and P120 nonwastewaters could be easily stabilized. Thus, the Agency is also proposing that stabilization is BDAT for the nonwastewaters. The Agency is thus proposing a treatment standard of "Recovery of Stabilization as a Method of Treatment" for P119 and P120 nonwastewaters. The Agency is soliciting comments on potential cut-off levels for vanadium wastes that can be recovered versus those that can be stabilized and any stabilization data on wastes containing vanadium.

BDAT TREATMENT STANDARDS FOR P119 AND P120

[Wastewaters]

Regulated constituent	Maximum for any 24 hour composite sample
	Total Composition (mg/l)
Vanadium	0.042

BDAT TREATMENT STANDARDS FOR P119 AND P120

[Nonwastewaters]

Thermal Recovery or Stabilization as a Method of Treatment

6. Proposed Treatment Standards for Additional Waste Code Specific Treatability Groups.—a. Cyanide Wastes. In the June 23, 1989 Second Third final rule, the Agency promulgated treatment standards for amenable and total cyanide constituents for the electroplating, heat treating, and acrylonitrile F and K wastes (54 FR 26610–615). The Agency transferred certain of these treatment standards to the cyanide wastes listed as P waste codes. The analytical method used to measure cyanide concentrations in treatment residues (thereby determining compliance with the treatment standard) was SW–846 Method 9010.

After promulgation of the Second Third rule, the National Association of Metal Finishers (NAMF) requested that the Agency confirm that generators of F006 nonwastewaters containing cyanides will be in compliance with the Second Third Land Disposal Restrictions if the total cyanide treatment standard (590 mg/kg) is measured using Method 9010 as currently written, that is analyzing the largest sample size practical, distilling for approximately one (1) hour, and one (1) liter distillation flask. NAMF asserted that for certain F006 nonwastewaters the total cyanide concentration varied significantly depending on the length of distillation time and the sample size used for the analysis. Data submitted by NAMF indicated that as the sample size increased and distillation time decreased, the concentration of total cyanide increased.

EPA regards the lack of specificity as to the sample size and distillation time in the description of Method 9010 to be potential loopholes that could allow persons to misuse the analytical method in order to demonstrate compliance without treating the waste. The Agency believes that a generator or treater could analyze a large sample size (i.e., greater than 10 grams) and shorten the length of the distillation time—thereby impacting the amount of cyanides that ultimately is analyzed—in order to comply with the treatment standard. Most of the samples being analyzed for cyanides are treatment residues containing significant amounts of alkaline materials, such as lime and metal hydroxides. The analytic method uses a fixed amount of sulfuric acid (as specified in Method 9010) which amount is supposed to be sufficient to neutralize alkaline materials and to acidify the sample such that the cyanide is converted to HCN and subsequently distilled and analyzed as total cyanide. However, the method does not limit the sample size nor the distillation time, and too large of a sample size could result in incomplete neutralization of the alkalinity, thus reducing the amount of HCN released and a resultant lower analysis of total cyanide. Similarly, too short a distillation time would also result in a lower analysis of total cyanide. To prevent this from happening, EPA is proposing an amendment to 40 CFR 268.43 that would require amenable and total cyanide concentration in wastes to be analyzed by Method 9010 of SW–846 with a sample size and a distillation time ranging from 0.5 to 10 grams and one hour to one hour and fifteen minutes, respectively. By proposing these constraints on sample size and distillation time, the Agency believes that compliance of the BDAT treatment standard will be done by actual treatment. Also, based on information from commercial laboratories, these values represent a range of sample size and distillation time that is commonly used for cyanide analysis.

EPA does not believe that this proposed clarification to the analytical method affects the achievability of the cyanide standards already promulgated. In fact, the sample size and the distillation time used to develop the treatment standards for F006, F007, F008, and F009 nonwastewaters were 10 grams and one hour and fifteen minutes, respectively (see RCRA Docket LD10–L0032, letter dated May 1, 1989). The Agency subsequently has solicited information from several treaters of cyanide wastes, who indicated to the Agency during the Second Third rulemaking that they were achieving the F006 nonwastewater cyanide standard as to the sample size and distillation time they are using. These facilities stated that they use a sample size of less than 5 grams and a distillation time of 1 hour (see administrative record for cyanide wastes in today's notice), again within the range being proposed today. Therefore, the Agency believes that the data in the Second Third rule documenting achievability of the cyanide treatment standard reflects the analytic procedure being proposed today.

(1) F006 Wastewaters. Today's rule proposes wastewater treatment standards for amenable and total cyanides and metal constituents for F006 wastewaters. (Nonwastewater standards for F006 metal constituents were promulgated in the First Third final rule, and nonwastewater standards for F006 cyanides were promulgated in the Second Third final rule.) Wastewater treatment standards are based on the performance of alkaline chlorination for the amenable and total cyanides, and chromium reduction followed by chemical precipitation using lime and sulfides and sludge dewatering for the metals. Detailed information on F006 waste characterization and the technical feasibility of the transfer of the performance of the treatment systems can be found in the Proposed Addendum to the Best Demonstrated Available Technology (BDAT) Background Document for F006.

F006 wastewaters are expected to result primarily from waste treatment operations in the electroplating or metal finishing industries. For example, the filter and/or clarifier overflow from treated electroplating wastewaters may be considered F006 wastewaters. F006 wastewaters may also be generated at a CERCLA site, during corrective action at a RCRA facility, or as a result of spills.

The Agency is proposing amenable and total cyanide standards for F006 wastewaters based on the performance of alkaline chlorination. The Agency is transferring these standards from the F007, F008, and F009 wastewaters. This transfer is based on the similarities in concentrations of cyanides in these

wastewaters and on the fact that F006 wastewaters, like F007, F008, and F009 wastewaters, are generated from electroplating operations. The Agency also believes that the F006 wastewaters contain lower or at most, similar, concentrations of amenable and total cyanides than F007, F008, and F009 wastewaters and are therefore less difficult to treat.

The Agency is proposing four metal standards (cadmium, total chromium, lead, and nickel) for F006 wastewaters based on the transfer of treatment standards for metals in K062. These standards are based on chromium reduction followed by chemical precipitation using lime and sulfide and sludge dewatering. (In fact, the Agency has information that certain facilities currently using these same treatment processes on F006 wastewaters.) The Agency believes that this transfer is technically feasible because the metals in K062 wastewaters are more difficult to treat (due to the high acidity of K062 wastes and the higher overall concentrations of total dissolved salts and metals) than the F006 wastewaters (e.g., individual metal concentrations in K062 ranged up to 7,000 ppm).

During the process of determining today's proposed standards, the Agency also evaluated performance data that were developed by EPA's Office of Water for hydroxide precipitation, sedimentation, and filtration for wastes from the metal finishing industry. However, the Agency did not use these data in the development of today's proposed F006 metal standards because the metal finishing waste characterization data indicated that the untreated concentrations of these metals in these wastewaters were low compared to those in F006 wastewaters. In fact, the individual metal concentrations in F006 wastewaters ranged up to 400 ppm and overall were typically orders of magnitude higher than those in the database for metal finishing raw wastewaters. The Agency believes, therefore, that these treatment data for the metal finishing wastewater streams do not represent treatment of F006 wastewaters and may result in wastewater treatment standards that would be unachievable for the F006 wastewaters. Thus, the Agency is not proposing F006 wastewater treatment standards based on these data.

BDAT TREATMENT STANDARDS FOR F006

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cyanides (total)	1.9
Cyanides (amenable)	0.10
Cadmium	1.6
Chromium	0.32
Lead	0.040
Nickel	0.44

(2) F019. Today's rule proposes treatment standards for amenable and total cyanides and metals in F019 wastewaters and nonwastewaters. Treatment standards for the wastewaters are based on the performance of wet air oxidation for the amenable and total cyanides. Treatment standards for metals in wastewaters are based on chromium reduction, chemical precipitation with lime and sulfide, and sludge dewatering. Treatment standards for the nonwastewaters are based on the performance of wet air oxidation for amenable and total cyanides, and stabilization for the metals.

In the Second Third final rule, the Agency stated that F019 wastes are a different treatability group than F006, F007, F008, and F009 electroplating wastes or F010, F011, and F012 heat treating wastes. This difference is primarily due to the presence of high concentrations of iron-cyanide complexes (ferric or ferrous cyanides) in F019 wastes (54 FR 26613, June 23, 1989). The source of the iron-cyanide complexes is the soluble ferrocyanide compounds used in the coating baths and in components of the coating. A detailed technical description of the generation and characterization of F019 wastes and discussion of the applicable technologies can be found in the Background Document for F019 wastes.

For the F019 wastes, the Agency investigated the technologies of ultraviolet (UV) ozonation and wet air oxidation. For the UV ozonation test, the Agency treated a F009 waste that contained primarily complex cyanides at a concentration of 60 to 63 ppm. This waste was then spiked with approximately 1,900 ppm of the ferricyanide, in order to simulate an F019 wastewater. The performance data from the UV ozonation technology indicated that the total cyanide concentration was not substantially reduced, indicating that UV ozonation was not an effective treatment for these wastes.

The Agency also investigated wet air oxidation of F019 wastes. The original F019 wastes collected by the Agency contained a total concentration of cyanide of 5,000 ppm. The waste was then diluted four to one with water in order to fluidize and charge the waste through the wet air oxidation process. Therefore, the theoretical influent concentration of cyanide should have been 1,250 ppm. However, the analysis of the influent concentration of cyanides indicated a concentration of 300 ppm (which was analyzed as mostly amenable cyanides). Because of these apparent discrepancies in the analytical data, the Agency is proposing two options for the development of treatment standards for total and amenable cyanides for F019 wastewaters and nonwastewaters.

The first option proposes concentration-based treatment standards for cyanides based on the performance data for wet air oxidation. Although there apparently are some discrepancies (noted above) with the cyanide analyses for F019, these data do represent treatment of an F019 waste and indicate that significant destruction of cyanides was achieved by the technology. Since wet air oxidation is an applicable technology and has been demonstrated on other cyanide wastes, the Agency believes that these standards based on wet air oxidation can be achieved.

As an alternative, the Agency is also proposing to transfer the concentration-based treatment standards for F006–F009 based on the performance of alkaline chlorination for F006 through F009 wastes. In the Second Third Final Rule (54 FR 26611), the Agency promulgated a treatment standard for total cyanide in F006 through F009 nonwastewaters as 590 mg/kg. While the Agency stated that F019 wastes were different from F006–F009 wastes because the F019 wastes contained high concentrations of iron-cyanide complexes, review of the waste characterization data for F006 wastes indicates that many F006 wastes also contain high concentrations of iron-cyanide complexes that are somewhat similar. Based on this information and the fact that F019 wastes could be diluted to levels similar to those found in the high iron F006 wastes in order to effect treatment, the Agency believes that the alternative proposed treatment standards for F019 based on a transfer from these F006 high iron wastes may be appropriate. The Agency is requesting comments on these two options for developing treatment standards for F019 wastes.

In addition, the Agency is proposing a treatment standard for amenable cyanides in F019 nonwastewaters based on the reproducibility of the analytical method for total cyanides. Details of the calculation of the amendable cyanide standards can be found in the background document. The Agency used a similar procedure for developing treatment standards for amenable cyanides in F006–F012 wastes in the Second Third Final Rule (see 54 FR 26611).

The Agency is proposing treatment standards for total chromium based on a transfer of treatment performance data for K062 wastewaters. These data are from a treatment train that included chromium reduction followed by precipitation with lime or sulfide and dewatering. In addition, generators of F019 wastes have indicated to the Agency that this treatment train is consistent with the onsite treatment of F019 wastewaters that is currently being performed. The Agency believes that this transfer is technically feasible because the metals in K062 wastewaters are more difficult to treat (due to the high acidity of K062 wastes and the higher overall concentrations of total dissolved salts and metals) than the F006 wastewaters (e.g., individual metal concentrations in K062 ranged up to 7000 ppm).

The Agency is also proposing treatment standards for total chromium in F019 nonwastewaters based on a transfer of performance data from the stabilization of F006 wastes. The Agency believes that the transfer of the performance of stabilization data from F006 to F019 is technically feasible due to the higher concentration of metals within F006 wastes.

BDAT TREATMENT STANDARDS FOR F019

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cyanides (Total)	0.27
Cyanides (Amendable)	0.11
Chromium (Total)	0.32

BDAT TREATMENT STANDARDS FOR F019

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Cyanides (Total)	390
Cyanides (Amendable)	20
	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total)	5.2

(3) K011, K013 and K014. In the Second Third final rule, the Agency promulgated treatment standards for the K011, K013, and K014 nonwastewaters (54 FR 26614, June 23, 1989). Treatment standards for the nonwastewaters were based on the performance of incineration. In addition, the Agency proposed treatment standards for K011, K013, and K014 wastewaters in the Second Third proposed rule on January 11, 1989 (54 FR 1056). Commenters on the proposed wastewater standards indicated that they were in the process of developing wet air oxidation data for these wastewaters. Since the Agency concurred that wet air oxidation was an applicable technology for these wastes and since the other data that was available to the Agency for treatment of these wastewaters was relatively incomplete, the Agency chose not to promulgate the proposed wastewater treatment standards at that time. After the close of the comment period, commenters submitted these performance data for treatment of K011, K013, and K014 wastewaters using wet air oxidation. As a result, the Agency is proposing treatment standards for organics and total cyanides in K011, K013, and K014 wastewaters. Treatment standards are based on the performance of wet air oxidation for the organics and cyanides.

The Agency is defining K011, K013, and K014 wastewaters (as generated) as containing less than 3.5% Total Organic Content (TOC) and less than 1% Total Suspended Solids (TSS). The Agency believes that the 3.5% cutoff level is applicable based on the available waste characterization data for K011, K013, and K014 wastes. As generated all of these wastes are liquid and contain primarily water, yet they sporadically contain over 1% TOC (but not more than 3%) and would have been classified as nonwastewaters based on the Agency's standard cut-off of 1% TOC.

The Agency originally established the 1% TOC cut-off based on evaluation of waste characterization data for solvent-water mixtures. These data indicated that the majority (99%) of the wastewaters containing solvents were significantly lower in total organics. These lower concentrations also corresponded to the appropriate concentrations of feed streams for the technologies applicable to the solvent-water mixtures (i.e., steam stripping, biodegradation, and carbon adsorption). The proposed 3.5% TOC cutoff for K011, K013, and K014 wastewaters is based on similar logic and calculation. In addition, the technology of choice for K011, K013, and K014 liquids with less than 3.5% TOC is wet air oxidation. Since wet air oxidation is typically designed to handle similar or slightly higher TOC levels although 10% TOC is cited in guidance as a typical maximum level for wet air oxidation, but, wet air oxidation systems are usually designed for lower levels, the Agency determined that it is an appropriate technology for these wastes and that the TOC cut-off for K011, K013, and K014 wastewaters should be adjusted accordingly.

BDAT TREATMENT STANDARDS FOR K011, K013, K014

[Wastewaters <3.5% TOC and <1% TSS]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Acetonitrile	38
Acrylamide	19.
Acrylonitrile	0.06
Benzene	0.02
Cyanides (total)	21.

(4) U and P Waste Codes Containing Cyanides

P031—Cyanogen
P033—Cyanogen chloride
U246—Cyanogen bromide

Today's rule proposes alkaline chlorination or incineration as a method of treatment for amenable and total cyanides for P031, P033, and U246 Wastes. For these wastes, the Agency is proposing a technology rather than concentration-based standards due to the high toxicity of these wastes and due to the imprecision of the analytical method for these wastes.

In a cyanide oxidation process such as alkaline chlorination, the cyanide present within a waste is converted to carbon dioxide and nitrogen. Before the carbon dioxide and nitrogen are formed, there are two intermediate reactions

that occur. The first reaction is the reaction of cyanide with chlorine to form cyanogen compounds. The second reaction is cyanogen compounds hydrolyzed to cyanate compounds. These cyanate compounds are further oxidized with excess chlorine to carbon dioxide and nitrogen. Based on information from the "Standards Method for the Examination of Wastewater," the cyanogen compounds are highly toxic and have limited solubility. At alkaline pH, these compounds hydrolyze to the cyanate compound and the rate of reaction is pH and time dependent. However, these cyanogen compounds convert rapidly to the cyanate compound when there is excess chlorine.

The Agency believes that because the cyanogen compounds are very unstable, these compounds are destroyed by incineration. Since the Agency has data that indicate that other more stable cyanide wastes can be completely destroyed to the detection limits, the Agency is proposing that incineration is an option for these cyanogen U and P wastes.

BDAT TREATMENT STANDARDS FOR P031, P033, U246

[Nonwastewaters and Wastewaters]

Alkaline Chlorination or Incineration as Methods of Treatment

b. F024 and F025

(1) Addition of Standards for F024 Wastes. Concentration-based treatment standards for organics in F024 wastewater and nonwastewater were promulgated in the Second Third final rule (54 FR 26615, June 23, 1989). The treatment standards were based on the performance of rotary kiln incineration for organic constituents, and chemical precipitation followed by vacuum filtration for metal constituents in wastewaters.

After the close of the comment period, the Agency completed an analysis of TCLP extracts obtained from the stabilization of F024 incinerator ash residues. The results of this analysis showed substantial reduction of metals; however, because these data were not available for public notice and comment and the resultant treatment standards were significantly different from the proposed standards, the Agency decided to reserve treatment standards for metals in F024 nonwastewaters.

Stabilization is an available technology for metals in F024 nonwastewaters because this technology is commercially available and can be purchased from a proprietor, and provides substantial reduction of metal hazardous constituents in the TCLP extract. The stabilization data obtained from the Agency's BDAT treatment test of F024 incinerator ash residues is the only available data on treatment of metal constituents in F024 nonwastewaters. EPA therefore considers stabilization to be BDAT for metals in F024 nonwastewaters.

The specific constituents being proposed by EPA for regulation and the proposed treatment standards are presented in the table at the end of this section. For a detailed description of the reductions exhibited by stabilization of these wastes refer to the Addendum to the BDAT Background Document for F024.

EPA has received anecdotal information that some treatment facilities which previously treated F024 wastes are now refusing to do so because the treatment standard for the waste includes standards for various chlorinated-dibenzo dioxins and furans. EPA has not had the opportunity to pursue whether this is the case, or the extent of the problem, if any. EPA solicits comment on these points here. In addition, the Agency solicits comment on whether the other treatment standards for organics in F024 serve as an adequate surrogates for these chlorinated-dibenzo dioxins and furans (i.e., whether achieving the treatment standards for the other organic constituents in the waste means that the treatment standards for chlorinated-dibenzo dioxins and furans will also be achieved). Based on these comments, the Agency may amend the treatment standard for chlorinated-dibenzo dioxins and furans in F024 wastewaters and nonwastewaters.

(2) Proposed Standards for F025 Wastes. Although the listing of F025 as a RCRA hazardous waste has not been promulgated as of today's rule, the Agency believes that promulgation of the listing for F025 will occur prior to the promulgation of the Third Third final rule, and has therefore decided to propose concentration-based treatment standards for F025 wastes at this time. The proposed concentration-based standards for F025, however, may change or become further refined as a result of the final listing of the waste. (EPA would not, however, establish an effective date for a prohibition and treatment standard for this waste before the effective date of the F025 waste listing.)

F025 wastes have been characterized as condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of chlorinated aliphatics. For the purposes of establishing treatment standards, the wastes have been grouped into two subcategories: condensed light ends and filters/aids and desiccants. Available characterization data suggest that different constituents may be contained in each of these subcategories. Therefore, the Agency is proposing concentration-based treatment standards to reflect these differences in physical and chemical composition. Concentration-based treatment standards for all wastewater and nonwastewaters forms of F025 are proposed today based of the transfer of performance data used in the development of treatment standards for specific U and P wastes that are constituents in the various F025 subcategories. (See sections III.A.2.c. and III.A.2.d. for additional information). The Agency believes that the constituents expected to be contained in F025 wastes can be incinerated to below detection limits. Those constituents for which the Agency has not set concentration-based standards can also be incinerated to below detection limits because the Agency believes that these constituents are easier to treat than those constituents for which EPA is proposing concentration-based treatment standards. Further information on the development of treatment standards can be found in the Addendum to the Background Document for F024 Wastes in the RCRA docket.

BDAT TREATMENT STANDARDS FOR F024

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total)	0.073
Lead	0.021
Nickel	0.088

BDAT TREATMENT STANDARDS FOR F025

[Nonwastewaters]

Light Ends Subcategory

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Chloroform	6.2
1,2-Dichloroethane	6.2
1,1-Dichloroethylene	6.2

BDAT TREATMENT STANDARDS FOR F025—Continued

[Nonwastewaters]

Light Ends Subcategory

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Methylene chloride	31
Carbon tetrachloride	6.2
1,1,2-Trichloroethane	6.2
Trichloroethylene	5.6
Vinyl chloride	0.035

BDAT TREATMENT STANDARDS FOR F025

[Wastewaters]

Light Ends Subcategory

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Chloroform	0.035
1,2-Dichloroethane	0.007
1,1-Dichloroethylene	0.007
Methylene chloride	0.037
Carbon tetrachloride	0.007
1,1,2-Trichloroethane	0.007
Trichloroethylene	0.007
Vinyl chloride	0.033

BDAT TREATMENT STANDARDS FOR F025

[Nonwastewaters]

Spent Filters/Aids and Desiccants Subcategory

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Chloroform	6.2
Methylene chloride	31
Carbon tetrachloride	6.2
1,1,2-Trichloroethane	6.2
Trichloroethylene	5.6
Vinyl chloride	0.035
Hexachlorobenzene	37
Hexachlorobutadiene	28
Hexachloroethane	30

BDAT TREATMENT STANDARDS FOR F025

[Wastewaters]

Spent Filters/Aids and Desiccants Subcategory

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Chloroform	0.035
Methylene chloride	0.037
Carbon tetrachloride	0.007

BDAT TREATMENT STANDARDS FOR F025—Continued

[Wastewaters]

Spent Filters/Aids and Desiccants Subcategory

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
1,1,2-Trichloroethane	0.007
Trichloroethylene	0.007
Vinyl chloride	0.033
Hexachlorobenzene	0.055
Hexachlorobutadiene	0.031
Hexachloroethane	0.034

c. Wastes from Inorganic Pigment Production. These wastes are generated by facilities manufacturing and processing inorganic pigments, as well as from the treatment of the wastes themselves. Detailed technical descriptions of the specific production processes generating these wastes can be found in the Listing Background Document for these wastes, as well as the BDAT Background Document for Inorganic Pigment Wastes.

(1) Nonwastewaters. In the Final Second Third Rule (53 FR 26594; June 23, 1989), EPA promulgated treatment standards of "No Land Disposal Based on No Generation" for K005 and K007 wastes. In today's proposed rule, the Agency is revoking these standards because a source wishing to manufacture these pigments in the future would be forced to apply for a variance from the treatment standard (40 CFR 268.44) in order to do so.

In the First Third final rule, EPA also promulgated a standard of "No Land Disposal Based on No Generation" for K004 and K008. EPA modified this standard to apply only to certain newly generated waste as part of the May 2, 1989 final rule (54 FR 18836). On January 11, 1989 EPA also proposed to modify this designation to "No Land Disposal Based on Recycling". During the comment period for the Second Third proposed rule, EPA received information that the recycling operation under consideration for these wastes may involve a limited captive market for the waste by-product; therefore, not all generators would be able to sell their processed K004 and K008. As a result, EPA revoked the "No Land Disposal Based on No Generation" standard in the Second Third final rule (54 FR 26617).

For K002, K003, and K006 (anhydrous) EPA considered proposing a treatment standard based on total recycling using secondary lead smelting. However, this process could also produce residues which may be subject to land disposal restrictions. Therefore, the Agency is proposing to transfer the performance of chromium reduction followed by precipitation and filtration from K062 to K002, K003, K004, K005, K006 (anhydrous), and K008. The filter cake that is generated from this treatment train may need further treatment such as stabilization in order to prevent immobilization of toxic metals.

EPA is proposing to transfer the K062 nonwastewaters standards to K002, K003, K004, K005, K006, and K008 nonwastewaters because the wastewaters from which K062 sludge are derived are similar in nature to the inorganic pigment wastewaters (i.e., consisting of inorganic constituents). The concentrations of heavy metals in the untreated wastewaters are also similar. The only difference is that K062 wastewaters contain higher concentrations of nickel and chromium (see the BDAT Background Document for Inorganic Pigments). The Agency, however, is soliciting TCLP data on treated inorganic pigment sludge.

In the case of hydrated K006, one facility is manufacturing this pigment, hydrated chrome oxide green, using a boric acid process. Due to the presence of boron, the sulfide precipitation results for K062 sludges may not be transferrable to this waste. Therefore, EPA is proposing to transfer the chromium standard from F006 to hydrated K006. This level is achievable for hydrated K006 nonwastewaters. Data submitted by the manufacturer of hydrated K006 indicates that five different stabilizing agents can reduce the hexavalent chromium to its trivalent stage. The process wastewaters underwent chromium reduction and lime precipitation, then the sludge was stabilized using various mixes of cement, fly ash, gypsum, ground burnt lime, and silicate gel (a combination of fly ash and gypsum was the most successful). All of the five mixes easily met the chromium standard for F006. The Agency is soliciting further TCLP data on treated hydrated K006.

(2) Wastewaters. The treatment of pigment sludge can generate wastewaters. These wastewaters are similar to treated and untreated wastewaters from the inorganic pigment manufacturing processes, depending on the type of pigment being processed. EPA is therefore proposing regulations based on the chrome pigment effluent guidelines for discharges from this industrial category regulated under the National Pollutant Discharge Elimination System (NPDES) (40 CFR

415.340). The proposed standards are taken directly from the concentrations as stated in the "Development Document for Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Inorganic Chemicals Manufacturing Point Source Category", June, 1982. These standards are based on chromium conversion and lime precipitation to remove toxic metals. Because the effluent limitations guidelines and standards contain both 30 day and one day numbers, the RCRA treatment standard likewise requires compliance with 30 day and one day standards. The minimum sampling frequency recommended is once a week. The basis of the 30 day limit is consecutive calendar days and not sampling days. The statistical basis for these one and 30 day values is set forth in the Development document cited above.

BDAT TREATMENT STANDARDS FOR K002, K003, K004, K006 (ANHYDROUS), AND K008

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total)	0.094
Lead	0.37

BDAT TREATMENT STANDARDS FOR K006 (HYDRATED)

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total)	5.2

BDAT TREATMENT STANDARDS FOR K005 AND K007

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Chromium (Total)	0.094
Lead	0.37

5BDAT TREATMENT STANDARDS FOR K002, K003, K004, K006, AND K008

[Wastewaters]

Regulated constituent	Total concentration (in mg/l)	
	30 day maximum	24 hour maximum
Chromium (Total)	1.2	0.9
Lead	1.4	3.4

BDAT TREATMENT STANDARDS FOR K005 AND K007

[Wastewaters]

Regulated constituent	Total concentration (in mg/l)	
	30 day maximum	24 hour maximum
Chromium (Total)	1.2	.9
Lead	1.4	3.4
Cyanides (Total)	0.31	0.74

d. K015

In the final First Third Rule (53 FR 31154), the Agency promulgated a treatment standard of "No Land Disposal Based on No Ash" for K015 nonwastewaters. Concentration-based standards for K015 wastewaters were promulgated at that time. After promulgation, a facility generating K015 nonwastewaters submitted information indicating that their K015 waste generated an ash residue upon combustion. Therefore, the Agency's assessment of these wastes not having an ash content was incorrect. As a result, EPA is proposing to revoke the "No Land Disposal Based on No Ash" standard for the nonwastewater forms of K015 (as well as the subcategorization based on ash content), and is proposing numerical treatment standards for all K015 nonwastewaters today.

The Agency is proposing treatment standards for five organic and two metal constituents. Treatment standards for the organic constituents are based on a transfer of the performance data of incineration for similar wastes. Treatment standards for metal constituents are based on a transfer of the performance of stabilization of incinerator ash for similar wastes. Six sample sets from the treatment of K019 and five sample sets from the treatment of K087 had been collected for rotary kiln incineration. These data sets were transferred to K015 nonwastewaters based on structural similarities. The constituent p-Dichlorobenzene is being used as a surrogate for benzal chloride; p-dichlorobenzene treatment data from K019 will be transferred to benzal chloride in K015. These constituents are similar in that they are both chlorinated benzenes.

The proposed toluene standards for KO15 are transferred directly from K019 treatment data. Toluene is present at higher levels in untreated K019 waste than in untreated K015 waste. Therefore, treatment by incineration should result in at least as low a level of toluene in K015 nonwastewater as in K019. The proposed standards for benzo(b/k)fluoranthene in K015 are transferred from K087 treatment data. Both the b and k forms are found in K087, whereas only the k form is present in K019. In addition, the untreated benzo(b/k)fluoranthene in K087 should be more difficult to treat than in K019, hence K087 is a better source of transferred incineration data for benzo(b/k)fluoranthene. Proposed standards for anthracene and phenanthrene are transferred from K087 data. These constituents are also found in untreated K019 waste; however, the concentrations of these constituents in K019 are not as high as in untreated K015. Anthracene and phenanthrene are, however, present at higher concentrations in K087 than in K015. Therefore, treatment by incineration should result in at least as low a level of these constituents in K015 as in K087. The Addendum to the Background Document for K015 describes how each standard was developed and presents the K019 and K087 treatability data used to generate these standards.

No performance data are available for treatment of metals in K015 nonwastewaters. However, data are available for stabilization of metals in the incinerator ash of K048–K052. Based on the similarity of the constituents and their concentrations expected to be found in the untreated K015 incineration ash compared to K048–K052 ash, K015 ash appears to be sufficiently similar to the ash generated by incinerating K048–K052. No data exist characterizing metal concentrations in untreated KO15 ash; however, nickel and chromium were found in the incinerator scrubber water. Hence, nickel and chromium should be expected in the ash and consequently EPA is proposing to regulate them in K015 nonwastewaters.

BDAT TREATMENT STANDARDS FOR K015

[Nonwastewaters; Revised from no land disposal]

Regulated constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Anthracene	3.4	
Benzal chloride	6.2	
Benzo(b/k)fluoranthene	3.4	
Phenanthrene	3.4	
Toluene	6.0	
Chromium (Total)	1.7	
Nickel	0.048	

e. K022, K025, K026, K035, and K083. All of these wastes generally contain similar treatable concentrations of aromatic organics and hydrocarbons. They thus are amenable to similar treatment technologies and present similar technical difficulties in developing treatment standards. Thus, these wastes have been grouped together under the same section for purposes of discussion. K022, K035, and K083 are scheduled First Third wastes, K025 is a Second Third waste, and K026 is a Third Third waste. EPA promulgated nonwastewater treatment standards for K022, K025, and K083 in the First Third final rule (53 FR 31138). EPA later deferred treatment for K083 nonwastewaters containing ash to the Third Third in the May 2, 1989, final rule (53 FR at 18837).

(1) Development of Treatment Standards. EPA has data that indicate nonwastewater forms of K025 and K026 are no longer generated in the United States. These wastes are currently subject to a treatment standard expressed as "No Land Disposal Based on No Generation". The Agency is proposing to revoke these standards in order that a source wishing to manufacture commercial products by the manufacturing processes described in the listing document for these wastes will not be forced to apply for a variance from the treatment standard in order to do so.

K025 is generated from the nitration of benzene which is a similar process to that which generates K111, K112, K103, and K104. Each one of these wastes has constituents which are as difficult to treat as those constitutents in K025. Available data characterizing the chemical composition of K025 are very limited, therefore the Agency is proposing to transfer performance data from K103 and K104 wastes to K025 in order to establish, as one option, concentration-based treatment standards, and as another option, a treatment standard expressed as a method.

For K035 wastewaters, EPA is proposing standards based on process wastewaters from the distillation of coal-tars as a surrogate waste for developing treatment standards. These process wastewaters are the precursors of K035 wastewater treatment sludges listed as hazardous wastes in 40 CFR § 261.32. These process wastewaters contain the same constituents for regulation as those identified in the K035 nonwastewaters with the exception of o-cresol, p-cresol, and phenol. These three constituents were identified in the process wastewaters at treatable concentrations and EPA is proposing to regulate them.

EPA is proposing concentration based standards for the organics identified in K022, K026, K035, and K083 wastes. These treatment standards are based on the incineration of similar nonwastewaters. As a result, EPA is also proposing incineration of these wastes as a prerequisite for land disposal. The concentration based standards for K026, K035, and K083 nonwastewaters are based on the concentration of organics achieved in the residual ash of the waste tested by EPA. Similarly, treatment standards for the K022, K026, K035, and K083 wastewaters are supported by the concentration organics achieved in the incineration scrubber waters.

For K025, EPA is proposing concentration based treatment standards for organics. The proposed treatment standards for the organics in K025 wastewaters are based on liquid-liquid extraction followed by stream stripping followed by carbon adsorption. As an alternative, the agency believes that the organics in these wastes can be effectively treated and removed by either direct carbon adsorption or wet air oxidation followed by carbon adsorption. The proposed treatment standards for K025 nonwastewaters are based on incineration. Alternatively, EPA is proposing requiring these methods of treatment as a prerequisite for land disposal of K025. Incineration of K025 wastewaters is also proposed as an equivalent method of treatment for K025 wastewaters. EPA prefers establishing methods of treatment for K025 and K026 because the lack of characterization data for them makes our approach uncertain in whether other constituents in the uncharacterized wastes that may be at treatable concentrations will or will not be regulated by the constituents proposed for regulation.

Available characterization for all these wastes show that only K022 and K083 have treatable concentrations of metals. As a result, EPA is proposing concentration based treatment standards for the metals identified in K022 and K083. The proposed treatment standards for K022 and K083 wastewaters are based on chemical precipitation of a similar waste to K022 and K083 wastewaters. For the metals in K083 nonwastewaters, the proposed treatment standards are based on stabilization. Alternatively, EPA is proposing for K022 and K083 treatment standards expressed as methods of treatment. The methods of treatment would be those BDAT technologies supporting the proposed concentration based standards for these two wastes. To determine the applicability of the proposed treatment standards, the standard BDAT criteria should be used to classify K022, K026, K035, and K083 as wastewaters or nonwastewaters. These standard BDAT criteria classify a waste as a wastewater if it contains less than one percent total suspended solid (TSS) and less than one percent total organic content (TOC). In contrast, K025 wastes are classified as wastewaters if they contain less than one percent TSS and less than 4 percent TOC. These wastes are classified as nonwastewaters if the TSS or TOC percent levels are exceeded. EPA is proposing a different wastewater definition for K025 because, upon study, it appears that normal liquids carrying this waste code that are amenable to wastewater treatment can legitimately contain up to 4% TOC (see BDAT Background Document of K025).

The BDAT Background Documents for these wastes provide further discussion on the constituents proposed for regulation as well as the development of the treatment standards proposed today. The BDAT Background Document for K022 is referred as a Proposed Amendment to the Final BDAT Background Document for K022. The tables at the end of this section summarize the proposed concentration based treatment standards for these wastes as well as the proposed constituents for regulation.

BDAT TREATMENT STANDARDS FOR K022

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Toluene	0.017
Acetophenone	0.036
Diphenylamine/diphenylnitrosamine	0.036
Phenol	0.091
Chromium (Total)	0.35
Nickel	0.47

BDAT TREATMENT STANDARDS FOR K025

[Wastewaters; <1% TSS and <4% TOC]

Incineration, or liquid-liquid extraction followed by steam stripping followed by carbon adsorption as a method of treatment.

BDAT TREATMENT STANDARDS FOR K025

[Nonwastewaters]

Incineration as a method of treatment.

BDAT TREATMENT STANDARDS FOR K025

[Wastewaters; Alternative proposal]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/l)
2,4-Dinitrotoluene	0.67
Nitrobenzene	0.084
4-Nitrophenol	0.67

BDAT TREATMENT STANDARDS FOR K025

[Nowastewaters; Alternative proposal]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/kg)
2,4-Dinitrotoluene	2.3
Nitrobenzene	2.3
4-Nitrophenol	2.3

BDAT TREATMENT STANDARDS FOR K026

[Wastewaters and Nonwastewaters]

Incineration as a method of treatment.

BDAT TREATMENT STANDARDS FOR K026

[Nonwastewaters; Alternative proposal]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/kg)
Pyridine	14

BDAT TREATMENT STANDARDS FOR K026

[Wastewaters; Alternative proposal]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/l)
Pyridine	0.017

BDAT TREATMENT STANDARDS FOR K035

[Wastewaters]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/l)
Benz(a)anthracene	0.028
Chrysene	0.14
o-Cresol	0.028
p-Cresol	0.028
Fluoranthene	0.028
Naphthalene	0.028
Phenanthrene	0.028
Phenol	0.031
Pyrene	0.056

BDAT TREATMENT STANDARDS FOR K035

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/kg)
Acenaphthene	3.4
Anthracene	3.4
Benz(a)anthracene	3.4
Benzo(a)pyrene	3.4
Chrysene	3.4
Dibenz(a,h)anthracene	3.4
Fluoranethene	3.4
Fluorene	3.4
Indeno(1,2,3-cd)pyrene	3.4
Naphthalene	3.4
Phenanthrene	3.4
Pyrene	8.2

BDAT TREATMENT STANDARDS FOR K083

[Nonwastewaters; Revised from no land disposal]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/l)	TCLP (mg/l)
Benzene	6.6	
Aniline	14.0	
Diphenylamine/ diphenylnitrosamine	14.0	
Nitrobenzene	14.0	
Phenol	5.6	
Cyclohexanone	30.0	
Nickel		0.088

BDAT TREATMENT STANDARDS FOR K083

[Wastewaters]

Regulated constituent	Maximum for any single grab sample: Total composition (mg/l)
Benzene	0.008
Aniline	0.017
Diphenylamine/ diphenylnitrosamine	0.017
Nitrobenzene	0.017
Phenol	0.007
Cyclohexanone	0.036
Nickel	0.47

f. K036 and K037

Today's rule proposes revised treatment standards for the wastewater forms of K037 and the nonwastewater forms of K036. Detailed technical descriptions of the specific production processes generating these wastes can be found in the background document for the listing of these wastes. These compounds were included in the organophosphorus pesticides treatability group in the Second Third proposed rule (54 FR 1085).

The Agency promulgated a treatment standard of "No Land Disposal Based on No Generation" for K036 nonwastewaters in the First Third final rule on August 8, 1988 (53 FR 31174, August 17, 1988). EPA amended this standard on May 2, 1989, to apply to wastes generated from the process described in the listing description and disposed after August 17, 1988 (54 FR 18836). In today's rule the Agency is proposing to transfer a concentration based standard from K037 nonwastewaters to other forms of K036 nonwastewaters, such as K036 spill residues, and is proposing to revise the K037 wastewater standards. (The Agency promulgated concentration-based treatment standards for K037 wastewaters and nonwastewaters in the First Third final rule.)

(1) Development of Standards. In the January 11, 1989, proposed rule for Second Third wastes (54 FR 1056), the Agency proposed a direct transfer of the concentration-based standards from the incineration of K037 wastes (wastewater treatment sludge from the production of Disulfoton) to a number of organophosphorus pesticide wastes. The basis for transferring the K037 standards is the similarity in structure and elemental composition of Disulfoton, the principal hazardous constituent of concern in K037 wastes, to all of the organophosphorus pesticides. In addition, the Agency believes that Disulfoton is one of the most difficult chemicals in that group of organophosphorus pesticides to incinerate. Given that Disulfoton can be effectively treated by incineration, the Agency believes that all the other wastes in the organophosphorus pesticides treatability group can be effectively treated by incineration, and the concentration-based standard for each representative regulated organophosphorus pesticide can be identical to that achieved by incineration of Disulfoton in K037 wastes. Therefore, the Agency believes that the performance achievable by incineration represents BDAT for

nonwastewater forms of K036 and is proposing concentration-based standards based on a transfer from the incineration of K037 nonwastewaters.

In the Second Third final rule, the Agency promulgated concentration-based treatment standards for the wastewater forms of the organophosphorus pesticides. These standards were proposed based on the concentrations found in scrubber water from a K037 incineration test burn. The Agency received data during the comment period on biological treatment of wastewaters containing Parathion, a constituent similar to Disulfoton, that were used as the basis of the promulgated treatment standards. Today the Agency is proposing to revise the wastewater treatment standards for K037 to be consistent with the other wastewater standards for organophosphorus pesticides.

(2) Identification of BDAT and Regulated Constituents. Standards applicable to K036 nonwastewaters are based on the performance achieved by rotary kiln incineration and the concentration of organophosphorus pesticide measured in the ash residuals. Standards applicable to K037 wastewaters are based on the performance achieved by biological treatment and the concentration of the regulated constituent (Disulfoton or Toluene) measured in the resultant effluent wastewaters. Where the treatment standards are expressed as concentration-based standards, other treatment technologies that can achieve these concentration-based treatment standards are not precluded from use by this rule. The regulated constituents and treatment standards for these wastes are listed in the tables at the end of this section.

The Agency points out that the promulgated concentration-based treatment standards for K037 wastewaters are based on the analysis of composite samples rather than grab samples. These performance data used to develop the standard for Disulfoton were received during the comment period for the Second Third Proposed Rule, and were based on the analysis of composite effluent samples. The data used to develop the standard for Toluene is from the Office of Water's Industrial Technology Division Database. See further discussion of composite samples in section III.A.1.f. of today's preamble. These data are a preferable measure of treatment performance because where the Agency has performance data that conform with BDAT methodology on wastewater treatment processes as well as data on incineration as measured by constituent concentrations in scrubber water, the Agency prefers to establish treatment standards based on the wastewater treatment processes. (Note: This does not preclude the Agency from establishing treatment standards for other wastes based on constituent concentrations in incinerator scrubber waters.)

Today's rule proposes revised concentration-based standards for the wastewater forms of K037 and the nonwastewater forms of K036.

BDAT TREATMENT STANDARDS FOR K036

[Nonwastewaters]

[Revised From No Land Disposal]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Disulfoton	0.1

BDAT TREATMENT STANDARDS FOR K037

[Wastewaters]

[Revised Based on Biotreatment Data]

Regulated constituent	Maximum for any single composite sample, total composition (mg/l)
Disulfoton	0.025
Toluene	0.080

g. K044, K045, K046, K047—(1) K044, K045, K047. Today's rule proposes to revoke the "No Land Disposal Based on Reactivity" treatment standard for K044, K045, and K046 wastes and proposes to set a method of treatment rather than concentration-based standards for these wastes. In the May 2, 1989, final rule (54 FR 18836), the Agency indicated that it would not amend the standard for these wastes because the wastes are listed for exhibiting the characteristic of reactivity. Although this is true, the Agency believes that by revoking the standard and setting "Deactivation as a Method of Treatment", a generator or treater can continue to dispose of this waste after the removal of the characteristic hazard.

(2) K046. In the August 17, 1989, final rule (53 FR 31158), the Agency developed two subcategories for the K046 nonwastewaters identified as the Reactive and Nonreactive Subcategories. The Agency based this subcategorization on the comments received by industry indicating that K046 Reactive wastes were not similar to the K046 Nonreactive wastes due to their reactivity. The nonreactive K046 wastes could be directly stabilized; however, stabilization of the reactive K046 wastes would result in a residual that could remain reactive. The Agency agreed and promulgated a treatment standard for lead in K046 Nonreactive nonwastewaters, but did not promulgate a standards for the K046 Reactive nonwastewaters nor did it promulgate wastewater standards for any K046 wastewaters. The Agency indicated in the First Third Rule that it would examine the data from testing of Nonreactive K046 nonwastewaters, and would determine whether these data could be extrapolated to Reactive K046 wastes or whether new data had to be obtained to set treatment standards for open detonation, open burning, or specialized incineration.

In this rule, the Agency is proposing a nonwastewater treatment standard for lead in the K046 Reactive Subcategory. BDAT for this waste is based on information that indicates that the K046 nonreactive waste for which the treatment standard was promulgated, originally started out as reactive wastewaters. The Agency believes that by removing the reactivity of these wastewaters, the resultant nonwastewater K046 will not be reactive and thus will be similar to the K046 nonreactive wastes for which the Agency promulgated standards (see 54 FR 26607–608 (June 23, 1989) regarding waste treatment that may occur before the listed waste is generated). In addition, the Agency believes that if the K046 nonwastewaters are generated as reactive, they could also be slurried in water and then treated by the same controlled chemical oxidation processes, again resulting in a nonreactive K046 nonwastewater. Thus, the nonwastewater standard for K046 reactive wastes is based on data transferred from the performance of stabilization of the K046 nonreactive wastes. BDAT is based on the performance of deactivation for the reactive wastewaters followed by alkaline precipitation, settling, and filtration to form a nonreactive K046 nonwastewater that is then stabilized for lead.

For all of the K046 wastewaters, BDAT is based on the performance of alkaline precipitation, settling, and filtration. The Agency is transferring the performance of this treatment system

from K062 wastes. The Agency believes that the K062 wastewaters are just as difficult to treat based on the concentration of lead in K062 (up to 212 ppm) which is the same or higher than that which has been found in K046 wastewaters (up to 200 ppm).

BDAT TREATMENT FOR K044, K045, K047

[Nonwastewaters and Wastewaters]

[Revised From No Land Disposal]

Deactivation as a method of treatment

BDAT TREATMENT STANDARDS FOR K044, K045, K046 AND K047 SUBCATEGORIES

[Wastewaters]

Regulated constituent	Maximum for any single composite sample, total composition (mg/l)
ead	0.037

BDAT TREATMENT STANDARDS FOR K046 REACTIVE SUBCATEGORY

[Nonwastewaters]

Regulated constituent	Maximum for any single composite sample, TCLP (mg/l)
ead	0.18

h. K060. In the August 17, 1989 final ule (53 FR 31174), the Agency promulgated "No Land Disposal Based n No Generation" for K060 nonwastewaters. EPA amended this standard in the May 2, 1989 final rule to apply only to certain newly generated wastes (54 FR 18838). Today, the Agency s proposing to revoke this standard since a facility might legitimately use ammonia as a reagent in the coking process and therefore may generate this waste. For more detailed technical nformation about waste characterization and treatment echnologies refer to the Best Demonstrated Available Technology BDAT) Background Document for K060.

(1) Wastewaters. Today, the Agency s proposing wastewater standards based on the performance of biological reatment followed by settling and clarification. These treatment standards are transferred from the Office of Water Development Document for Effluent Limitations Guidelines and Standards for the Iron and Steel Industry Manufacturing Point Source Category Coke Making Subcategory.

The Agency evaluated two types of treatment processes: dephenolization followed by alkaline chlorination and biological treatment followed by settling and clarification. Both data sets were available from the Office of Water Development Document for Effluent Guidelines and Standards for the Iron and Steel Industry Manufacturing Point Source Category Coke Making Manufacture. The Agency believes that the performance data from biological treatment followed by settling and clarification were best because the untreated values were higher and the treated values were lower. Therefore, this treatment system treated a more difficult waste and therefore the system's performance should be transferrable to K060.

For the cyanide constituents in the wastewaters, the treatment standards are based on the performance of alkaline chlorination for F006 through F009 wastes. The Agency believes that this is technically feasible due to the fact that the F006 through F009 wastes are more difficult to treat because of the higher cyanide concentrations (i.e., 30,000 ppm) and presence of non-cyanide complexes.

(2) Nonwastewaters. In today's rule, the Agency is proposing nonwastewater treatment standards for organic and cyanides based on a transfer of the performance of incineration for K087. K087 wastes are generated from the same industry (coking industry) as K060 wastes and have similar or higher concentrations of K060. Therefore, the Agency believes that this technology transfer is feasible.

BDAT TREATMENT STANDARDS FOR K060

[Wastewaters]

Regulated constituent	Maximum for any 24 hour composite sample, total composition (mg/l)
Benzene	0.17
Benzo(a) pyrene	0.035
Naphthalene	0.028
Phenol	0.042
	Maximum for any single grab sample, total composition (mg/l)
Cyanides (Total)	1.9

BDAT TREATMENT STANDARDS FOR K060

[Nonwastewaters]

[Revised From No Land Disposal]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene	0.071
Benzo(a) pyrene	3.6
Naphthalene	3.4
Phenol	3.4
Cyanides (Total)	1.2

i. K061. In the August 17, 1988 final rule (53 FR 31162), the Agency promulgated treatment standards for K061 nonwastewaters but did not promulgate treatment standards for K061 wastewaters. K061 wastewaters can be generated from dewatered sludges, CERCLA sites, and during corrective action at RCRA facilities. Based on single source leachate information from the Generator's Survey, K061 wastewaters generally have low concentrations of dissolved metals (i.e., less than 100 ppm). Because of these low concentrations of dissolved metals, the Agency believes that a transfer of the performance of hexavalent chromium followed by precipitation with lime or sulfide and sludge dewatering for K062 wastewaters is technically feasible. In addition, the Agency believes that the K062 wastewaters are more difficult to treat than the K061 wastewaters because of the high concentration of dissolved metals, i.e. 5,000 ppm of dissolved metals.

EPA promulgated treatment standards for nonwastewater forms of K061 as part of the First Third final regulation. In this rule, two subcategories for nonwastewaters forms of K061 were defined. The low zinc subcategory (less than 15%) and the high zinc subcategory (greater than 15%) were defined as separate treatability groups. BDAT for the low zinc subcategory was based on the performance of stabilization. For the high zinc subcategory, the final standard was "No Land Disposal Based on High Temperature Metals Recovery as a Method of Treatment" technology (53 FR 31221). The standard takes effect in August, 1990 and due to a shortage of treatment capacity, an interim numerical standard based on performance of stabilization technology is in force until that time.

Today, EPA is proposing to revise the promulgated treatment standard for the high zinc subcategory to be "Resmelting in a High Temperature Zinc Metal

Recovery Furnace." Specifying this treatment method more accurately reflects the Agency's intentions in promulgating the first third regulation, and does not reflect a change in regulatory approach.

EPA also notes that in establishing resmelting technology as a treatment method, residues from the process may be land disposed without further treatment. (54 FR 26631-32, June 23, 1989) (Where EPA specifies a method of treatment under section 3004(m), residues from that treatment process may be land disposed without further treatment.) That result is appropriate here. Data gathered as part of the First Third rulemaking (and part of this rulemaking record) indicate that the slag that results from high temperature metals recovery has metals mobility levels comparable to (and in some cases, lower than) that achieved by stabilization technologies. To the extent that stabilization may perform somewhat better, EPA still views high temperature metals recovery as superior because it furthers the statutory objectives of recycling and waste minimization while still achieving significant reductions of metal mobility. (See H. Rep. No. 198, 98th Cong, 1st Sess. 31 describing a preferred hierarchy of management options, and ranking recycling and materials recovery as preferable options to conventional treatment.) Since stabilization potentially adds to the volume of waste requiring land disposal (through addition of cementitious binding agents), and does not perform significantly better in reducing metals mobility, EPA does not believe that it constitutes the ultimate best available technology for K061.

To assure that the metals recovery process performs efficiently, however, EPA is also reiterating that any residues must not exhibit any of the characteristics of hazardous waste (see also the general discussion of this issue in preamble section III.C). If they do, they would have to meet the treatment standard for that characteristic. None of the residues from recovery of K061 in EPA's existing data base exhibit any hazardous waste characteristic.

EPA is further soliciting comment regarding the advisability of extending the duration of the existing, interim treatment standard (based on performance of stabilization technology) for another year. EPA is doing so because available information suggests that there is insufficient high temperature metals recovery capacity to handle demand for this waste. If this were the sole treatment standard, generators could apply for and potentially receive case-by-case variances and the waste would not be required to be treated before being land disposed. EPA is also concerned about the administrative costs and burdens of applying for a case-by-case variance, and the difficulties faced by waste generators while variance petitions are being evaluated.

On the other hand, the Agency does not wish to create a disincentive to construction of new metal recovery capacity. Nor does the Agency wish to reward companies that have not prepared for meeting a treatment standard based on high temperature metals recovery. Accordingly, EPA seeks information about efforts made to construct and operate this type of technology, and what arrangements are being made to enter into binding contractual arrangements to utilize this technology (cf. RCRA Section 3004(h)(3) where this is part of the test for granting a case-by-case variance). Based upon this information (and other relevant information that may develop), the Agency will determine whether to extend the existing standard as an alternative to high temperature metals recovery.

BDAT TREATMENT STANDARDS FOR K061

[Nonwastewaters—High Zinc Subcategory]

[Revised from No Land Disposal]

Resmelting in high temperature zinc metal recovery furnace as a method of treatment.

BDAT TREATMENT STANDARDS FOR K061

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cadmium	1.61
Chromium	0.32
Lead	0.04
Nickel	0.44

j. K069. In today's rule, the Agency is proposing treatment standards for K069 nonwastewaters in the Calcium Sulfate Subcategory, and for wastewater forms of K069. In addition, the Agency is proposing to revoke the no land disposal based on recycling treatment standard for the Non Calcium Sulfate Subcategory for K069 nonwastewaters and is proposing "Recycling as a Method of Treatment".

(1) Wastewaters. BDAT treatment standards for K069 wastewaters are based on the performance of precipitation with lime and sulfide and sludge dewatering for K062 wastes.

Waste characterization data available to the Agency indicate that K069 wastewaters contain cadmium and lead. The concentration of cadmium is less than 2 ppm and the concentration of lead ranges up to 80 ppm. The Agency believes that this transfer is technically feasible due to the higher concentration of dissolved metals that are present in K062 wastes. Therefore, the Agency believes that the K062 waste is a more difficult waste to treat and thus the performance of the treatment system can be legitimately transferred.

(2) Nonwastewaters. BDAT for K069 nonwastewaters in the Calcium Sulfate Subcategory is stabilization. The Agency believes that there is only one generator of this waste and that this waste cannot be directly recycled to recover lead. The waste characterization data from the one generator indicate that this waste contains metal constituents such as cadmium and lead. The metal concentrations range up to 3300 ppm.

For the K069 nonwastewaters in the Calcium Sulfate Subcategory, the Agency is proposing to transfer the treatment performance of stabilization for K061 waste to the K069 nonwastewaters. The Agency believes that this is a technically feasible transfer because the K061 waste is a more difficult waste to treat. In fact, the metal concentrations in K061 waste ranges up to 20,300 ppm. Therefore, the Agency believes that K069 nonwastewaters can be treated to similar concentration levels as K061, thus the performance of the treatment system can be ligitimately transferred.

BDAT TREATMENT STANDARDS FOR K069

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cadmium	1.61
Lead	0.04

BDAT TREATMENT STANDARDS FOR K069 CALCIUM SULFATE SUBCATEGORY

[Nonwastewaters]

Regulated constituent	Maximum for any simple Grab sample TCLP (mg/l)
Cadmium	0.14
Lead	0.24

BDAT TREATMENT STANDARDS FOR K069 ON CALCIUM SUBCATEGORY

[Nonwastewaters]

[Revised from No Land Disposal]

Recycling as a method of treatment

k. Revisions to K086. Revisions are being proposed today for the K086 solvent washes treatment standards that were promulgated in the First Third final rule (53 FR 31168, August 17, 1988). Treatment standards for the other K086 treatability groups that have been subject to the "soft hammer" provisions of 40 CFR 268.8. are also being proposed. For a description of K086 wastes, see 40 CFR 268.33 and the K086 Listing Background Document.

Since promulgation of the First Third rule, EPA has collected samples of K086 caustic sludges and water sludges for the purposes of waste characterization and determination of BDAT. Based on the treatment of these samples, EPA believes that it is unnecessary to subcategorize this waste code (beyond subcategorization for wastewaters and non-wastewaters).

The majority of the facilities generating K086 claim they are phasing out or no longer formulating inks derived from chromium and lead based materials. Current management practices include solvent recoveries (from solvent washes and sludges), incineration (corrosive K086 wastes), and fuel substitution (solvent and metal-containing wastes). These technologies are demonstrated and applicable to K086.

Treatment data for wastes believed similar to K086 show that all K086 wastes—solvent, caustic, and water washes, and their sludges—can be treated by incineration. These treatment data also show that a wide range of technologies are available to recover valuable constituents or energy from K086 wastes. (These recovery technologies, however, frequently result in residues that require further treatment prior to land disposal.) Based on these data, EPA is proposing treatment standards for organics in K086 wastewaters and nonwastewaters based on incineration. For the metal constituents, the Agency is proposing treatment standards based on the performance of hexavalent chromium reduction to trivalent chromium followed by excess lime precipitation, filtration. Except for methanol, the development of the treatment standards for the organics in K086 wastes is consistent with the corresponding U and P treatment standards. Both the BDAT Background Document for K086-Solvent Washes and its November 1989, Addendum further discusses the treatment data supporting the proposed treatment standards for the organic and inorganic constituents in K086 wastes.

The Agency is proposing to expand the list of regulated constituents in K086 to include acetophenone, di-n-butylphthalate, and cyanide. Bis (2-ethylhexyl) phthalate is currently subject to regulation in the current K086 solvent wash treatability group. New characterization data indicate that K086 also contains treatable concentrations of di-n-butylphthalate; therefore, the Agency is proposing to add this constituent for regulation. In addition, the Agency is proposing to include other phthalates identified in the BDAT list in order to prevent the regulated community from simply switching to other phthalates for the purpose of avoiding regulation.

BDAT TREATMENT STANDARDS FOR K086

[Nonwastewaters]

Constituent	Maximum for any single grab sample, total composition (mg/kg)
Acetone	0.14
Acetophenone	9.6
Bis(2-ethylhexyl)phthalate	28
n-Butyl alcohol	2.6
Butylbenzylphthalate	28
Cyanide (total)	1.5
Cyclohexanone	1.9
1,2-Dichlorobenzene	6.2
Diethyl phthalate	28
Dimethyl phthalate	28
Di-n-butyl phthalate	28
Di-n-octyl phthalate	28
Ethyl acetate	5.6
Ethylbenzene	33
Methanol	140
Methyl isobutyl ketone	33
Methyl ethyl ketone	200
Methylene chloride	31
Napthalene	5.9
Nitrobenzene	14
Toluene	28
1,1,1-Trichloroethane	6.2
Trichloroethylene	5.6
Xylenes (Total)	33
Chromium	0.094
Lead	0.37

BDAT Treatment Standards for K086

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/1)
Acetone	0.25
Acetophenone	0.17
Bis(2-ethylhexyl)phthalate	0.54
n-Butyl alcohol	0.56
Butylbenzylphthalate	0.54
Cyclohexanone	1.4
1,2-Dichlorobenzene	0.058
Diethyl phthalate	0.54
Diethyl phthalate	0.54
Di-n-butyl phthalate	0.54
Di-n-octyl phthalate	0.54
Ethyl acetate	0.0052
Ethylbenzene	0.032
Methanol	[1] 0.033
Methyl isobutyl ketone	0.028
Methyl ethyl ketone	0.14
Methylene chloride	0.037
Napthalene	0.007
Nitrobenzene	0.033
Toluene	0.032
1,1,1-Trichloroethane	0.007
Trichloroethylene	0.007
Xylenes (Total)	0.028
Cyanides (Total)	1.9
Chromium (Total)	0.32
Lead	0.037

[1] Standard for methanol is based on analysis of a composite sample using SW-846 Method 8000.

1. K100. Treatment standards for K100 wastes were originally scheduled to be promulgated as part of the Third Third rulemaking. However, a treatment standard of "No Land Disposal Based on No Generation" for K100 nonwastewaters was promulgated on August 8, 1988 and subsequently revised on May 2, 1989 (54 FR 18836) to be applicable only to "Nonwastewater forms of these wastes generated by the process described in the listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes [Based on No Generation]."

In the proposal for the Second Third Wastes (54 FR 1056 (January 11, 1989)), EPA stated its intention to develop concentration-based treatment standards for all forms of K100 prior to May 8, 1990, and has decided to propose to revoke the promulgated treatment standard of "No Land Disposal Based on No Generation" for K100 nonwastewaters. EPA prefers to set concentration-based treatment

standards in lieu of this standard and is today proposing these for K100 nonwastewaters.

Concentration-based treatment standards for all wastewater forms of K100 are proposed today based on the transfer of performance data for metals precipitation from K062 wastewaters and data for metals stabilization from f006 nonwastewaters.

The Agency reminds commenters that there are very few (if any) of these wastes that are currently being generated as originally listed and that the standards will probably only be applied to residues from previous disposal that should be less difficult to treat than the original waste as generated.

BDAT TREATMENT STANDARDS FOR K100

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cadmium	1.61
Chromium	0.32
Lead	0.040

BDAT TREATMENT STANDARDS FOR K100

[Nonwastewaters]

(REVISE FROM NO LAND DISPOSAL)

Regulated constituent	Maximum for any single grab sample, TCLP (mg/l)
Cadmium	0.066
Chromium	5.2
Lead	0.51

m. Gases

P076—Nitric oxide
P078—Nitrogen dioxide
U115—Ethylene oxide

While all three of these U and P wastes are highly toxic, it is unlikely that they will exist as wastes which require land disposal. The wastes listed below are typically found as gaseous materials when existing at high concentrations. Since it is difficult to "spill" a gas on soil or in water, it is unlikely that these wastes could exist as spill residues. While these compounds may exist as aqueous or organic solutions, the solutions may not be considered the listed product. The original listing specifically excluded chemical products that simply contained U or P constituents. However, EPA is concerned about the possibility that full containers of these wastes may have to be disposed of in a cleanup situation. EPA solicits comments from anyone who feels they may be land disposing these wastes or may have to do so in the future.

Since all three of these wastes are probably generated as gases and since industry typically reuses or recovers compressed gases directly, the Agency is proposing a treatment standard of "Recovery as a Method of Treatment" for all P076, P078, and U115 wastes. Besides, the Agency currently has no specific data on the treatment of P076 or P078, nor can it determine a treatment technology that would be applicable. Thus, the Agency solicits comment on these issues for these wastes and also whether there is even a need to promulgate treatment standards for these wastes.

Concentration-based standards for these wastes would be complicated by the fact that these compounds are gases. While some analytical techniques do exist, the fact that they are gases complicates the analysis of treatment residuals. (The sampling and analysis procedures for these constituents would have to minimize potential losses.)

However, the Agency has recently received data from a facility that had generated a U115 wastewater and nonwastewater. Under the soft hammer provisions, the facility had to demonstrate treatment for these wastes prior to land disposal. The wastes contained up to 26.5 ppm of ethylene oxide. Treatment included incineration of the nonwastewaters and chemical oxidation of the wastewaters. In all cases, the ethylene oxide was reduced to detection limits. These data were received too late for the Agency to develop concentration-based treatment standards for U115 wastes. However, these data are being placed in the administrative record for today's notice and treatment standards for U115 wastes may be promulgated based on these data.

BDAT TREATMENT STANDARDS FOR P076, P078, AND U115

Recovery as a method of treatment

n. Revision of Petroleum Refining Wastes. On August 8, 1988, EPA promulgated treatment standards for regulated constituents in K048–K052 wastewaters and nonwastewaters. The promulgated BDAT treatment standards were based on data that were collected by EPA on incineration of these wastes, data that were submitted to the Agency on solvent extraction of the wastes, and data for treatment of metals in the wastewater and nonwastewater residuals. However, some of the solvent extraction data were not submitted to the Agency in time to allow them to be fully evaluated before the promulgation date. As a result, EPA reserved the treatment standards for several organic constituents in K048–K052 nonwastewaters. Since promulgation of K048–K052 treatment standards, the Agency has received additional data on treatment of these wastes. The Agency has also recently collected data on solvent extraction of these wastes.

Where EPA has set a treatment standard, it is not precluded from revising that standard after the statutory date provided that rulemaking procedures are followed. RCRA Section 3004(m)(1) states specifically that treatment standards are to be revised as appropriate. EPA believes that revision of these standards is appropriate and timely. Therefore, the EPA is today proposing revised BDAT treatment standards based on a re-evaluation of the currently available data and is proposing that these revised standards, with five exceptions, take effect exactly one year following the Third Third Rulemaking promulgation date to allow the petroleum refining industry sufficient time to adjust to changes from the K048–K052 BDAT treatment standards previously promulgated. The five exceptions are benzo(a) pyrene, ortho- and para-cresols, di-n-butyl phthalate, and phenol. These standards would increase based on the revised data, and therefore, are proposed to be effective on August 8, 1990. Until the revised standards take effect for all other constituents, the previously promulgated standards which, due to the 2 year capacity variance issued for K048–K052 wastes as part of the First Third rule, become effective on August 8, 1990, will remain in effect. Specific changes to the BDAT treatment standards that are being proposed today are discussed below.

The Agency is today proposing to add cyanide as a regulated constituent for K048–K052 wastewaters and is proposing a BDAT treatment standard for cyanide based on incineration of these wastes. At the time of proposal for the First Third wastes, the Agency did not have data on treatment of cyanide for K048–K052 wastewaters and did not have data on treatment of cyanide in other wastes that could be transferred to K048–K052 wastewaters. Data on cyanide in combustion gas scrubber water from incineration of K048 became available to the Agency late in the regulatory schedule for the First Third

wastes. These data have now been used to develop the proposed Third Third treatment standards for cyanide in K048–K052 wastewaters. Thus, for K048–K052 wastes containing cyanide, the Agency expects treatment to occur using incineration technologies. Solvent extraction, although considered a BDAT technology for all other organic constituents regulated in K048–K052 nonwastewaters, has not been demonstrated to treat cyanide. The proposed treatment standard for cyanide in K048–K052 wastewaters is shown in the table at the end of this section.

After the close of the comment period for the proposed regulations for First Third wastes, EPA received additional data on solvent extraction treatment of K048–K052 wastes. These data were received too late to allow a full evaluation and inclusion in the development of the promulgated BDAT treatment standards. Since promulgation of the land disposal restrictions for First Third wastes in August 1988, the Agency has reviewed these data as well as additional new data submitted following promulgation. The Agency has also recently completed a solvent extraction treatment test on a mixture of K048 and K051 waste. For most of the regulated organic constituents in K048–K052 nonwastewaters, the new solvent extraction data show better or similar treatment than the data used to develop the previously promulgated standards. Overall, the Agency believes that the new data provide the most substantial treatment for the greatest number of organic constituents of concern than all of the other solvent extraction data available to the Agency. Therefore, the Agency is proposing revised treatment standards for the organics already covered in the K048–K052 nonwastewater treatment standards based on the results of this treatment test. The Agency has not reevaluated the selection of solvent extraction and incineration as BDAT for organics in nonwastewaters but has instead incorporated the additional solvent extraction performance data into the revision of these treatment standards. As before, these wastes may be treated by any treatment technology capable of achieving the treatment standard.

The Agency also is proposing nonwastewater treatment standards for two constituents for which it reserved treatment standards in the First Third rule, naphthalene and xylene. The results from the recently completed Agency-sponsored solvent extraction test provide treatment performance data for solvent extraction of these constituents as well (as the other regulated organic constituents in K048–K052 nonwastewaters). There are important environmental reasons to develop treatment standards for xylene and naphthalene in these wastes. These solvents have been found to be present at high concentrations in these wastes (0.1 percent or higher), and at these levels can readily mobilize other land disposed constituents or degrade landfill liners resulting in increased mobilization. The Agency also is concerned about the potential contribution of these constituents to VOC emissions from land disposal facilities. Thus, treatment of these constituents will clearly serve to reduce the mobility of land disposed K048–K052 wastes (and any wastes with which they are co-disposed) (see Section 3004(m)(1)).

EPA has recently received treatment performance data, and a separate rulemaking petition, from Exxon Company, U.S.A. and the American Petroleum Institute (API). The thrust of the petition is that certain of the promulgated treatment standards are unachievable. These data were not received by the Agency in time to be fully evaluated for this proposed rulemaking. The data are mentioned here and included in the administrative record for this proposed rulemaking to provide sufficient notice to commenters of their availability. These data will be fully evaluated by the Agency and may be used by the Agency to provide further revisions to the K048–K052 BDAT treatment standards, if appropriate, in the Third Third final rule.

The revised BDAT treatment standards that are being proposed for organic constituents in K048–K052 nonwastewaters and for cyanide in K048–K052 wastewaters are listed in the tables at the end of this section. The Agency is not proposing revisions to promulgated BDAT treatment standards for constituents in K048–K052 wastewaters other than cyanide, nor for any metal constituents in either K048–K052 wastewaters or nonwastewaters.

BDAT TREATMENT STANDARDS FOR K048, K049, K050, K051 AND K052

[Wastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/l)
Cyanides (Total)	0.028

REVISED BDAT TREATMENT STANDARDS FOR ORGANICS IN K048

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene	3.9
Benzo(a)pyrene	1.4
Bis(2-ethylhexyl)phthalate	4.3
Chrysene	0.84
Di-n-butyl phthalate	4.3
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Pyrene	1.1
Toluene	3.9
Xylenes (Total)	8.5

REVISED BDAT TREATMENT STANDARDS FOR ORGANICS IN K049

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Anthracene	1.4
Benzene	3.9
Benzo(a)pyrene	1.4
Bis(2-ethylhexyl)phthalate	4.3
Chrysene	0.84
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Pyrene	1.1
Toluene	3.9
Xylenes (Total)	8.5

REVISED BDAT TREATMENT STANDARDS FOR ORGANICS IN K050

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzo(a)pyrene	1.4
Phenol	4.3

REVISED BDAT TREATMENT STANDARDS FOR ORGANICS IN K051

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Anthracene	1.4
Benzene	3.9
Benzo(a)anthracene	1.4

REVISED BDAT TREATMENT STANDARDS FOR ORGANICS IN K051—Continued

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzo(a)pyrene	1.4
Bis(2-ethylhexyl)phthalate	4.3
Chrysene	0.84
Di-n-butyl phthalate	4.3
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Pyrene	1.1
Toluene	3.9
Xylenes (Total)	8.5

REVISED BDAT TREATMENT STANDARDS FOR ORGANICS IN K052

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene	3.9
Benzo(a)pyrene	1.4
o-Cresol	6.8
p-Cresol	6.8
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Toluene	3.9
Xylenes (Total)	8.5

o. Additional Treatment Standards for F002 and F005. The Agency promulgated treatment standards for F001–F005 listed wastes in the Solvents and Dioxins Rule (51 FR 40572, November 7, 1986). On February 25, 1986 the Agency amended the listing of F002 and F005 to include four new constituents: 1,1,2-trichloroethane, benzene, 2-ethoxyethanol, and 2-nitropropane (51 FR 6737). These are organic compounds that are usually used for their solvent properties.

Although HSWA directs the Agency to restrict the disposal of these new constituents six months after they were listed, EPA was unable to propose or promulgate treatment standards because there were no SW–846 analytical methods that could satisfactorily analyze 2-ethoxyethanol and 2-nitropropane in complex waste matrices. Therefore, the Agency has been unable to propose treatment standards for these constituents until today's notice.

The Agency synthesized several wastewaters containing these constituents in order to conduct treatability studies and to identify appropriate analytical methods. To develop today's proposed treatment standards, the Agency modified existing SW–846 analytical methods so that they were applicable to 2-ethoxyethanol and 2-nitropropane. (For further information on the synthesis of these wastewaters and the development of these analytical methods, consult the F002 and F005 Background Document in the administrative record for today's proposal.)

The Agency has determined that biological treatment represents BDAT for treatment of 1,1,2-trichloroethane, benzene, and 2-ethoxyethanol. Wastewater treatment standards are being proposed today for 1,1,2-trichloroethane of 0.03 mg/l, benzene of 0.07 mg/l, and 2-ethoxyethanol of 73.3 mg/l based on the performance of biological treatment.

The Agency has determined that liquid-liquid extraction followed by steam stripping followed by carbon adsorption represents BDAT for 2-nitropropane wastewaters. Based on the performance of this treatment train the Agency is proposing a treatment standard of 0.056 mg/1 for this constituent in wastewaters. The Agency also examined the performance of steam stripping alone for treatment of 2-nitropropane wastewaters and developed a treatment standard of 1.35 mg/1. The Agency is concerned about the validity of the steam stripping data because the holding times of the samples supporting the 1.35 mg/1 limit were exceeded. The Agency is also evaluating the need for recreating the steam stripping test studies of 2-nitropropane because the reduction of 2-nitropropane was achieved at the expense of significant amounts of energy. The high energy demands may have been a result of an inappropriate steam stripper design or the azeotropic behavior of 2-nitropropane with water. As a result, the Agency is proposing the 0.056 mg/1 level, and solicits comment on this proposed approach.

Incineration represents BDAT for all of the newly listed F002 and F005 constituents in nonwastewaters. The Agency does not have incineration data from the treatment of the four newly-listed F002 and F005 organics. However, the Agency has performance data from incineration of nonwastewaters containing treatable concentrations of the same or similar constituents. (See preamble section III.A.1.d. for further discussion of the transfer of treatment standards.) Nonwastewater treatment standards are being proposed today for 1,1,2-trichloroethane of 7.6 mg/kg, benzene of 3.72 mg/kg, and 2-ethoxyethanol of 47.5 mg/kg, and 2-nitropropane of 5.6 mg/kg, based on the transfer of incineration performance data.

BDAT TREATMENT STANDARDS FOR F002

[Nonwastewaters]

Regulated Constituent	Maximum for any single grab sample, total composition (mg/kg)
1,1,2-Trichloroethane	6.2

BDAT TREATMENT STANDARDS FOR F002

[Wastewaters]

Regulated constituent	Maximum for any composite sample, total Composition (mg/l)
1,1,2-Trichloroethane	0.054

BDAT TREATMENT STANDARDS FOR F005

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample, total composition (mg/kg)
Benzene	3.72
2-Ethoxyethanol	47.5
2-Nitropropane	5.6

BDAT TREATMENT STANDARDS FOR F005

[Wastewaters]

Regulated constituent	Maximum for any composite sample, total composition (mg/l)
Benzene	0.07
2 Ethoxyethanol	73.3
2-Nitropropane	0.073

7. Development of Treatment Standards for Multi-Source Leachate—a. Background. In the final rule for the First Third Wastes (August 17, 1988 (53 FR 31146–31150)) the Agency reiterated that leachate derived from the disposal of listed wastes is a hazardous waste based on the derived-from rule. The Agency took the position that the waste code-specific treatment standards for the land disposed waste(s) from which the leachate is derived applied to the leachate (this idea has acquired the

label of "waste code carry-through principle", although this label is something of an oversimplification because it merges the ideas of carry-through of a treatment standard with carry-through of a waste label for permitting purposes; these issues need not be identical, as discussed in section e. below). EPA later revisited the issue of leachate treatability and determined that there were significant unresolved issues regarding availability of leachate treatment capacity, and that further study of treatability of leachate derived from the co-disposal of multiple waste codes (i.e., more than two waste codes) was warranted. These wastes have thus been designated as multi-source leachate (see 54 FR 8264 (Feb. 27, 1989)). Single-source leachate must meet the wastewater and nonwastewater standards for the underlying waste code from which it was derived. *Id.*

The Agency consequently rescheduled most multi-source leachate to the third-third of the schedule. *Id.* The only type of multisource leachate not rescheduled is that derived from disposal of the listed dioxin-containing hazardous wastes. Such leachate remains the subject of a judicial stay order entered by a panel from the District of Columbia Circuit Court of Appeals which stays the applicability of the waste code carry-through principle to multi-source leachate whose prohibition date was not rescheduled by the Agency.

(1) Definition of Multi-source Leachate. Leachate is defined in 40 CFR 260.10 as any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste. Leachate that is derived from the disposal of listed hazardous wastes is classified as a hazardous waste by virtue of the "derived-from" rule in 40 CFR 261.3(c)(2). Multi-source leachate is leachate that is derived from the disposal of more than one listed hazardous waste (i.e., more than one waste code). 54 FR 8264 (February 27, 1989). EPA is soliciting comment below on considering leachate derived exclusively from F021–F023, and F025–F028 dioxin-containing wastes to be single-source leachate. EPA also solicits comment on a narrower definition of multi-source leachate which would say that leachate must be derived from more than one treatability group (rather than more than one waste code) to be considered "multi-source". EPA is soliciting comment on this point both because it appears that leachate derived exclusively from wastes within a single treatability group would be able to meet the treatment standards for that treatability group because it is more dilute, and because members of the regulated community have voiced concern at being subject to standards encompassing all toxic pollutants (a virtually inevitable consequence of classifying multi-source leachate as any leachate derived from more than one waste code). By "treatability group, EPA is referring to the groupings of wastes in this proposed rule such as "halogenated aliphatics", or "phenolics". Scheduled wastes from earlier rulemakings would be part of a single treatability group if grouped within an industry grouping in § 261.32 (hazardous wastes generated from specific sources). For example, the K048–052 series of wastes would constitute a single treatability group since all the wastes come from the petroleum refining process.

(2) Applicability. Leachate can become subject to the land disposal restrictions if it is removed from a land disposal unit for disposal after the prohibition effective date for the underlying waste (see *Chemical Waste Management* v. *EPA*, 869 F. 2d. 1526, 1536 (D.C.Cir. 1989)). Furthermore, to the extent that such leachate is derived from wastes that were listed as hazardous on November 8, 1984 (the date of the HSWA amendments), it is subject to the statutory hard hammer in section 3004(g) which applies to all wastes that were listed as hazardous on the date of enactment of the HSWA amendments. The time the waste was originally disposed is irrelevant to this analysis; the status of wastes as listed hazardous wastes (and wastes derived from them as listed hazardous wastes) is determined by what the wastes are, not by when they were initially disposed (*Chemical Waste Management*, 869 F. 2d at 1536–37).

To further clarify the applicability of the treatment standards to multi-source leachate, the Agency points out the following: (1) Groundwater contaminated with multi-source leachate must comply with the multi-source leachate standards (see e.g. *Chemical Waste Management* v. *EPA*, *supra*, 869 F.2d at 1539–40); (2) Single-source leachate (i.e., leachate derived-from only one waste code such as might be expected from a monofill) cannot be combined to create multi-source leachate; and (3) Single-source leachate from separate facilities cannot be combined to create multi-source leachate. These last two interpretive principles are needed to prevent abuses that would forestall treatment of prohibited wastes.

b. Development of Proposed Treatment Standards. The Agency is today proposing two options for applicability of BDAT treatment standards for multi-source leachate and residues from leachate treatment: (1) Continued application of only those treatment standards for the waste codes that were land disposed; and (2) application of one fixed set of wastewater treatment standards and one set of nonwastewater treatment standards for all multi-source leachate and treatment residues. These options are discussed later in this preamble section. The Agency is specifically requesting comment on both of these options.

For both options, the number of applicable concentration-based constituent standards could be very large (i.e., there could be more than 200 individual constituent concentrations that would have to be met). This is a consequence of viewing multi-source leachate as its own treatability group; it thus potentially contains any or all of the BDAT list constituents which consequently must be addressed in treatment standards. It is important to point out that under either option, EPA envisions the rule being implemented by leaving the frequency of monitoring for constituents (or indicator parameters) to the judgement of the permit writer, who would specify monitoring frequency in the facility's waste analysis plan. (See further discussion of waste analysis plans in section III.A.1.f.(3.) of today's preamble). As with all BDAT treatment standards, this provides site-specific consideration of the need for monitoring regulated pollutants likely to be present.

EPA is in the process of reviewing these constituents to determine if treatment of the BDAT list of constituents will assure treatment of these other one hundred or so Appendix VIII constituents. If the BDAT list is not adequate as a surrogate for all constituents contained in multi-source leachate, a treatment train could also be specified to assure adequate treatment of all codes.

(1) Continued Application of Only Those Treatment Standards for the Waste Codes that were Land Disposed. The first option is to continue to apply the derived-from rule to multi-source leachate for only those treatment standards for the waste codes that were land disposed. As discussed earlier in this section, the derived-from rule would require that leachate meet the standards set for the waste codes from which the leachate is derived. In previous rules, the Agency stated that these treatment standards could be appropriate because leachate is expected to be more dilute than the original wastes on which the

standards were based. At that time, the available waste characterization data for leachate indicated that the concentrations of hazardous constituents in untreated leachate were slightly higher but very similar to the concentrations of hazardous constituents that would meet the promulgated treatment standards. Thus, the Agency concluded that leachate is easier to treat than the original wastes and so could be treated to comply with BDAT.

Administrative complications can arise from applying these standards based on the vast number of potentially applicable treatment standards and the various combinations and permutations of applicable treatment standards. This is further complicated if more than one standard exists for a particular constituent, since the most stringent standard then applies (see § 268.41(b)). Because of the variety in potential applicable treatment standards due to the wide variety of combinations of waste codes, the Agency cannot present, in today's preamble, all of the options of treatment standards that would apply for all combinations of wastes.

EPA solicits comment regarding applicability of treatment standards that are specified methods of treatment should the Agency decide to adopt this option in the final rule. The Agency's tentative resolution is that, for leachate wastewaters, any treatment standard that is a method should apply. This is because all of the specified treatment methods for wastewaters (typically wet air oxidation or chemical precipitation and filtration) are readily applicable wastewater treatment methods to which leachate wastewaters should be amenable.

The situation for leachate non-wastewaters, i.e. the residues from treating leachate, is more complicated. The nonwastewater treatment methods that EPA has specified most frequently are incineration to destroy organics and chemical stabilization for inorganics. Since these are generally-applicable treatment technologies (and form the basis for most of the numerical standards in any case), EPA does not see any difficulty in applying these methods. EPA, however, has also required deactivation and recovery as methods for certain wastes. These methods are less likely to be appropriate to leachate nonwastewaters. As a practical matter, however, EPA expects that the property of reactivity will be removed by treating the leachate itself, so that the treatment residue would never require deactivation. Thus, EPA is not proposing to require this treatment method for leachate nonwastewaters (should it ultimately adopt standards based on this option). EPA has specified or proposed recovery as a method for certain wastes that contain zinc, lead, or mercury (see section III.A.5. of today's preamble). These treatment methods are required for waste treatability groups that contain recoverable amounts of the target metal. For zinc in K061 wastes the percentage is 15%; for lead in the D008 High Lead Subcategory, the percentage is greater than 2.5 %; for mercury in D009 High Mercury Subcategory, the concentration is l6 mg/kg. EPA is proposing to apply these same thresholds to leachate nonwastewaters derived from wastes subject to these treatment methods. Should the leachate nonwastewater contain less than these concentrations of the target metal, the concentration level based on stabilization would apply. (See also 54 FR 18836 (May 2, 1989) where the Agency adopted a similar approach in revising certain of the no land disposal treatment standards.)

(2) Establishing One Set of Wastewater Standards and Nonwastewater Standards for Multi-Source Leachate and Treatment Residues. The Agency received several comments during the first third rulemaking alleging that multi-source leachate can be difficult to treat due to its complex waste matrix (i.e., each leachate and treatment residue has various combinations and concentrations of different hazardous constituents). The commenters suggested that multi-source leachate should be a specific treatability group with its own separate waste code, and that one set of treatment standards (i.e., one standard per constituent) should be established for this group. At that time, however, insufficient data were available to substantiate that multi-source leachate and treatment residues constitute a separate treatability group.

Since the time this issue was first raised, the Agency has received data on the physical and chemical composition of various multi-source leachates and on current multi-source leachate treatment. These data were submitted from various TSDFs to show that multi-source leachate is more difficult to treat than EPA originally thought, and that it deserves classification as a separate treatability group. The Agency is examining waste characterization data and some treatment data to determine the frequency that leachate (both treated and untreated) fails to achieve the existing treatment standards. The treatment data are from treatment systems that are currently being applied to leachate collected from several sources. These data are being placed in the administrative record for today's proposed rule and will be considered in the promulgation of treatment standards for leachate.

Based on a preliminary analysis of industry data and the various complications that arise in applying the treatment standards to a seemingly endless array of waste combinations, the Agency is proposing, as one option, the applicability of one set of wastewater treatment standards and one set of nonwastewater standards for all multi-source leachates as a means of complying with the waste code carry-through. Although this option may ease the burden of compliance for those facilities land disposing numerous waste codes, it may increase the burden for those facilities land disposing only a few waste codes, who, under this second option, would have to analyze for the entire BDAT list of constituents. (See the earlier solicitation of comment on redefining multi-source leachate as a means of dealing with this potential problem.)

The Agency also is specifically requesting comment on the treatability data submitted by industry that can be found in the administrative record for today's proposed rule. These data may be used by the Agency to develop or to revise the proposed standards based on the second approach (although initial indications are that these data do not come from optimized treatment systems). If any person desires a copy of any additional data pertaining to this proposed treatment standard that is received during the public comment period, please request it in writing by identifying the data of interest as III.A.7 Development of Treatment Standards for Multi-Source Leachate. See section III.A.1.i. for more information on requesting data.

c. Proposed Treatment Standards Based on Option Two. In today's notice, EPA is proposing one set of nonwastewater and one set of wastewater treatment standards based on the data currently available according to option two discussed above. As noted previously, the final treatment standards based on this option will depend upon the analysis of additional treatment data received just prior to proposal (these data have been placed in the administrative record for today's notice but have not yet been analyzed for impact on the treatment standards proposed in this notice) and any additional data or comments received during the comment period.

These treatment standards propose the regulation of the entire BDAT list of constituents. The reasoning behind this is that commenters have previously stated that their multi-source leachate is typically derived from the land disposal of every listed hazardous waste, and thus can potentially contain any or all of the BDAT list constituents. More information on how these standards were developed can be found in sections of today's preamble and various background documents. The proposed wastewater and nonwastewater multi-source leachate standards for option two are included in tables at the end of this preamble section.

It is EPA's tentative conclusion that establishing treatment standards for each BDAT constituent obviates the need to specify methods of treatment, should the Agency adopt this option. In other words, the BDAT list would serve as a surrogate for those constituents for which there are no analytic methods. The Agency solicits comment on this point, and specifically requests documentation of the validity of using the BDAT list as surrogates.

(1) Nonwastewaters. The Agency is proposing to transfer most of the concentration-based nonwastewater standards for multi-source leachate (option two) based on a direct transfer of existing and proposed nonwastewater treatment standards for the U and P waste codes that correspond to the proposed regulated constituents. For convenience of the reader, the Agency presents a table at the end of this section entitled Basis of Transfer for Multi-Source Leachate Treatment Standards which gives the waste code from which the standard has been proposed to be transferred. This table also includes a reference to further discussion of the development of the proposed standard either in the administrative record, the preamble of today's notice, or the appropriate background document for that particular standard.

Almost all of the nonwastewater standards for organic constituents are based on incineration as BDAT. These constituent concentrations are transferred from treatment standards for U and P waste codes promulgated in the Second Third Rule or proposed in today's preamble. The metal constituent concentrations (except for arsenic, selenium and mercury) are primarily based on a transfer of the performance achieved by stabilization for F006.

(2) Wastewaters. Most of the concentration-based wastewater standards were transferred from treatment data on those constituents developed for various other regulatory programs administered by the Agency, and are based on data from numerous sources. (Since these data apply to the development of treatment standards for other wastewaters besides multi-source leachate, further discussion of these data is presented in section III.A.1.h.(6.) of today's notice.) Some of the treatment standards for wastewater forms of multi-source leachate have been transferred from other listed RCRA wastes. Details on the development or transfer of these wastewater standards per constituent can be found in the administrative record for multi-source leachate.

EPA also has recently conducted a study of the treatment of wastewaters by wet air oxidation followed by PACT or activated carbon. Subsequent to this proposal, these data will be examined for applicability to wastewater constituents in multi-source leachate. In the interim, these data can be found in the administrative record for today's proposed rule. EPA specifically solicits comment on the appropriate use of these data in establishing standards for leachate.

d. Multi-Source Leachate That Exhibits a Characteristic of Hazardous Wastes. EPA is not proposing separate standards under option 2 for multi-source leachate that exhibits a characteristic of hazardous wastes. This is because, by proposing standards for all of the BDAT list constituents, the treatment standards will address all of the constituents and properties that the treatment standard for characteristics address. As described more fully in section III.C below, the Agency's proposed resolution of situations where prohibited listed wastes also exhibit a characteristic is that the specific treatment standard for the listed waste would control because it is more specific. As stated further in that section, however, should multi-source leachate or its treatment residues exhibit a characteristic at the point of disposal, it would have to be treated to meet the treatment standard for that characteristic.

Under option 1, if multi-source leachate exhibited a characteristic, one would have to ascertain if the treatment standard for the listed wastes from which the leachate is derived addressed the same constituents or properties identified by the characteristic. If so, the treatment standard for the listed waste would supercede the standard for the characteristic. If not, the leachate and/or treatment residues would have to be treated to meet the treatment standard for both the listed wastes and the characteristic. See section III.C. This same result would obtain for single source leachate that exhibits a characteristic.

Finally, if leachate simply exhibits a characteristic of hazardous waste without being derived from a listed waste, it is subject to the treatment standard for that characteristic.

e. Multi-Source Leachate Containing Dioxins and Furans. A final set of issues pertaining to multi-source leachate involves the status of multi-source leachate that contains chlorinated dibenzo-p-dioxins and furans ("dioxins" and "furans"). Specific points for discussion are applicability of the waste code carry-through principle where the leachate may be derived in part from treatment, storage, or disposal of listed dioxin-containing wastes, applicability of the dioxin land disposal prohibitions, applicability of management standards for acute hazardous wastes, and a need for treatment standards for dioxins and furans.

The most recent characterization data for multi-source leachate indicates presence of dioxins at low concentration levels. These data are gathered from several very large commercial facilities that treat a great number of different wastes: these data should thus be representative of the majority of leachate that may be generated. Based on a review of waste characterization data for fifteen different sources of untreated multi-source leachate, only two data points indicated detectable concentrations of dioxins (based on a range of detection limits of 0.0001 ppb to 0.01 ppb): concentrations of 0.031 ppb tetrachlorodibenzo-p-dioxin in one sample, and .026 ppb pentachlorodibenzo-p-dioxin in another sample (TCDD equivalence: .013 ppb, based on a Toxic Equivalence Factor of 0.5, see 51 FR 19661, June 3, 1986). All other samples showed nondetectable levels for hexa-, penta-, and tetra-chlorodibenzo-furans and dioxins. (It is not known if any of the leachates tested derived in part from disposal of listed dioxin-containing wastes.)

These concentration levels are very low, and below the level the Agency believes warrants the special concerns which prompted special management standards for the F021–F023 and F025–F028 wastes, and which prompted Congress to prioritize the dioxin waste land disposal prohibitions (see 51 FR 19859, June 3, 1986). Based on these data, EPA is proposing that the dioxin waste codes not apply to multi-source leachate. Thus, the leachate would remain a hazardous waste but would not be classified under these waste codes. These waste codes trigger extraordinary regulatory and

nonregulatory burdens in the form of extra management standards (50 FR 1978, January 17, 1985), permitting obstacles due to public perceptions, extra management costs, and prioritized land disposal prohibitions. These extraordinary consequences should be reserved for situations where the concentrations of dioxin merit the need for extraordinary controls. This does not appear to be the case for multi-source leachate. (EPA notes that the derived-from rule does not bar the type of reclassification that we are proposing here. The derived-from rule, and the interpretive waste-code carry through principle, establish presumptions that can be rebutted either by an individual party, or by the Agency. Indeed, EPA itself indicated in the original dioxin waste listing regulation that not all wastes derived from managing the listed dioxin-containing wastes are acute hazardous. EPA thus listed waste F028, which is a residue from treating listed dioxin-containing wastes, as a toxic hazardous waste under its own waste code.)

However, to guard against situations where leachate might have higher concentrations of dioxins and furans as a result of management of the listed dioxin-containing wastes (the only circumstance under the existing rules when presence of dioxins would trigger acute hazardous waste status for the leachate), EPA is proposing that leachate that is derived from any or all of the listed dioxin-containing wastes (F021–F023 and F025–F028) and no other hazardous waste continue to be classified as multi-source even if it was derived exclusively from these dioxin-containing wastes, provided more than one was involved.

A consequence of the proposal is rescheduling to the Third multi-source leachate that could have been classified under the dioxin waste code. EPA does not see a legal impediment to this action. As the Agency determined with respect to multi-source leachate that contains listed solvent wastes, EPA does not believe that either the solvent or dioxin statutory prohibitions (RCRA section 3004(e)) are so definite as to the prohibition effective date for multi-source leachate not directly attributable to disposal of a particular solvent or dioxin that the Agency is without discretion to determine an alternative prohibition effective date (see 54 FR 8265, February 27, 1989). Rather, the Agency sees some ambiguity in the classification of multi-source leachate and thus some discretion to reschedule. Because existing data show that the levels of dioxins and furans are so low or nondetectable, EPA does not presently believe it would be appropriate to classify those multi-source leachates that technically are derived in part from disposal of the listed dioxin-containing waste codes under the dioxin waste prohibition.

For the same reasons, imposition of the special standards for acute hazardous wastes do not appear appropriate for multi-source leachate. Indeed, EPA has already made determinations (or proposed them) that comparable levels of dioxins are not properly classifiable as acute hazardous wastes (see 51 FR 30271 (July 25, 1985); 53 FR 7903 (March 11, 1988); 53 FR 20103 (June 2, 1988); 54 FR 27167 (June 28, 1989)).

The final issue is whether the treatment standards for multi-source leachate should include a treatment standard for dioxins and furans. The Agency is proposing a treatment standard of 1 ppb in the waste, the routinely achievable analytical detection limit. However, it may be that there is no need for a dioxin standard (or a standard for many of the other BDAT list constituents) if control of other constituents will also control the dioxins and furans. Given the apparent low level of dioxins and furans in the untreated leachate, these would appear to be possible candidates for indicator pollutant status since most of the samples could meet the treatment standard even as generated. EPA notes, however, that the issue of indicator pollutants for multi-source leachate treatment standards is not unique to dioxin and potentially includes any of the BDAT list pollutants. EPA accordingly solicits comment on this issue not only for dioxins and furans, but as part of the general issue. EPA also solicits comment on the other issues discussed in this part of the preamble, including any more raw leachate characterization data that may be available.

f. Separate Waste Code for Multi-Source Leachate. EPA also solicits comment on one remaining issue: whether multi-source leachate should be redesignated by a separate waste code. This issue is not necessarily related to the question of the treatment standards that should apply to multi-source leachate, since EPA could still determine that the treatment standards proposed under either option 1 or option 2 could apply to multi-source leachate (although, should the Agency adopt an approach based on option 1—carry through of treatment standards—then waste generators and treatment facilities probably could comply with § 268.7 (a) and (b) only by listing numerical treatment standards on the land disposal prohibition tracking document). Members of the commercial waste management industry have urged the Agency to establish a separate waste code for multi-source leachate on the grounds that it is a distinct type of waste different from the underlying wastes from which it is derived. In addition, they assert that they will face fewer administrative obstacles, particularly with respect to permit modifications if multi-source leachate and treatment residues have a separate waste code.

EPA solicits comment on this approach, provided it is understood that a decision on this issue does not determine what the treatment standard(s) for multi-source leachate and treatment residues should be. In addition, EPA solicits comment on the possible effect on RCRA permitting of designating multi-source leachate (and treatment residues derived therefrom) by a separate waste code. It would appear that this necessitates amending all RCRA permits that do not already include a narrative description for leachate and leachate treatment residues. EPA also solicits comment on whether designating multi-source leachate by a single waste code should be considered a HSWA regulation immediately effective in authorized states.

BDAT TREATMENT STANDARDS FOR MULTI-SOURCE LEACHATE

[Nonwastewaters]

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
Acetone	0.14
Acenaphthalene	3.4
Acenaphthene	9.1
Acetonitrile	0.35
Acrolein	2.8
Acetophenone	9.6
Acrylamide	1.5
2-Acetylaminofluorene	13
Acrylonitrile	0.28
Aldrin	0.066
4-Aminobiphenyl	13
Aniline	14
Anthracene	7.7
Aramite	2.5
Aroclor 1016	0.92
Aroclor 1221	0.92
Aroclor 1232	0.92
Aroclor 1242	0.92
Aroclor 1248	0.92
Aroclor 1254	1.8
Aroclor 1260	1.8
alpha BHC	0.066
beta-BHC	0.066
delta-BHC	0.066
gamma-BHC	0.066

BDAT Treatment Standards for Multi-Source Leachate—Continued

[Nonwastewaters]

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
Benzene	36
Benzal chloride	6.2
Benzene thiol	6.2
Benzo(a)anthracene	3.6
Benzo(b)fluoranthene	3.4
Benzo(k)fluoranthene	3.4
Benzo(g,h,i)perylene	1.8
Benzo(a)pyrene	3.6
p-Benzoquinone	180
Bromodichloromethane	16
Bromoform	16
Bromomethane (methyl bromide)	16
4-Bromophenyl phenyl ether	16
n-Butanol	2.6
Butyl benzyl phthalate	15
2-sec-Butyl-4,6-dinitrophenol	2.5
Carbon tetrachloride	6.2
Chlordane	0.13
p Chloroaniline	16
Chlorobenzene	5.7
Chlorobenzilate	6.6
2-Chloro-1,3-butadiene	28
Chlorodibromomethane	16
Chloroethane	6.0
bis-(2-Chloroethoxy) methane	7.2
bis-(2-Chloroethyl) ether	7.2
Chloroform	6.2
bis-(2-Chloroisopropyl) ether	7.2
p-Chloro-m-cresol	14
Chloromethane	5.6
2-Chloronaphthalene	5.6
2-Chlorophenol	5.7
3-Chloropropene	28
Chrysene	3.6
o-Cresol	5.6
Cresol (m- and p-isomers)	3.2
Cyclohexanone	1.9
1,2-Dibromo-3 Chloropropane	16
1,2-Dibromoethane (Ethylene dibromide)	16
Dibromomethane	16
2,4-Dichlorophenoxyacetic acid (2,4-D)	10
o,p'-DDD	0.087
p,p'-DDD	0.087
o,p'-DDE	0.087
p,p'-DDE	0.087
o,p'-DDT	0.087
p,p'-DDT	0.087
Dibenzo(a,h)anthracene	13
1,2,7,8-Dibenzopyrene	22
tris-(2,3-Dibromopropyl) phosphate	0.1
m-Dichlorobenzene	6.2
o-Dichlorobenzene	6.2
p-Dichlorobenzene	6.2
3,3'-Dichlorobenzidine	16
cis-1,4-Dichloro-2-butene	30
trans-1,4-Dichloro-2-butene	30
Dichlorodifluoromethane	10
1,1-Dichloroethane	6.2
1,2-Dichloroethane	6.2
1,1-Dichloroethylene	6.2
trans-1,2-Dichloroethylene	6.2
2,4-Dichlorophenol	14
2,6-Dichlorophenol	14
1,2-Dichloropropane	15
cis-1,3-Dichloropropene	15
trans-1,3-Dichloropropene	15
Dieldrin	0.13

BDAT Treatment Standards for Multi-Source Leachate—Continued

[Nonwastewaters]

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
Diethyl phthalate	28
p-Dimethylaminoazobenzene	29
2,4-Dimethyl phenol	14
Dimethyl phthalate	28
Di-n-butyl phthalate	28
1,4-Dinitrobenzene	2.3
4,6-Dinitrocresol	140
2,4-Dinitrophenol	140
2,4-Dinitrotoluene	140
2,6-Dinitrotoluene	28
Di-n-octyl phthalate	28
Diphenylamine	13
Diphenylnitrosoamine	13
Di-n-propylnitrosoamine	14
1,4-Dioxane	280
Disulfoton	0.1
Endosulfan I	0.066
Endosulfan II	0.13
Endosulfan sulfate	0.13
Endrin	0.13
Endrin aldehyde	0.13
Ethyl acetate	5.6
Ethyl benzene	6.0
Ethyl ether	140
bis-(2-Ethylhexyl) phthalate	28
Ethyl methacrylate	160
Famphur	0.1
Fluoranthene	3.6
Fluorene	7.7
Fluorotrichloromethane	33
Heptachlor	0.066
Heptachlor epoxide	0.066
Hexachlorobenzene	37
Hexachlorobutadiene	28
Hexachlorocyclopentadiene	4.8
Hexachlorodibenzo-furans	0.001
Hexachlorodibenzo-p-dioxins	0.001
Hexachloroethane	30
Hexachlorophene	1.1
Hexachloropropene	37
Indeno(1,2,3,-c,d)pyrene	3.6
Iodomethane	65
Isobutanol	170
Isodrin	0.010
Isosafrole	2.6
Kepone	0.043
Methacrylonitrile	84
Methanol	140
Methapyrilene	6.9
Methoxychlor	0.18
3-Methylchloanthrene	33
4,4-Methylene-bis-(2-chloroaniline)	29
Methylene chloride	31
Methyl ethyl ketone	200
Methyl isobutyl ketone	33
Methyl methacrylate	160
Methyl Parathion	0.1
Naphthalene	5.9
1,4-Naphthoquinone	1.9
1-Naphthylamine	15
2-Naphthylamine	15
p-Nitroaniline	28
Nitrobenzene	14
5-Nitro-o-toluidine	56
4-Nitrophenol	65
N-Nitrosodiethylamine	28
N-Nitrosodimethylamine	56
N-Nitroso-di-n-butlyamine	54
N-Nitrosomethylethylamine	2.3

BDAT Treatment Standards for Multi-Source Leachate—Continued

[Nonwastewaters]

Regulated organic constituents	Maximum for any single grab sample, total composition (mg/kg)
N-Nitrosomorpholine	2.3
N-Nitrosopiperidine	220
N-Nitrosopyrrolidine	220
Parathion	0.1
Pentachlorobenzene	37
Pentachlorodibenzo-furans	0.001
Pentachlorodibenzo-p-dioxins	0.001
Pentachloroethane	31
Pentachloronitrobenzene	4.8
Pentachlorophenol	37
Phenacetin	16
Phenanthrene	3.4
Phenol	6.2
Phorate	0.1
Phthalic anhydride (measured as phthalic acid)	28
Propanenitrile	360
Pronamide	1.5
Pyrene	9.1
Pyridine	16
Resourcinol	1.8
Safrole	22
Silvex (2,4,5-TP)	2.1
2,4,5-T	2.1
1,2,4,5-Tetrachlorobenzene	19
Tetrachlorodibenzo-furans	0.001
Tetrachlorodibenzo-p-dioxins	0.001
1,1,1,2-Tetrachloroethane	6.2
1,1,2,2-Tetrachloroethane	6.2
Tetrachloroethylene	6.2
2,3,4,6-Tetrachlorophenol	37
Toluene	28
Toxaphene	1.3
1,2,4-Trichlorobenzene	19
1,1,1-Trichloroethane	6.2
1,1,2-Trichloroethane	6.2
Trichloroethylene	5.6
2,4,5-Trichlorophenol	37
2,4,6 Trichlorophenol	37
1,2,3-Trichloropropane	28
1,1,2-Trichloro-I,2,2 trifluoro-ethane	28
Vinyl chloride	0.035
Xylene(s)	33
Cyanides (Total)	1.5
Cyanides (Amenable)	0.10

Regulated inorganic constituents	Maximum for any single grab sample, TCLP (mg/l)
Antimony	0.23
Arsenic	5.6
Barium	100
Cadmium	0.066
Chromium (Total)	5.0
Lead	0.51
Mercury	0.2
Nickel	0.32
Selenium	5.6
Silver	0.072
Thallium	5.6

BDAT Treatment Standards for Multi-Source Leachate

[Wastewaters]*

Regulated organic and inorganic constituents	Maximum for any 24 hr. composite, total composition (mg/l)
Acetone	0.162
Acenaphthalene	0.059
Acenaphthene	0.059
Acetonitrile	0.097
Acrolein	0.162
Acetophenone	41.198
Acrylamide	1.042
2-Acetylaminofluorene	0.040
Acrylonitrile	0.242
Aldrin	0.021
4-Aminobiphenyl	0.095
Aniline	0.807
Anthracene	0.059
Aramite	0.020
Aroclor 1016	0.013
Aroclor 1221	0.014
Aroclor 1232	0.013
Aroclor 1242	0.017
Aroclor 1248	0.013
Aroclor 1254	0.014
Aroclor 1260	0.014
alpha-BHC	0.00014
beta-BHC	0.00014
delta-BHC	0.023
gamma-BHC	0.00168
Benzal chloride	0.040
Benzene	0.136
Benzene thiol	0.219
Benzo(a)anthracene	0.059
Benzo(a)pyrene	0.061
Benzo(b)fluoranthene	0.040
Benzo(g,h,i)perylene	0.004
Benzo(k) fluoranthene	0.059
p-Benzoquinone	0.020
Bromodichloromethane	0.198
Bromomethane (methyl bromide)	0.065
4-Bromophenyl phenyl ether	0.040
n-Butanol	0.137
Butyl benzyl phthalate	0.012
2-sec-Butyl-4,6-dinitrophenol	1.436
Carbon tetrachloride	0.032
Carbon disulfide	0.179
Chlordane	0.00327
p-Chloroaniline	43.736
Chlorobenzene	0.032
Chlorobenzilate	0.072
2-Chloro-1,3-butadiene	0.032
Chlorodibromomethane	0.032
Chloroethane	0.268
bis-(2-Chloroethoxy) methane	0.008
bis-(2-Chloroethyl) ether	0.024
2-Chloroethyl vinyl ether	0.035
Chloroform	0.046
bis-(2-Chloroisopropyl) ether	0.040
p-Chloro-m-cresol	0.053
Chloromethane (methyl chloride)	0.190
2-Chloronaphthalene	0.040
2-Chlorophenol	0.051
3-Chloropropene	0.021
Chrysene	0.059
o-Cresol	0.189
Cresol (m- and p- isomers)	1.315
Cyclohexanone	0.020
1,2 Dibromo-3-chloropropane	0.065
1,2-Dibromoethane	0.016
Dibromomethane	0.065
2,4-Dichlorophenoxyacetic acid	0.721
o,p'-DDD	0.023
p,p'-DDD	0.023
o,p'-DDE	0.031
p,p'-DDE	0.031
o,p'-DDT	0.00392
p,p'-DDT	0.00392
Dibenzo(a,e)pyrene (1:2;7:8)	0.041
Dibenzo(a,h)anthracene	0.040
tris-(2,3-Dibromopropyl) phosphate	0.080
m-Dichlorobenzene	0.014
o-Dichlorobenzene	0.064
p-Dichlorobenzene	0.088
3,3'-Dichlorobenzidine	0.095
cis-1,4-Dichloro-2-butene	0.021
trans-1,4-Dichloro-2-butene	0.021
Dichlorodifluoromethane	0.130
1,1-Dichloroethane	0.059
1,2-Dichloroethane	0.211
1,1-Dichloroethylene	0.025
trans-1,2-Dichloroethylene	0.054
2,4-Dichlorophenol	0.076
2,6-Dichlorophenol	0.076
1,2-Dichloropropane	0.482
cis-1,3-Dichloropropene	0.021
trans-1,3-Dichloropropene	0.021
Dieldrin	0.017
Diethyl phthalate	0.203
3,3-Dimethoxybenzidine	0.095
p-Dimethylaminoazobenzene	0.095
3,3'-Dimethylbenzidine	0.095
2,4-Dimethyl phenol	0.036
Dimethyl phthalate	0.047
Di-n-butyl phthalate	0.057
1,4-Dinitrobenzene	0.231
4,6 Dinitrocresol	0.277
2,4-Dinitrophenol	0.123
2,4-Dinitrotoluene	0.235
2,6-Dinitrotoluene	0.398
Di-n-octyl phthalate	0.012
Di-n-propylnitrosoamine	0.400
Diphenylamine	0.378
1,2-Diphenyl hydrazine	0.063
Diphenylnitrosoamine	0.290
1,4-Dioxane	28
Disulfoton	0.770
Endosulfan I	0.023
Endosulfan II	0.029
Endosulfan sulfate	0.029
Endrin	0.00279
Endrin aldehyde	0.025
Ethyl acetate	0.195
Ethyl benzene	0.032
Ethyl ether	0.067
bis-(2-Ethylhexyl) phthalate	0.279
Ethyl methacrylate	0.032
Ethylene oxide	127.4
Famphur	0.336
Fluoranthene	0.068
Fluorene	0.059
Fluorotrichloromethane	0.023
Heptachlor	0.00116
Heptachlor epoxide	0.016
Hexachlorobenzene	0.040
Hexachlorobutadiene	0.040
Hexachlorocyclopentadiene	0.041
Hexachlorodibenzo-furans	0.000035
Hexachlorodibenzo-p-dioxins	0.000031
Hexachloroethane	0.040
Hexachlorophene	0.00111
Hexachloropropene	0.025
Indeno(1,2,3,-c,d)pyrene	0.004
Iodomethane	0.162
Isobutanol	0.125
Isodrin	0.021
Isosafrole	9.542
Kepone	0.0095
Methacrylonitrile	28.
Methanol	0.033
Methapyrilene	9.542
Methoxychlor	0.252
3-Methylchloanthrene	0.004
4,4-Methylene-bis-(2-chloroaniline)	0.358
Methylene chloride	0.089
Methyl ethyl ketone	0.016
Methyl isobutyl ketone	0.032
Methyl methacrylate	0.032
Methyl Parathion	0.336
Naphthalene	0.059
1,4-Naphthoquinone	0.020
1-Naphthylamine	0.378
2-Naphthylamine	0.378
p-Nitroaniline	0.020
Nitrobenzene	0.068
5-Nitro-o-toluidine	0.230
4-Nitrophenol	0.124
N-Nitrosodiethylamine	0.290
N-Nitrosodimethylamine	0.290
N-Nitroso-di-n-butylamine	0.290
N-Nitrosomethylethylamine	0.290
N-Nitrosomorpholine	0.290
N-Nitrosopiperidine	0.010
N-Nitrosopyrrolidine	0.010
Parathion	0.336
Pentachlorobenzene	0.040
Pentachlorodibenzo-furans	0.000023
Pentachlorodibenzo-p-dioxins	0.000018
Pentachloroethane	0.040
Pentachloronitrobenzene	0.040
Pentachlorophenol	0.082
Phenacetin	9.542
Phenanthrene	0.059
Phenol	0.026
Phorate	0.770
Phthalic anhydride (measured as phthalic acid)	0.020
Propanenitrile (ethyl cyanide)	23.0
Pronamide	0.083
Pyrene	0.067
Pyridine	0.008
Resorcinol	0.042
Safrole	9.542
Silvex (2,4,5-TP)	0.721
2,4,5-T	0.721
1,2,4,5-Tetrachlorobenzene	0.040
Tetrachlorodibenzo-furans	0.0000088
Tetrachlorodibenzo-p-dioxins	0.0000062
1,1,1,2 Tetrachloroethane	0.032
1,1,2,2-Tetrachloroethane	0.032
Tetrachloroethylene	0.056
2,3,4,6-Tetrachlorophenol	0.051
Toluene	0.080
Toxaphene	0.0095
Tribromomethane (bromoform)	0.357
1,2,4-Trichlorobenzene	0.046
1,1,1-Trichloroethane	0.054
1,1,2-Trichloroethane	0.054
Trichloroethylene	0.054
2,4,5-Trichlorophenol	0.008
2,4,6-Trichlorophenol	0.008
1,2,3-Trichloropropane	0.482
1,1,2-Trichloro-1,2,2-trifluoroethane	6.496
Vinyl chloride	0.268
Xylene(s)	0.182
Cyanides (Total)	1.9
Cyanides (Amenable)	0.10
Fluoride	35.
Sulfide	14.
Antimony	1.930
Arsenic	1.390
Barium	1.150
Beryllium	0.820
Cadmium	0.200
Chromium (Total)	0.370
Copper	1.280
Lead	0.280
Mercury	0.150
Nickel	0.550
Selenium	0.820
Silver	0.290
Thallium	1.400
Vanadium	0.042

Regulated organic and inorganic constituents	Maximum for any 24 hr. composite, total composition (mg/l)
Zinc	1.020

*Note: These proposed standards for wastewater forms of Multi-source leachate represent alternative standards for the U and P wastewaters that correspond to chemicals listed in this table. As an example: the standard for acetone listed above is an alternative standard for U002 (acetone) wastewaters, etc. Not all constituents listed in the above table have a corresponding U or P waste codes. These generally represent other Appendix VIII (40 CFR 261) constituents that were not listed as U or P wastes. See background information on the development of these alternative standards in section III.A.1.h.(6.)(b.).

Basis of Transfer for Non-wastewater Treatment Standards

Nonwastewater for Multi-Source Leachate

Regulated organic constituents	Refer to waste code	Reference for standard
Acetone	U002	A
Acenaphthalene		B
Acenaphthene		B
Acetonitrile	U009	C
Acrolein	P003	A
Acetophenone	U004	A
Acrylamide	U007	C
2-Acetylaminofluorene	U005	D
Acrylonitrile	U009	C
Aldrin	P004	E
4-Aminobiphenyl		B
Aniline	U012	C
Anthracene		B
Aramite		B
Aroclor 1016	K085	E
Aroclor 1221	K085	E
Aroclor 1232	K085	E
Aroclor 1242	K085	E
Aroclor 1248	K085	E
Aroclor 1254	K085	E
Aroclor 1260	K085	E
alpha-BHC	U129	E
beta-BHC	U129	E
delta-BHC	U129	E
gamma-BHC	U129	E
Benzene	U019	F
Benzal chloride		B
Benzo(a)anthracene	U018	D
Benzo(b)fluoranthene		B
Benzo(k)fluoranthene		B
Benzo(g,h,i)perylene		B
Benzo(a)pyrene	U022	D
p-Benzoquinone	U197	A
n-Butanol	U031	A
Butyl benzyl phthalate		B
2-sec-Butyl-4,6-dinitrophenol	P020	I
Carbon tetrachloride	U211	G
Chlordane	U036	E
p-Chloroaniline	P024	H
Chlorobenzene	U037	E
Chlorobenzilate	U038	E
2-Chloro-1,3-butadiene		B
Chloroethane		B
bis-(2-Chloroethoxy) methane	U024	C
bis-(2-Chloroethyl) ether	U025	C
2-Chloroethyl vinyl ether	U042	C
Chloroform	U044	G
bis-(2-Chloroisopropyl) ether	U027	C
p-Chloro-m-cresol	U039	S

Basis of Transfer for Non-wastewater Treatment Standards—Continued

Regulated organic constituents	Refer to waste code	Reference for standard
Chloromethane	U045	C
2-Chloronaphthalene	U047	H
2-Chlorophenol	U048	S
3-Chloropropene		B
Chrysene	U050	D
o-Cresol	U052	I
Cresol (m- and p- isomers)	U052	I
Cyclohexanone	U057	A
2,4-Dichlorophenoxyacetic acid (2,4-D).	U240	E
o,p'-DDD	U060	E
p,p'-DDD	U060	E
o,p'-DDE	U061	E
p,p'-DDE	U061	E
o,p'-DDT	U061	E
p,p'-DDT	U061	E
Dibenzo(a,h)anthracene	U063	D
1,2,7,8-Dibenzopyrene	U064	D
tris-(2,3-Dibromopropyl) phosphate.	U235	J
m-Dichlorobenzene	U071	E
o-Dichlorobenzene	U070	E
p-Dichlorobenzene	U072	E
3,3'-Dichlorobenzidine	U073	H
cis-1,4-Dichloro-2-butene	U074	G
trans-1,4-Dichloro-2-butene	U074	G
Dichlorodifluoromethane	U075	H
1,1-Dichloroethane	U076	G
1,2-Dichloroethane	U077	G
1,1-Dichloroethylene	U078	G
trans-1,2-Dichloroethylene	U079	G
2,4-Dichlorophenol	U081	S
2,6-Dichlorophenol	U082	S
1,2-Dichloropropane	U083	G
cis-1,3-Dichloropropene	U084	G
trans-1,3-Dichloropropene	U084	G
Dieldrin	P037	E
Diethyl phthalate	U088	K
3,3-Dimethoxybenzidine	U091	C
p-Dimethylaminoazobenzene	U093	C
3,3'-Dimethylbenzidine	U095	C
2,4-Dimethyl phenol	U101	I
Dimethyl phthalate	U102	K
Di-n-butyl phthalate	U069	K
1,4-Dinitrobenzene		B
4,6-Dinitrocresol	P047	I
2,4-Dinitrophenol	P048	I
2,4-Dinitrotoluene	U105	C
2,6-Dinitrotoluene	U106	C
Di-n-octyl phthalate	U107	K
Diphenylamine		B
Diphenylnitrosoamine		B
Di-n-propylnitrosoamine	U111	C
1,4-Dioxane	U108	A
Disulfoton	P039	J
Endosulfan I	P050	E
Endosulfan II	P050	E
Endosulfan sulfate	P050	E
Endrin	P051	E
Endrin aldehyde	P051	E
Ethyl acetate	U112	A
Ethyl benzene	1	B
Ethyl ether	U117	A
bis-(2-Ethylhexyl) phthalate	U028	K
Ethyl methacrylate	U118	A
Famphur	P097	J
Fluoranthene	U120	D
Fluorene		B
Fluorotrichloromethane	U121	H
Heptachlor	P059	E
Heptachlor epoxide	P059	E
Hexachlorobenzene	U127	E
Hexachlorobutadiene	U128	E

Basis of Transfer for Non-wastewater Treatment Standards—Continued

Regulated organic constituents	Refer to waste code	Reference for standard
Hexachlorocyclopentadiene	U130	E
Hexachlorodibenzo-furans		M
Hexachlorodibenzo-p-dioxins		M
Hexachloroethane	U131	G
Hexachlorophene	U132	E
Hexachloropropene	U243	G
Indeno(1,2,3,-c,d)pyrene	U137	D
Iodomethane	U138	H
Isobutanol	U140	A
Isodrin	P060	E
Isosafrole	U141	L
Kepone	U142	E
Methacrylonitrile	U152	C
Methanol	K086	A
Methapyrilene	U155	L
Methoxychlor	U247	E
3-Methylchloanthrene	U157	D
4,4-Methylene-bis-(2-chloroaniline).	U158	H
Methylene chloride	U080	G
Methyl ethyl ketone	U159	A
Methyl isobutyl ketone	U161	A
Methyl methacrylate	U162	A
Methyl Parathion	P071	J
Naphthalene	U165	D
1,4-Naphthoquinone	U166	A
1-Naphthylamine	U167	C
2-Naphthylamine	U168	C
p-Nitroaniline	P077	C
Nitrobenzene	U169	C
5-Nitro-o-toluidine	U181	C
4-Nitrophenol	U170	I
N-Nitrosodiethylamine	U174	C
N-Nitrosodimethylamine	P082	C
N-Nitroso-di-n-butlyamine	U172	C
N-Nitrosomethylethylamine		B
N-Nitrosomorpholine		B
N-Nitrosopiperidine	U179	C
N-Nitrosopyrrolidine	U180	C
Parathion	P089	J
Pentachlorobenzene	U183	E
Pentachlorodibenzo-furans		M
Pentachlorodibenzo-p-dioxins		M
Pentachloroethane	U184	G
Pentachloronitrobenzene	U185	E
Pentachlorophenol		B
Phenacetin	U187	L
Phenanthrene		B
Phenol	U188	I
Phorate	P094	J
Phthalic anhydride (measured as phthalic acid)	U190	K
Propanenitrile	P101	C
Pronamide	U192	H
Pyrene		B
Pyridine	U196	C
Resourcinol	U201	I
Safrole	U203	L
Silvex (2,4,5-TP)		B
2,4,5-T		B
1,2,4,5-Tetrachlorobenzene	U207	E
Tetrachlorodibenzo-furans		M
Tetrachlorodibenzo-p-dioxins		M
1,1,1,2-Tetrachloroethane	U208	G
1,1,2,2-Tetrachloroethane	U209	G
Tetrachloroethylene	U210	G
2,3,4,6-Tetrachlorophenol		B
Toluene	U220	F
Toxaphene	P123	E
1,2,4-Trichlorobenzene		B
1,1,1-Trichloroethane	U226	G
1,1,2-Trichloroethane	U227	G
Trichloroethylene	U228	G

BASIS OF TRANSFER FOR NON-WASTEWATER TREATMENT STANDARDS—Continued

Regulated organic constituents	Refer to waste code	Reference for standard
2,4,5-Trichlorophenol		B
2,4,6-Trichlorophenol		B
1,2,3-Trichloropropane		B
1,1,2-Trichloro-1,2,2-trifluoroethane.		B
Vinyl chloride	U043	H
Xylene(s)	U239	F
Cyanides (Total)	D003	N
Cyanides (Amenable)	D003	N
Arsenic	D004	O
Barium	D005	P
Cadmium	D006	Q
Chromium (Total)	D007	U
Lead	D008	V
Mercury	D009	R
Nickel		P
Selenium	D010	O
Silver	D011	W
Thallium		T

(REFERENCES)

A—See development of standards presented in section III.A.3.e. Oxygenated Hydrocarbons and Heterocyclics
B—See previous discussion in III.A.7. and Basis for Multi-Source Leachate Transfers in the Administrative Record for today's proposal
C—See development of standards presented in section III.A.3.f. Organo-Nitrogen Compounds
D—See development of standards presented in section III.A.3.c. Polynuclear Aromatics Hydrocarbons
E—See development of standards presented in section III.A.2.c. Halogenated Pesticides and Chlorobenzenes
F—See development of standards presented in section III.A.3.b. Aromatics and Other Hydrocarbons
G—See development of standards presented in section III.A.2.b. Halogenated Aliphatics
H—See development of standards presented in section III.A.2.f. Miscellaneous Halogenated Organics
I—See development of standards presented in section III.A.3.d. Phenolics
J—See discussion on Organophosphorus wastes in Second Third Final Rule (54 FR 26628)
K—See discussion on Phthalate wastes in Second Third Final Rule (54 FR 26620)
L—See development of standards presented in section III.A.3.h. Wastes of a Pharmaceutical Nature
M—Transferred from F020, F021, F022, F023, F025, F026 and F027
N—See development of standards presented in section III.A.6.a. Cyanides
O—See development of standards presented in section III.A.5.b. Arsenic and Selenium
P—See development of standards presented in section III.A.5.c. Barium
Q—See development of standards presented in section III.A.5.d. Cadmium
R—See development of standards presented in section III.A.5.g. Mercury
S—See development of standards presented in section III.A.2.d. Halogenated Phenolics
T—See development of standards presented in section III.A.5.i. Thallium
U—See development of standards presented in section III.A.5.e. Chromium
V—See development of standards presented in section III.A.5.f. Lead
W—See development of standards presented in section III.A.5.h. Silver

8. Clarification of Applicability of Treatment Standards to Soil and Debris. Soil and debris contaminated with wastes subject to the land disposal restrictions are likewise subject to the restrictions. Contaminated soil and debris must meet the promulgated treatment standards for the contaminating hazardous wastes prior to land disposal.

The Agency realizes, however, there are certain problems associated with regulating hazardous wastes in soil and debris matrices. It is often difficult to determine the level of contaminant concentrations found in soil and debris because it may be difficult to obtain a representative sample of the waste. Another problem is posed by the wide variety of soil and debris that could be subject to the land disposal restrictions. In the case of debris, the size ranges from clay-sized particles to large contaminated tanks and buildings. Therefore, a separate rulemaking is being prepared that will establish treatability groups and treatment standards for contaminated soil and debris.

Until contaminated soil and debris can be better organized into treatability groups, alternate treatment standards for these wastes can be established as a site-specific variance from the treatment standards (see 53 FR 3122l, August 17, 1988). Categorizing such waste according to type, volume, form, and contaminant concentration poses several problems best resolved on a site-specific basis. To be granted a site-specific variance from the treatment standard, the petitioner must demonstrate that because the physical (or chemical) properties of the waste differ significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

A particularly difficult problem arises with respect to scrap metal contaminated with some listed wastes. When BDAT standards for these listed wastes limit metal concentrations to relatively low leachable levels based on stabilization, it can be infeasible to achieve these standards, in some cases, due to the presence of metals scrap in the waste mixture. Therefore, EPA solicits comment as to whether these scrap metal/listed waste mixtures should be exempt from BDAT standards associated with the listed wastes for metal contained in the scrap prior to contamination with the listed waste. Any comments supporting this approach should address the obvious difficulties in demonstrating which metals were present (and at what concentrations) in the uncontaminated scrap. We also solicit comment on whether the definition of scrap in 40 CFR 261.1 provides an adequate basis for the purposes of this exemption.

EPA wishes to emphasize that, under this scenario, the contaminated scrap metal would remain a listed hazardous waste for the purposes of other Subtitle C requirements. In addition, any such scrap/listed waste mixture that exhibits a hazardous characteristic (such as EP toxicity) would be subject to the BDAT standards for those characteristic wastes. We also believe that the dilution prohibition properly extends to this situation. Unless EPA requires that the exemption applies only scrap unavoidably contaminated with listed waste (such as materials generated by remedial clean-ups or discarded treatment equipment that contained the waste), there would be an obvious incentive to mix scrap with listed wastes that have BDAT metal standards to avoid the need to comply with those standards. Therefore, EPA intends to restrict the exemption to scrap metal that (1) has been unavoidably contaminated and (2) has had all listed waste removed by rinsing or other demonstrated decontamination techniques.

EPA requests comment on whether it should, in the near term, establish specific measures for "unavoidably contaminated" and "all listed waste removed". We think that these concepts will prove difficult to establish in the near term, and, therefore, expect to leave these determinations to permit writers to establish on a site-specific basis in waste analysis plans. In the longer term, however, EPA will be developing BDAT standards for contaminated soil and debris that may well establish the proper methods of decontamination. Because of an apparent need to resolve this issue on a rapid basis to avoid impacting needed remedial cleanups and corrective actions, EPA today is rescheduling the F006, F007, F008, F009, F010, F011, and F012 standards for cadmium, chromium, lead, nickel, and silver to the "third third". This rescheduling applies only to

scrap which has been determined to be unavoidably contaminated and to no longer contain listed waste. Because of the urgent need for action and specific statutory language exempting such decisions from review, we do not intend to solicit comment on the rescheduling and, instead, are making the action effective today. The effect of this rescheduling is to provide temporary relief for these wastes while EPA considers the comments on these issues.

9. Treatment Standards for Lab Packs. The Agency received several comments in response to the Second Third proposed rule on the regulatory status of lab packs. The commenters stated that lab packs are typically used by industry to dispose of small quantities of commercial chemical products (U and P wastes) and analytical samples that may contain F and K wastes. These lab packs may contain hundreds of restricted wastes, and the applicable treatment standards (or soft hammer requirements until May 8, 1990) must be achieved for each waste code contained in the lab pack. The commenters stated that these requirements pose an administrative burden that is incommensurate with the amount of waste land disposed.

In the Second Third final rule (54 FR 26594), the Agency restated its position that all restricted wastes placed in lab packs and land disposed must comply with the land disposal restrictions. However, the Agency solicited comments, data, and specific suggestions to support treatment options for lab packs. The Agency is today proposing an approach for lab packs that establishes alternate treatment standards expressed as technologies for those lab packs meeting certain criteria. Lab packs that do not meet these criteria must meet the applicable treatment standard for each waste contained in the lab pack. The Agency notes that the proposed approach would not be mandatory and that generators of lab packs who wish to comply with the current implementation of the land disposal restrictions regulatory framework as it applies to lab packs would be free to do so.

The approach proposed in today's rule establishes incineration as the alternate treatment standard for lab packs containing certain characteristic waste and listed organic hazardous waste codes only, and stabilization for lab packs containing certain EP toxic metals only. The Agency has developed appendices to 40 CFR part 268 for the purpose of identifying waste codes and constituents to which the alternate treatment standards are applicable. Appendix IV to part 268 identifies waste codes that may be included in an "organic lab pack." Appendix V to part 268 lists inorganic constituents that may be included in an "inorganic lab pack." Where lab packs contain organic or inorganic waste other than those specified in Appendix IV or V (including non-hazardous waste), or where organic and inorganic wastes are commingled in a lab pack, the treatment standards and other restrictions for each waste code in the lab pack must be achieved.

The Agency believes its proposed approach, although narrowly defined, provides some administrative relief sought by the commenters. It simplifies the management system for these wastes because owners/operators will not be required to analyze the treatment residue for compliance with individual treatment standards. However, generators must continue to list each waste code contained in the lab pack on the notification form according to the requirements of § 268.7. Lab packs that are treated by the specified technology may be disposed of in Subtitle C facilities without further testing or analysis.

Agency data indicate that organic constituents can be effectively destroyed by incineration in well-designed, well-operated incinerators that meet the requirements of part 264 or 265 subpart O. For example, treatment standards for most solvents, dioxins, California list halogenated organic compounds (HOCs), and First, Second, and Third Third organic wastes are expressed as a numerical standard derived from incineration of the waste. In some cases, the treatment standard is specified as incineration (e.g., for most California list HOCs). Although the Agency lacks specific treatability data for lab packs containing organic waste, it believes that incineration of organic lab pack waste will significantly reduce the risks posed by land disposal, and simplify the management of these small volume wastes. Therefore, the Agency is proposing to specify incineration as the treatment standard for lab packs containing these wastes.

The Agency is limiting the applicability of this alternate standard for organics to wastes that have a promulgated or proposed treatment standard based on the performance of incineration, or where incineration only is specified as the treatment standard. Appendix IV to part 268 contains a list of F, K, P, and U wastes and characteristic wastes that meet these criteria. These wastes must be incinerated in accordance with the requirements of part 264 subpart O and part 265 subpart O. Ignitable and corrosive wastes may be included in the "organic lab pack" provided they comply with the requirements for incompatible wastes in § 264.316(d) or 265.316(d). Reactive wastes are excluded from placement in the organic lab pack. These wastes remain subject to the applicable treatment standards.

The Agency is proposing to include California list PCBs and dioxin-containing waste (F020–F023, F026–F028) in the "organic lab pack" treatability group, but emphasizes that treatment of these wastes requires more stringent performance standards than wastes included in part 268 Appendix IV (i.e., dioxins must achieve a destruction and removal efficiency of 99.9999 percent and PCBs must meet the technical standards in 40 CFR 761.70). Where generators choose to commingle one or both of these wastes with "organic lab pack" waste listed in Appendix IV, the entire lab pack must be incinerated to meet the more stringent standard. For example, a lab pack containing dioxin-containing waste, California list PCBs, and Appendix IV waste must be incinerated according to the technical standards of 40 CFR 761.70 and the applicable requirements of parts 264, 265, and 266 (including all applicable performance standards for dioxin-containing waste).

The Agency recognizes that generators may also dispose of inorganic (metals-bearing) wastes in lab packs. Therefore, the Agency is proposing an alternate treatment standard of stabilization for the following EP toxic metals listed in Appendix V to part 268: barium, cadmium, lead, silver, and trivalent chromium. The Agency believes that stabilization of these metals that are removed from the vials and lab packs can be accomplished using Portland cement in a 20 percent binder-to-waste ratio (by weight). The Agency believes this to be a demonstrated and available technology for these constituents. The Agency would like to allow other stabilizing agents that are "equivalent" to Portland cement to also be used, but has been unable to develop a method of demonstrating equivalence that does not involve review and approval. The Agency is soliciting suggestions for demonstrating such equivalence. The Agency, therefore, is proposing a treatment standard of stabilization (i.e., the wastes must be removed from the containers and stabilized), performed in the manner described above, for lab packs containing only those inorganic constituents specified in Appendix V to part 268 (i.e., "inorganic lab packs").

In cases where non-hazardous wastes are commingled with Appendix V inorganic constituents prior to stabilization, the lab pack is ineligible for the alternate treatment standard due to possible interferences caused by these non-hazardous constituents. The alternate treatment standard for "inorganic lab packs" is not applicable where generators or owners/operators commingle "inorganic lab pack" waste with wastes listed in part 268 Appendix IV, dioxin-containing waste, PCBs, or other wastes.

The Agency is not establishing an alternate treatment standard expressed as a specified technology for lab packs containing the remaining EP toxic metals (i.e., arsenic, selenium, mercury, and hexavalent chromium) because of concern regarding the successful stabilization of these inorganic constituents. Agency data indicate that there is difficulty in stabilizing these constituents, and a TCLP analysis is necessary to verify the results. In cases where the Agency specifies a technology as the treatment standard, however, treatment using the specified technology satisfies the land disposal restriction requirements, and analysis of the treatment residues is not required. Consequently, lab packs containing constituents other than those specified in Appendix V to part 268 must comply with the treatment standards for each of the restricted wastes included in the lab pack.

The Agency's proposed alternate treatment standards for lab packs applies only if the following conditions are met:

(1) The lab pack contains only organic hazardous waste codes, the waste codes are listed in Appendix IV to part 268, and the "organic lab pack" is incinerated according to the provisions in part 264 or 265 subpart O; or

(2) The lab pack contains only inorganic constituents listed in Appendix V to part 268, and the "inorganic lab pack" is stabilized with Portland cement in a 20 percent binder-to-waste ratio by weight. Again, the Agency is aware that equivalent technologies to Portland cement stabilization exist. Therefore, the Agency is soliciting comment on methods for establishing equivalency that are short of establishing a variance procedure.

Lab packs that contain PCBs or dioxin-containing wastes must continue to meet the applicable treatment standards for these wastes. Examples are provided for clarification:

(1) A lab pack that contains only dioxin-containing waste (F020–23 and F026–28) *or* a mixture of dioxin-containing waste and organic hazardous waste codes listed in Appendix IV to part 268 must be incinerated according to the provisions in part 264 or 265 subpart O (including the applicable performance standards for dioxin-containing waste).

(2) A lab pack containing California list PCBs and dioxin-containing waste must be incinerated according to the technical standards of 40 CFR 761.70 and the applicable standards of parts 264, 265, and 266 (including the performance standards for dioxin-containing waste).

Generators or owners/operators who dispose of hazardous organic waste according to the provisions in today's proposed rule must also meet the requirements for lab packs specified in §§ 264.316 and 265.316, whichever is applicable. Such persons must also comply with the notification, certification, and recordkeeping requirements of § 268.7. The Agency is continuing to require generators to list each hazardous waste code on the notification form according to the requirements in § 268.7. The Agency is also proposing to require generators to certify that organic and inorganic lab packs destined for treatment as described in today's notice contain only the applicable waste codes or constituents listed in Appendix IV or Appendix V, whichever is applicable. The Agency emphasizes that lab packs containing wastes other than those listed in Appendix IV or Appendix V to part 268, including nonhazardous wastes, are excluded from the alternate treatment standards for lab packs proposed in today's rule.

The Agency is requesting comments on all aspects of its proposed approach for lab packs.

III.B Capacity Determinations

1. Determination of Alternative Capacity and Effective Dates for Surface Land-Disposed Wastes

a. Total Quantity of Land-Disposed Wastes

The capacity analyses for wastes for which EPA is today proposing treatment standards were conducted using the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (the TSDR Survey). EPA conducted the TSDR Survey during 1987 and early 1988 to obtain comprehensive data on the nation's capacity for managing hazardous waste and on the volumes of hazardous waste being disposed of in or on the land (i.e., land disposal). Survey data are part of the record for this proposed rule.

Other major sources of data include the National Survey of Hazardous Waste Generators, conducted by EPA during 1988 and 1989. It includes data on waste generation, waste characterization, and hazardous waste treatment capacity in units exempt from RCRA permitting. These data are used to support this proposal and are part of the record for this proposed rule.

For mixed RCRA/radioactive wastes, EPA has used data supplied by the U.S. Department of Energy. State and State compact low-level radioactive waste survey data were also used, as were data summaries in several overview reports on mixed radioactive waste.

The various land disposal methods used in 1986 and the quantities of waste they handled (excluding mixed radioactive wastes) are presented in Table III.B.1.(a). The data indicated that about 5,566 million gallons of the wastes for which standards are proposed today were disposed of in or on the land. This estimate includes less than 1 million gallons of wastes that were stored in surface impoundments and 76 million that were stored in waste piles. These stored wastes will eventually be treated, recycled, or permanently disposed of in other units. To avoid double counting, the volumes of wastes reported as being stored in surface impoundments or waste piles have not been included in the volumes of wastes requiring alternative treatment. Furthermore, this rule proposes prohibitions on the placement of wastes affected by this rule in waste piles or surface impoundments for storage.

EPA estimates that about 11 million gallons of treatment residuals from minimum technology impoundments or from impoundments that were replaced by a tank (e.g., standard cement, steel tanks, or filter presses) will require alternative treatment. EPA assumes that this waste is now being sent off-site for treatment. Consequently, this amount is included as treatment capacity required in today's rule.

In addition, 29 million gallons of wastes were treated in waste piles, 20 million gallons were disposed of in surface impoundments, 246 million gallons were disposed of in land treatment units or landfills, and 5,184 million gallons were injected underground. All of these wastes will require alternative treatment capacity.

TABLE III.B.1.(a) VOLUME OF WASTES BY LAND DISPOSAL METHOD FOR WHICH STANDARDS ARE BEING PROPOSED

[Millions of gallons/year]

Land disposal method	Volume
Storage:	
Waste piles	76
Surface impoundments	<1
Treatment:	
Waste piles	29
Surface impoundments	11
Disposal:	
Landfills	240
Land treatment	6
Surface impoundments	20
Underground injected	5,184
Total	5,566

EPA notes, however, that the TSDR survey may overstate demand for treatment capacity for wastewaters that were treated or disposed in surface impoundments at the time of the survey (1987 and early 1988). This is because such impoundments must now be retrofitted to meet minimum technology requirements, or taken out of service, as a result of RCRA section 3005(j). If the impoundment continues to operate after being retrofitted, it would be a section 3005(j)(11) impoundment if the wastewaters are treated and residues are removed annually. Wastewaters that are not treated or disposed in surface disposal units, or that are treated in section 3005(j)(11) impoundments, do not create any demand for alternative treatment capacity. Thus, the Agency solicits comment on what wastewaters currently disposed of in surface units do require alternative treatment capacity. Based on the above analysis, EPA believes that the volume is low and that, as a result, no capacity variance ordinarily is required for wastewaters destined for surface disposal. (This discussion obviously does not apply for wastewaters destined for deepwell disposal.)

There is one exception to the discussion in the preceding paragraph. This involves wastewaters that exhibit a characteristic of hazardous waste but that are diluted before they reach surface disposal units. As discussed in detail in section III.C below, EPA believes that such dilution normally is impermissible (although the Agency is soliciting comment on the issue). As a result, these wastes may require alternative treatment capacity and the volumes of these wastes would likely not be reflected in the TSDR survey (because the waste would not exhibit a characteristic by the time it reaches a surface disposal unit). EPA solicits comment on the volumes of wastes potentially affected by this interpretation and whether a national capacity variance would be required for such wastes. (Readers should be aware, however, of potential implications of the California list prohibitions for characteristic wastes receiving a national capacity variance. See the discussion in section III.M below.)

EPA is also requesting comments on the quantity of P and U RCRA waste codes currently being disposed of in deepwells. The TSDR Survey data include some large volume waste streams containing P and U RCRA codes. However, P and U wastes are by definition discarded off-specification products or residues and are usually generated in small volumes. Facilities disposing of these large volume waste streams in deepwells have indicated that small volumes of U and P wastes were mixed with large volumes of other wastes. However, the facilities were not able to provide a specific volume for the deepwell-disposed P and U wastes. Since the facilities generally described the volume of U and P wastes deepwell-disposed as "very small", EPA has assumed for the analysis of alternative treatment capacity that the volume of P and U wastes needing alternative capacity is less than 100,000 gallons; therefore, EPA is not proposing to grant a national variance to P and U wastes that are deepwell-disposed. EPA requests information of the generation and management of P and U wastes, especially on the disposal of P and U wastes in deepwells. EPA also requests comments on the assumption that the volume of P and U wastes being deepwell-disposed are less than 100,000 gallons.

The following sections provide a summary of the capacity analysis for the proposed rule; the detailed analyses are presented in the background document, and all data are included in the public docket.

b. Required Alternative Capacity for Surface Land-Disposed Wastes

EPA assessed the requirements resulting from today's proposed rule for alternative treatment capacity for surface land-disposed wastes. Using primarily the TSDR and Generator Survey data, EPA first characterized the volumes of wastes for which treatment standards are being established. Waste streams were characterized on the basis of land disposal method, waste code, physical and chemical form, and waste characterization data. Using this information, EPA placed the wastes in treatability groups identifying applicable treatment technologies. The waste volume were then summed by treatability group to determine the amount and type of alternative treatment capacity that would be required when owners or operators comply with the land disposal restrictions being proposed today.

Based on this analysis, EPA estimates that today's proposal could affect about 5,556 million gallons of wastes that are landdisposed annually. This total includes wastes that were stored only, that already meet BDAT, or that can be treated on-site. Consequently, only about 5,411 million gallons will require alternative treatment capacity. Of this total, 266 million gallons were surface-disposed (i.e., excluding underground injection), and the remaining 5,184 million gallons were underground injected. (See section 2 for determinations of alternative capacity and effective dates for wastes injected underground.) EPA estimates that treatment of these wastes will generate approximately 48 million gallons of residuals requiring treatment before land disposal.

In addition, EPA realizes that petroleum-refining wastes (K048, K049, K050, K051, and K052 wastes) will increase demand for capacity. The two-year capacity variance that was granted to petroleum refining wastes in the First Third rule will expire on August 8, 1990, three months after the promulgation of the Third Third rule. The best demonstrated available technology (BDAT) standard for these wastes is based on sludge incineration followed by stabilization of the ash, or on solvent extraction and stabilization of the residuals. EPA anticipates that available capacity for these technologies may be insufficient for handling the total volume of K048–K052 land-disposed wastes. Thus, EPA is requesting comments on current generation and management practices, industries' plans for treating and disposing of K048–K052 wastes, and the quantities of K048–K052 wastes disposed of based on current and planned management practices. EPA will analyze this information to estimate the impact of K048–K052 wastes on available capacity after August 8, 1990.

The volumes of surface-disposed wastes that require alternative commercial treatment and/or recycling capacity are presented in Table III.B.1.(b). This table does not include wastes that can be treated on-site by the generator, nor does it contain volumes of mixed radioactive wastes.

As explained in section III.A of this preamble, EPA is proposing treatment

standards expressed either as concentration limits based on the performance of the BDAT, or as a specific treatment technology. When a treatment standard is expressed as a concentration limit, a specific treatment method is not required to achieve that concentration level. However, the BDAT (and technologies that EPA finds perform comparably), as discussed in section III.A., were used as the basis for determining available capacity. When the treatment standard is expressed as a specific technology (rather than a concentration limit), that technology must be used.

Table III.B.1.(b) REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES

[Million gallons/year]

Waste code	Capacity required for surface-disposed wastes
First Third Code	
F006	5.1
F019	4.9
K004	0.1
K017	<0.1
K021	<0.1
K031	0.6
K035	<0.1
K071	5.9
K073	<0.1
K084	0.2
K085	<0.1
K106	0.5
P001	<0.1
P004	<0.1
P005	<0.1
P010	<0.1
P011	<0.1
P012	<0.1
P015	<0.1
P018	<0.1
P020	<0.1
P037	<0.1
P048	<0.1
P050	<0.1
P058	<0.1
P059	<0.1
P069	<0.1
P070	<0.1
P081	<0.1
P087	<0.1
P092	<0.1
P105	<0.1
P108	<0.1
P115	<0.1
P120	<0.1
P123	<0.1
U007	<0.1
U009	<0.1
U010	<0.1
U012	<0.1
U019	<0.1
U022	<0.1
U029	<0.1
U031	<0.1
U036	<0.1
U037	<0.1
U043	<0.1
U044	<0.1
U050	<0.1

Table III.B.1.(b) REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES—Continued

[Million gallons/year]

Waste code	Capacity required for surface-disposed wastes
U051	0.1
U061	<0.1
U066	<0.1
U067	<0.1
U077	<0.1
U078	<0.1
U103	<0.1
U105	<0.1
U108	<0.1
U122	<0.1
U129	<0.1
U133	<0.1
U134	<0.1
U151	<0.1
U154	<0.1
U158	0.3
U159	<0.1
U177	<0.1
U180	<0.1
U185	<0.1
U188	0.3
U192	<0.1
U209	<0.1
U210	<0.1
U211	<0.1
U219	<0.1
U220	0.1
U226	<0.1
U227	2.7
U228	<0.1
U237	<0.1
U238	<0.1
U248	<0.1
U249	<0.1
Second Third Code	
F024	<0.1
K105	<0.1
P002	<0.1
P003	<0.1
P014	<0.1
P066	<0.1
P067	<0.1
U002	<0.1
U003	<0.1
U005	<0.1
U008	<0.1
U014	<0.1
U021	<0.1
U032	<0.1
U047	<0.1
U057	<0.1
U070	<0.1
U073	<0.1
U080	2.7
U083	<0.1
U092	<0.1
U093	<0.1
U101	<0.1
U106	<0.1
U109	<0.1
U114	<0.1
U116	<0.1
U119	<0.1
U127	<0.1
U131	0.1
U140	<0.1
U142	<0.1
U144	<0.1
U146	<0.1
U147	<0.1

Table III.B.1.(b) REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES—Continued

[Million gallons/year]

Waste code	Capacity required for surface-disposed wastes
U149	<0.1
U161	<0.1
U162	<0.1
U165	<0.1
U169	<0.1
U170	<0.1
U196	<0.1
U208	<0.1
U213	<0.1
U214	<0.1
U217	<0.1
U218	<0.1
U239	0.2
U244	<0.1
Third Third Code	
D001	19.7
D002	25.6
D003	9.2
D004	12.8
D005	16.4
D006	16.3
D007	117.0
D008	73.0
D009	4.0
D010	2.0
D011	2.5
D012	0.5
D013	0.4
D014	1.9
D015	<0.1
D016	0.2
D017	0.4
K002	0.2
K003	0.2
K005	0.1
K006	0.2
K069	<0.1
K083	<0.1
P006	<0.1
P022	<0.1
P024	<0.1
P028	<0.1
P031	<0.1
P047	<0.1
P051	<0.1
P064	<0.1
P073	<0.1
P075	<0.1
P077	<0.1
P088	<0.1
P093	<0.1
P119	<0.1
U001	<0.1
U004	<0.1
U006	<0.1
U017	<0.1
U030	<0.1
U039	<0.1
U048	<0.1
U052	<0.1
U055	0.2
U056	<0.1
U071	<0.1
U072	0.2
U075	<0.1
U076	<0.1
U079	<0.1
U081	<0.1
U082	<0.1
U112	<0.1

Table III.B.1.(b) REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR SURFACE-DISPOSED WASTES—Continued

[Million gallons/year]

Waste code	Capacity required for surface-disposed wastes
U117	<0.1
U118	<0.1
U120	<0.1
U121	<0.1
U123	<0.1
U125	<0.1
U126	<0.1
U148	<0.1
U156	<0.1
U167	<0.1
U181	<0.1
U182	<0.1
U201	<0.1
U202	<0.1
U204	<0.1
U225	<0.1
U234	<0.1
U240	<0.1
U247	<0.1
Leachate	34.5

The TSDR Survey contains data on specific treatment processes at facilities. The data enable EPA to identify specific BDAT treatment (and treatment that EPA has determined performs comparably) in its assessment of both off-site and on site capacity. Therefore, EPA believes that the capacity identified as available for a specific treatment technology will be capable of meeting the BDAT standard, which has been developed such that a well-designed and well-operated BDAT treatment process should be capable of meeting it.

EPA is concerned that there may be insufficient incineration capacity to treat the sludge and solid hazardous wastes that must be incinerated to meet BDAT standards. To establish criteria for differentiating between a liquid and a solid waste as it pertains to the adequacy of existing incineration capacity, EPA examined the way in which these materials are fed into combustion systems. Solids are typically fed in a containerized form or through an auger system. Liquids are atomized and fed through burners or nozzles (sometimes referred to as feed guns). Some facilities burn sludges that are not handled as either solids or liquids in the conventional feed mechanisms mentioned above. Sludges are typically fed to an incinerator by pumping them through a lance (i.e., essentially an open-ended pipe).

EPA considers sludges to be solids in the context of the adequacy of existing incineration capacity. Sludges are pumpable but generally not atomizable. As such, the key to differentiating between solid and liquid feed materials is whether or not the feed material can be atomized.

The Agency believes that viscosity of the waste can be used to determine if it can be atomized. Wastes with a viscosity of greater than 1500 to 2500 centipoise are generally considered too viscous to be atomized. Given that a waste with high viscosity can be blended with a waste with low viscosity so that the mixture can be atomized, the Agency is proposing a viscosity representing the high end of the range—2500 centipoise—to identify "non-liquid" waste (i.e., wastes that cannot be atomized).

The Agency considered other criteria for distinguishing between liquid and solid wastes with respect to how wastes are fed into incinerators. Criteria such as solids content, particle size, and salt content of the waste were considered but ultimately rejected. Although the Agency recognizes that these waste parameters are important factors in incinerator design and operation, we believe that viscosity alone is an adequate parameter for the purpose at hand. EPA requests comments on this approach for differentiating between a liquid and a solid waste as it pertains to the adequacy of existing incineration capacity.

With respect to variances based on lack of solids incineration capacity, EPA is only proposing to grant national capacity variances for *non-atomizable* solids (as defined above). Thus, for this purpose, EPA is proposing to further subcategorize the wastewater and nonwastewater treatability groups that are used as the basis for treatment standards. Only the nonatomizable nonwastewaters would receive the variance. This is because (for most waste codes) there is ample treatment capacity in liquid injection furnaces, and in boilers and industrial furnaces, for atomizable nonwastewaters. EPA realizes that this approach is different from and more sophisticated than that utilized in previous rulemakings. However, there is clearly no reason to grant national capacity variances when EPA can define a reasonable subcategory for prohibited wastes for which there exists treatment capacity.

c. Capacity Currently Available and Effective Dates

Table III.B.1.(c) presents an estimate of the volumes of wastes that will require alternative treatment before land disposal to comply with the standards proposed today. The amount of capacity that is available at commercial facilities in each case is also presented. Available capacity is equal to the specific treatment system's maximum capacity minus the amount used in 1986; available capacity was calculated using the TSDR Survey data. In addition, the available capacity presented in this section was adjusted to account for wastes previously restricted from land disposal by subtracting the capacity required for land-disposed solvent wastes, First Third wastes, and Second Third wastes.

In general, Table III.B.1.(c) indicates that there is inadequate capacity for certain technologies: combustion of sludges and solids, mercury retorting, thermal recovery, vitrification, and wet-air oxidation. EPA requests information on available treatment capacity for these specific treatments.

TABLE III.B.1.(c) REQUIRED ALTERNATIVE COMMERCIAL TREATMENT (INCLUDING RECYCLING) CAPACITY FOR SURFACE LAND-DISPOSED WASTES

[Millions of gallons/yr.]

Technology	Available capacity	Required capacity	Variance
Alkaline Chlorination	2	<1.0	No.
Alkaline Chlorination and by Chemical Precipitation	11	4.6	No.
Biological and Carbon Adsorption	6	1.0	No.
Carbon Adsorption and Chemical Precipitation	41	<1.0	No.
Chemical Oxidation and Chemical Precipitation	29	6.9	No.
Chemical Precipitation	364	25.5	No.
Chromium Reduction and Chemical Precipitation	79	66.5	No.
Combustion of Atomizable Liquids	249	16.3	No.
Combustion of Sludge/Solids	4	52.7	Yes.

TABLE III.B.1.(c) REQUIRED ALTERNATIVE COMMERCIAL TREATMENT (INCLUDING RECYCLING) CAPACITY FOR SURFACE LAND-DISPOSED WASTES—Continued

[Millions of gallons/yr.]

Technology	Available capacity	Required capacity	Variance
Mercury Retorting	<1.0	8.8	Yes.
Neutralization	36	22.0	No.
Secondary Smelting	37	1.7	No.
Stabilization	479	134.5	No.
Thermal Recovery	0	<1.0	Yes.
Treatment of Reactives and Chromium Reduction and Chemical Precipitation	2	1.9	No.
Vitrification	0	2.50	Yes.
Wet-Air Oxidation	<1.0	6.1	Yes.
Wet-Air Oxidation and Carbon Adsorption and Chemical Precipitation	<1.0	<1.0	No.
Wet-Air Oxidation and Chemical Precipitation	<1.0	<1.0	No.
Wet-Air Oxidation and Chromium Reduction	<1.0	<1.0	No.

For combustion of sludges and solids, there is not available capacity for D001 sludges and solids or for leachate sludges and solids. However, there is adequate capacity for all other wastes needing combustion of sludges and solids. For mercury retorting, there is not adequate capacity for D009, K071, K106, and U151. However there is adequate capacity for other wastes needing this technology. Also, for wet-air oxidation, there is not enough capacity for F019, but there is adequate capacity for other wastes needing this technology.

It is important to note that some of the wastes, because of their actual physical form, cannot be treated to meet standards simply by using the technology identified as BDAT. These wastes must be treated through several steps, called a treatment train. EPA assumes that the resultant residuals will also need to be treated using alternative technologies before land disposal; therefore, the total volumes reported were assigned to appropriate technologies.

The following sections discuss the results of the individual capacity analyses and effective dates for each waste code included in today's proposal. Table III.B.1.(d) summarizes all the surface-disposed wastes for which EPA is proposing to grant a two-year variance. The detailed basis for the Agency's conclusions, however, are set forth in the capacity background document for this proposal.

TABLE III.B.1.(d) SUMMARY OF PROPOSED TWO-YEAR NATIONAL CAPACITY VARIANCE FOR SURFACE LAND-DISPOSED WASTES

Required alternative treatment technology	Waste code	Physical form
Combustion of Sludge/Solids (i.e., non-atomizable wastes)	[1] D001	Nonwastewater.
	[2] Leachate	Nonwastewater.
Mercury Retorting	D009	Nonwastewater.
	K071	Nonwastewater.
	K106	Nonwastewater.
	P065	Nonwastewater.
	P092	Nonwastewater.
	U151	Nonwastewater.
Thermal Recovery	[3] D006	Nonwastewater.
	P015	Nonwastewater.
	P073	Nonwastewater.
	P087	Nonwastewater.
Vitrification	D004	Nonwastewater.
	D010	Nonwastewater.
	K031	Nonwastewater.
	K084	Nonwastewater.
	K101	Nonwastewater.
	K102	Nonwastewater.
	P010	Nonwastewater.
	P011	Nonwastewater.
	P012	Nonwastewater.
	P036	Nonwastewater.
	P038	Nonwastewater.
	P103	Nonwastewater.
	P114	Nonwastewater.
	U136	Nonwastewater.
	U204	Nonwastewater.
	U205	Nonwastewater.
Wet-Air Oxidation	F019	Nonwastewater.

[1] D001 (Ignitables Liquids Mixed with Sludges and Solids).
[2] Multi-source Leachate.
[3] D006 (Cadmium Batteries).

(1) Halogenated organic wastes. This treatability group includes halogenated aliphatics, halogenated pesticides and chlorobenzenes, halogenated phenolics, brominated organics, and miscellaneous halogenated organics. These treatability groups will require the following technologies: incineration; incineration and stabilization; stabilization; and wet-

air oxidation or chemical oxidation and carbon adsorption. Sufficient capacity exists for treatment of the halogenated organic wastes by these technologies; therefore, EPA is not proposing to grant a national capacity variance for these wastes. (These wastes needing alternative incineration capacity do not need a variance, because there is adequate capacity for all atomizable liquids as well as adequate capacity for the small quantities for sludges and solids in this category.) The following sections present the waste codes and the proposed treatment standards for each of the halogenated organic waste groups.

(a) Halogenated Aliphatics

K017—Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin
K021—Aqueous spent antimony catalyst from fluoromethane production
K028—1,1,1-Trichloroethane production wastes
K029—Waste from the product steam stripper in the production of 1,1,1-trichloroethane
K073—Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production
K095—Distillation bottoms from the production of 1,1,1 trichloroethane
K096—Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane
U044—Chloroform
U074—1,4-Dichloro-2-butene
U078—1,1-Dichloroethane
U077—1,2-Dichloroethane
U078—1,2-Dichloroethylene
U079—1,2-Dichloroethylene
U080—Methylene chloride
U083—1,2-Dichloropropene
U084—1,3-Dichloropropene
U131—Hexachloroethane
U184—Pentachloroethane
U208—1,1,1,2-Tetrachloroethane
U209—1,1,2,2-Tetrachloroethane
U210—Tetrachloroethylene
U211—Carbon tetrachloride
U226—1,1,1-Trichloroethane
U227—1,1,2-Trichloroethane
U228—Trichloroethylene
U243—Hexachloropropene

For the halogenated aliphatics, incineration is the BDAT for both wastewater and nonwastewater forms of K017, K073, K021 (organics), U044, U074, U076, U077, U078, U079, U080, U083, U084, U131, U184, U208, U209, U210, U211, U226, U227, U228, and U243. K021 (inorganics) nonwastewaters with a high level of metal constituents also require incineration and stabilization of metal constituents as a BDAT. Treatment standards were promulgated for the wastewater and nonwastewater forms of K028 in the Second Third rule; however, today EPA is proposing treatment standards for the metal constituents in K028 nonwastewaters. The treatment standards for these wastes are based on stabilization. The nonwastewater forms of K029, K095, and K096 were promulgated in the Second Third rule. Today, EPA is proposing concentration standards for organics in K029, K095, and K096 wastewaters based on incineration. Sufficient capacity exists for treatment of the halogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes. (These wastes needing alternative incineration capacity do not need a variance, because there is adequate capacity for all atomizable liquids as well as adequate capacity for the small quantities for sludges and solids in this category.)

(b) Halogenated Pesticides and Chlorobenzenes

D012—Characteristic of EP Toxic for Endrin
D013—Characteristic of EP Toxic for Lindane
D014—Characteristic of EP Toxic for Methoxychlor
D015—Characteristic of EP Toxic for Toxaphene
D016—Characteristic of EP Toxic for 2,4-D
D017—Characteristic of EP Toxic for 2,4,5-TP
K032—Wastewater treatment sludge from the production of chlordane
K033—Wastewater treatment scrubber water from the chlorination of cyclopentadiene in the production of chlordane
K034—Filter solids from filtration of hexachlorocyclopentadiene in the production of chlordane
K041—Wastewater treatment sludge from the production of toxaphene
K042—Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T
K085—Distillation of fractionation column bottoms from the production of chlorobenzenes
K097—Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane
K098—Untreated process wastewater from the production of toxaphene
K105—Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes
P004—Aldrin
P037—Dieldrin
P050—Endosulfan
P051—Endrin
P059—Heptachlor
P060—Isodrin
P123—Toxaphene
U036—Chlordane, technical
U037—Chlorobenzene
U038—Chlorobenzilate
U060—DDD
U061—DDT
U070—1,2-Dichlorobenzene
U071—1,3-Dichlorobenzene
U072—1,4-Dichlorobenzene
U127—Hexachlorobenzene
U128—Hexachlorobutadiene
U129—Lindane
U130—Hexachlorocyclopentadiene
U132—Hexachlorophene
U142—Kepone
U183—Pentachlorobenzene
U185—Pentachloronitrobenzene
U207—1,2,4,5-Tetrachlorobenzene
U240—2,4-D salts and esters
U247—Methoxychlor

For the following halogenated pesticides and chlorobenzenes, the BDAT for wastewaters and nonwastewaters is incineration: D012 D013, D014, D015, D016, D017, K032, K033, K034, K041, K042, K085, K097, K098, K105, P004, P037, P050, P051, P059, P060, P123, U036, U037, U038, U060, U061, U070, U071, U072, U127, U128, U129, U130, U132, U142, U183, U185, U207, and U247.

For U240, the BDAT for nonwastewaters is incineration as a method; for wastewaters the BDAT is wet-air oxidation or chemical oxidation and carbon adsorption or incineration as methods of treatment. Sufficient capacity exists for treatment of the halogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(c) Halogenated Phenolics

U039—p-Chloro-m-cresol
U048—2-Chlorophenol
U081—2,4-Dichlorophenol
U082—2,6-Dichlorophenol

For U039, U048, U081, and U082, the BDAT for wastewaters and nonwastewaters is incineration. Sufficient capacity exists for treatment of the halogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(d) Brominated Organics

P017—Bromoacetone
U029—Methyl Bromide
U030—4-Bromophenyl phenyl ether
U066—1,2-Dibromo-3-chloropropane
U067—Ethylene dibromide (EDB)
U068—Dibromomethane
U225—Bromoform

For U029, U030, U066, U067, U068, and U225, incineration is the BDAT for

nonwastewaters and wastewaters. For PO17 nonwastewaters, the BDAT is incineration as a method of treatment. For P017 wastewaters, wet-air oxidation, biodegradation, chemical oxidation, or incineration are the proposed methods of treatment. Sufficient capacity exists for treatment of the halogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(e) Miscellaneous Halogenated Organics

P016—bis-(Chloromethyl) ether
P023—Chloroacetaldehyde
P024—p-Chloroaniline
P026—1-(o-Chlorophenyl) thiourea
P027—3-Chloropropionitrile
P028—Benzyl chloride
P057—Fluoracetamide
P058—Fluoracetic acid sodium salt
P095—Phosgene
P118—Trichloromethanethiol
U006—Acetyl chloride
U017—Benzal chloride
U020—Benzenesulfonyl chloride
U024—bis-(2-Chloroethoxy) methane
U025—Dichloroethyl ether
U026—Chloronaphazine
U027—bis-(2-Chloroispropyl) ether
U033—Carbonyl fluoride
U034—Trichloroacetaldehyde
U041—n-Chloro-2,3-epoxypropane
U042—2-Chloroethyl vinyl ether
U043—Vinyl chloride
U045—Methyl chloride
U046—Chloromethyl methyl ether
U047—2-Chloronaphthalene
U049—4-Chloro-o-toluidine hydrochloride
U062—Diallate
U073—3,3'-Dichlorobenzidine
U075—Dichlorodifluoromethane
U097—Dimethylcarbamoyl chloride
U121—Trichloromonofluoromethane
U138—Iodomethane
U156—Methyl chlorocarbonate
U158—4,4-Methylene-bis-(2-chloroaniline)
U192—Pronamide
U222—o-Toluidine hydrochloride

For P016, P023, P026, P027, P028, P057, P058, P095, P118, U006, U017, U020, U026, U033, U034, U041, U042, U046, U049, U062, U097, U156, and U222, EPA is proposing incineration as a method of treatment for nonwastewaters and incineration, wet-air oxidation and carbon adsorption, or chemical oxidation and carbon adsorption as methods of treatment for wastewaters. For wastewater and nonwastewater forms of P024, U024, U025, U027, U043, U045, U047, U073, U075, U121, U138, U158, and U192, EPA is proposing treatment standards based on incineration.

In addition to the methods of treatment proposed for U017, EPA is proposing a treatment standard based on incineration. EPA is soliciting comments concerning the options for U017 and will make a decision at a later date. For the capacity analysis, the alternative treatment technology for U017 is incineration. Sufficient capacity exists for treatment of the halogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(2) *Additional organic wastes.* This group includes aromatic and other hydrocarbons, polynuclear aromatic hydrocarbons, phenolics, oxygenated hydrocarbons and heterocyclics, organo-nitrogen compounds, organo-sulfur compounds, and pharmaceuticals.

In today's proposed rule, EPA is proposing incineration as BDAT for all of the nonhalogenated organics presented below. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(a) Aromatics and Other Hydrocarbons

U019—Benzene
U055—Cumene
U056—Cyclohexane
U186—1,3-Pentadiene
U220—Toluene (methyl benzene)
U239—Xylenes (dimethyl benzene)

For U019, U220, and U239 wastes, EPA is proposing to transfer standards based on incineration for wastewaters and nonwastewaters. For U055, U056, and U186 nonwastewaters, EPA is proposing incineration as a method of treatment. For U055, U056, and U186 wastewaters, EPA is proposing wet-air oxidation or chemical oxidation or biological degradation followed by carbon adsorption, or incineration as methods of treatment for wastewaters. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(b) Polynuclear Aromatic Hydrocarbons

U005—2-Acetylaminofluorene
U016—Benz(c)acridine
U018—Benz(a)anthracene
U022—Benzo(a)pyrene
U050—Chrysene
U051—Creosote
U063—Dibenzo(a,h)anthracene
U064—1,2,7,8-Dibenzopyrene
U094—7,12-Dimethyl benz(a)anthracene
U120—Fluoranthene
U137—Indeno(1,2,3,-d,d)pyrene
U157—3-Methylchloanthrene
U165—Naphthalene

For U005, U018, U022, U050, U063, U120, U137, U157, and U165 wastewaters and nonwastewaters, EPA is proposing incineration as a BDAT. For U016, U064, and U094 wastes, EPA is proposing to require the use of incineration as a method of treatment for nonwastewaters and wet-air oxidation and carbon adsorption or chemical oxidation and carbon adsorption, or biological degradation and carbon adsorption, or incineration as methods of treatment for wastewaters. For the organics in U051 wastewaters and nonwastewaters, the concentration standards are based on incineration. EPA is also proposing treatment standards for lead in U05l. These standards are based on stabilization as the BDAT for nonwastewaters and chemical precipitation as the BDAT for wastewaters. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(c) Phenolics

P020—2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
P034—2-cyclohexyl-4,6-dinitrophenol
P047—4,6-dinitrocresol and salts
P048—2,4-dinitrophenol
U052—Cresols
U101—2,4-Dimethyl phenol
U170—4-Nitrophenol
U188—Phenol
U201—Resorcinol

For P020, P048, U052, U101, U170, U188, and U201, EPA is proposing treatment standards based on incineration. For P034 and P047, EPA is proposing to require the use of incineration as a method of treatment for nonwastewaters and wet-air oxidation and carbon adsorption, chemical oxidation and carbon adsorption, or biodegradation and carbon adsorption, or incineration as methods of treatment for wastewaters. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(d) Oxygenated Hydrocarbons and Heterocyclics

P001—Warfarin (>3%)
P003—Acrolein
P005—Allyl alcohol
P088—Endothall
P102—Propargyl alcohol
U001—Acetaldehyde
U002—Acetone
U004—Acetophenone
U008—Acrylic acid

U031—n-Butanol
U053—Crotonaldehyde
U057—Cyclohexanone
U085—1,2,3,4-Diepoxybutane
U108—1,4-Dioxane
U112—Ethyl acetate
U113—Ethyl acrylate
U117—Ethyl ether
U118—Ethyl methacrylate
U122—Formaldehyde
U123—Formic acid
U124—Furan
U125—Furfural
U126—Glycidaldehyde
U140—Isobutanol
U147—Maleic anhydride
U154—Methanol
U159—Methyl ethyl ketone
Ul61—Methyl isobutyl ketone
U162—Methyl methacrylate
U166—1,4-Naphthoquinone
U182—Paraldehyde
U197—p-Benzoquinone
U213—Tetrahydrofuran
U248—Warfarin (<3%)

For U002, U004, U031, U057, U108, U112, Ul17, Ul18, U140, U154, U161, U162, U166, and U197 wastes, EPA is proposing treatment standards based on the performance of incineration or fuel substitution for nonwastewaters and incineration for wastewaters. For P001, P003, P005, P088, P102, U001, U008, U053, U085, Ul13, U122, U123, U124, U125, U126, U147, U154, U182, U213, and U248 wastes, EPA is proposing to establish incineration or fuel substitution as a method of treatment for nonwastewaters (unlike other wastes in the additional organic wastes category, this proposed standard does not preclude the use of fuel substitution), and wet-air oxidation, chemical oxidation, or biodegradation and carbon adsorption, or incineration as methods of treatment for all wastewaters except P003. Treatment standards for P003 wastewaters are based on incineration. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes. (These wastes needing alternative wet-air oxidation and incineration capacities do not need a variance, because there is adequate capacity for the small quantity of wastes in this category.)

(e) Organo-Nitrogen Compounds

(i) Nitrogen Heterocyclic Compounds

P008—4-Aminopyridine
P018—Brucine
P054—Aziridine
P067—2-Methylaziridine
U011—Amitrole
U148—Maleic Anhydride
U179—N-Nitrosopiperidine
U180—N-Nitrosopyrrolidine
U191—2-Picoline
U196—Pyridine

(ii) Amine and Amide Compounds

P046—alpha, alpha-Dimethylphenethylamine
P064—Isocyanic acid, ethyl ester
U007—Acrylamide
U012 Aniline
U092—Dimethylamine
U110—Dipropylamine
U167—1-Naphthylamine
U168—2-Naphthylamine
U194—n-Propylamine
U238—Ethyl carbamate

(iii) Aminated Diphenyls and Biphenyls

U014—Auramine
U021—Benzidine
U09l—3,3-Dimethoxybenzidine
U093—p-Dimethylaminoazobenzidine
U095—3,3'-Dimethylbenzidine
U236—Trypan Blue

(iv) Nitriles

P069—Methyllactonitrile
P101—Propanenitrile
U003—Acetonitrile
U009—Acrylonitrile
U149—Malononitrile
U152—Methacrylonitrile

(v) Nitro Compounds

P077—p-Nitroaniline
U105—2,4-Dinitrotoluene
U106—2,6-Dinitrotoluene
U169—Nitrobenzene
U171—2-Nitropropane
U181—5-Nitro-o-toluidine
U234—sym-Trinitrobenzene

(vi) Nitroso Compounds

P082—N-Nitrosodimethylamine
P084—N-Nitrosomethylvinylamine
U111—Di-n-propylnitrosoamine
U172—N-Nitroso-di-n-butylamine
U173—N Nitroso-di-n-ethanolamine
U174—N-Nitrosodiethylamine
U176—N-Nitroso-N-ethylurea
Ul77—N-Nitroso-N-methylurea
U178—N-Nitroso-N-methylurethane

For P077, P082, P1O1, U003, U009, U012, U093, U105, U106, U111, U152, U167, U168, U169, U172, U174, U179, U180, U181, and U196 wastes, EPA is proposing BDAT treatment standards based on the performance of incineration. For P008, P018, P046, P054, P064, P067, P069, P084, U007, U011, U014, U021, U091, U092, U095, U110, U148, U149, U171, U173, U176, U177, U178, U191, U194, U234, U236, and U238 wastes, EPA is proposing to establish incineration as a method of treatment for nonwastewaters; for wastewaters, the proposed BDATs are: wet-air oxidation and carbon adsorption, chemical oxidation and carbon adsorption, biodegradation and carbon adsorption, or incineration as methods of treatment. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(f) Organo-Sulfur Compounds

P002—1-Acetyl 2-thiourea
P014—Benzene thiol (Thiophenol)
P022—Carbon disulfide
P045—Thiofanox
P049—2,4-Dithiobiuret
P066—Methomyl
P070—Aldicarb
P072—1-Naphthyl-2-thiourea (Bantu)
P093—N-Phenylthiourea
P116—Thiosemicarbazide
U114—Ethylene bis-dithiocarbamic acid
U116—Ethylene thiourea
U119—Ethyl methane sulfonate
U153—Methane thiol
U193—1,3-Propane sulfone
U218—Thioacetamide
U219—Thiourea
U244—Thiram

For all of these organo-sulfur wastes, EPA is proposing to establish incineration as a method of treatment for nonwastewaters and wet-air oxidation and carbon adsorption, chemical oxidation and carbon adsorption, biodegradation and carbon adsorption, or incineration as methods of treatment for wastewaters. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes. (These wastes needing alternative wet-air oxidation and incineration capacities do not need a variance, because their is adequate capacity for the small quantity of wastes in this category.)

(g) Pharmaceuticals

P007—Muscimol (5-Aminoethyl 3-isoxazolol)
P042—Epinephrine
P075—Nicotine and salts
P108—Strychnine and salts
U010—Mitomycin C
U015—Azaserine
U035—Chlorambucil
U059—Daunomycin
U089—Diethyl stilbestrol
U090—Dihydrosafrole
U141—Isosafrole
U143—Lasiocarpine
U150—Melphalan
U155—Methapyrilene
U163—N-Methyl N-nitro N-nitroquanidine
U164—Methylthiouracil
U187—Phenacetin
U200—Reserpine
U202—Saccharin and salts
U203—Safrole
U206—Streptozotocin
U237—Uracil mustard

For all of these pharmaceutical wastes except U141, U155, U187, and U203, EPA is proposing to establish incineration as a method of treatment for nonwastewaters and wet-air oxidation and carbon adsorption, chemical oxidation and carbon adsorption, or biodegradation and carbon adsorption, or incineration as methods of treatment for wastewaters. For U141, U155, U187, and U203, EPA is proposing BDAT treatment standards based on the performance of incineration for wastewaters and nonwastewaters. Sufficient capacity exists for treatment of these nonhalogenated organic wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(3) Ignitable, corrosive, and reactive characteristic wastes, and reactive U and P wastes. This group includes ignitable characteristic wastes (D001), corrosive characteristic wastes (D002), reactive characteristic wastes (D003), and potentially reactive P and U wastes.

(a) *Ignitable Characteristic Wastes (D001).* EPA has identified four treatability groups for D001 wastes: ignitable liquids, ignitable reactives, oxidizers, and ignitable gases. For ignitable liquids, EPA is proposing incineration, fuel substitution, or recovery as a method of treatment, rather than proposing numerical standards. EPA believes that the majority of these wastes are already being either incinerated or reused as fuel or recovered for reuse. Sufficient treatment capacity exists for the D001 ignitable liquid wastes destined for surface disposal; therefore, no capacity variance is being proposed for them.

EPA notes, that there may be inadequate treatment capacity for these ignitable liquid wastes if fuel substitution capacity were not considered. Since it makes environmental sense for ignitable wastes to be used as fuel substitutes, since final boiler and furnace RCRA air emission permit standards should be in place relatively soon (standards were re-proposed on October 26, 1989), since ignitable wastes are likely to be destroyed in such units, and because the Agency believes it is important not to grant a national capacity variance for this waste treatability group (during which time the wastes would most likely be used as fuel substitutes anyway, or be land-disposed), EPA believes it preferable to include fuel substitution as a method of treatment for these wastes.

However, significant volumes of D001 sludges and solids are being surface-disposed. These wastes would require incineration or reuse as fuel. Presently, EPA believes that adequate capacity does not exist for them. Therefore, EPA is proposing to grant a two-year national capacity variance only to the subcategory of D001 sludges and solids (which is defined as having a viscosity of greater than 2,500 centipoise) requiring incineration or reuse as fuel. Planned capacity could possibly become available by May 1990 for D001 ignitable wastes. If planned facilities become operational by May 1990, there may be adequate capacity for these wastes and a variance would not be needed. EPA requests comments on the need for and availability capacity for incineration of non-atomizable sludges and solids as well as comments on the use of a subcategory of D001 waste based on viscosity as the basis for granting a national capacity variance.

EPA is proposing deactivation as a method of treatment for D001 ignitable reactives and oxidizers. EPA has determined that sufficient capacity exists for these wastes; therefore, EPA is not proposing to grant a national capacity variance for them.

For D001 ignitable gases, EPA is proposing recovery or incineration of vented ignitable gases as a method of treatment. EPA believes that adequate capacity exists for this waste form; therefore, EPA is not proposing a national capacity variance for this waste.

(b) *Corrosive Characteristic Wastes (D002).* EPA has identified three treatability groups for D002 wastes: acids, alkalines, and other corrosives. For the acid and alkaline subcategories, EPA is proposing neutralization as a method of treatment. These wastes must be treated with chemicals and neutralized into an insoluble salt. However, EPA is also considering the use of recovery of acids for these wastes, and EPA requests comments on the current use of recovery of acids. By definition, wastes in these subcategories are liquids; therefore, based on the minimum technology requirements for surface impoundments and the ban on liquids in landfills, EPA believes that few, if any, of these wastes are surface-disposed. EPA believes sufficient neutralization capacity does exist for acid and alkaline D002 wastes that are surface-disposed; therefore, EPA is not proposing a national capacity variance for them.

For the D002 other corrosives category, EPA is proposing deactivation as a method of treatment. These wastes can be deactivated using chemical reagents. In addition, EPA believes that these wastes are generated sporadically and in low volumes. Therefore, it is not proposing to grant a national capacity variance for them.

(c) *Reactive Characteristic Wastes (D003).* For D003 wastes, EPA has identified five treatability groups: reactive cyanides, explosives, water reactives, reactive sulfides, and other reactives. For D003 reactive cyanides, EPA is considering the transfer of numerical standards from cyanide wastes from electroplating, heat treating, or acrylonitrile production. Although reactive cyanides account for the majority of the quantity of D003 generated, EPA believes that most are already being treated by alkaline chlorination, wet-air oxidation, or electro-oxidation. Furthermore, these wastes are already restricted from landfills by existing regulations (40 CFR part 264.312, 265.312). EPA believes that sufficient capacity does exist for the volume of surface-disposed D003 cyanide reactive wastes and is not proposing a national capacity variance for them.

For D003 reactive sulfides, the Agency is proposing to require chemical oxidation and chemical precipitation, alkaline chlorination and chemical precipitation, or incineration and chemical precipitation to insoluble sulfates rather than proposing numerical standards. EPA believes sufficient capacity does exist for the volume of surface-disposed D003 sulfide wastes and is not proposing a national capacity variance for them.

For D003 explosive wastes, the Agency is proposing deactivation as a method of treatment. Because these wastes are already restricted from land disposal by existing regulations and are commonly burned and/or detonated openly, EPA is not proposing to grant a national capacity variance for their surface disposal.

The proposed method of treatment for D003 water-reactive wastes is also deactivation. EPA believes that these wastes are generated sporadically and in low volumes and are not typically land-disposed. Therefore, EPA is not proposing to grant a national capacity variance for their surface disposal.

For other reactive D003 wastes, EPA is proposing deactivation as a method of treatment. EPA believes these wastes could be incinerated or open detonated. EPA believes that there is adequate capacity for the treatment of small volumes of these wastes that are surface-disposed. Therefore, EPA is not proposing to grant a national capacity variance to surface disposal.

(d) *Potentially Reactive P and U Wastes.* This subgroup includes the following waste codes:

P006—Aluminum phosphide (R,T)
P009—Ammonium picrate (R)

P015—Beryllium dust
P056—Fluorine
P068—Methyl hydrazine
P073—Nickel carbonyl
P081—Nitroglycerin (R)
P087—Osmium tetroxide
P096—Phosphine
P105—Sodium azide
P112—Tetranitromethane (R)
P122—Zinc phosphide (>10%) (R,T)
U023—Benzotrichloride (C,R,T)
U086—N,N-Diethylhydrazine
U096—a,a-Dimethyl benzyl hydroperoxide (R)
U098—1,1-Dimethylhydrazine
U099—1,2-Dimethylhydrazine
U103—Dimethyl sulfate
U109—1,2-Diphenylhydrazine
U133—Hydrazine (R,T)
U134—Hydrofluoric acid (C,T)
U135—Hydrogen sulfide
U160—Methyl ethyl ketone peroxide (R,T)
U189—Phosphorus sulfide (R)
U249—Zinc phosphide (<10%)

These wastes are either highly reactive or explosive or are polymers that also tend to be highly reactive.

For the purpose of BDAT determinations, EPA has identified four subgroups: incinerable reactive organics and hydrazine derivatives (P009, P068, P081, P112, U023, U086, U096, U098, U099, U103, U109, U133, and U160); incinerable inorganics (P006, P096, P105, P122, U135, U189, and U249); fluorine compounds (P056 and U134); and recoverable metallic compounds (P015, P073, and P087). For incinerable organics, EPA is proposing to require the use of thermal destruction (i.e., incineration) as a method of treatment for nonwastewaters and carbon adsorption or incineration as methods of treatment for wastewaters, rather than establishing numerical standards. Because EPA believes sufficient treatment capacity exists for the small volume of surface-disposed incinerable organic wastes (P009, P068, P081, P112, U023, U086, U096, U098, U099, U103, U109, U133. U160, and U186), EPA is not proposing to grant a national capacity variance for them.

For incinerable inorganic wastes, EPA is proposing a standard based on thermal destruction (i.e., incineration) for nonwastewaters and chemical oxidation followed by precipitation to insoluble salts (rather than numerical standards) for wastewaters. EPA believes sufficient treatment capacity does exist for the small volume of surface-disposed incinerable metallic wastes (P006, P096, P105, P122, U135, U189, and U249) and is not proposing a national capacity variance for them.

For fluorine compounds, P056 and U134 nonwastewaters, EPA is proposing to require chemical precipitation as a method of treatment. For P056 and U134 wastewaters, EPA is proposing concentration standards based on chemical precipitation. EPA believes that adequate treatment capacity exists for these wastes and is therefore not proposing to grant a capacity variance for their surface disposal.

For recoverable metallic compounds (P015, P073, and P087), EPA is proposing recovery as a method, rather than numerical standards. EPA has determined that there is not enough capacity available for the volumes of these wastes. Therefore, EPA is proposing to grant a capacity variance for them.

(4) Metal Wastes. This group includes arsenic, selenium, barium, cadmium, chromium, lead, mercury, silver, thallium, and vanadium wastes.

(a) *Arsenic and Selenium Wastes.*

D004—EP Toxic for arsenic
D010—EP Toxic for selenium
K031—By-product salts generated in the production of MSMA and cacodylic acid
K084—Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds
K101—Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds
K102—Residues from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds
P010—Arsenic acid
P011—Arsenic (V) oxide
P012—Arsenic (III) oxide
P036—Dichlorophenylarsine
P038—Diethylarsine
P103—Selenourea
P114—Thallium selenite
U136—Cacodylic acid
U204—Selenious acid
U205—Selenium disulfide

For arsenic and selenium nonwastewaters, EPA is proposing concentration standards based on vitrification. The TSDR Survey indicates that no commercial vitrification capacity exists. Therefore, EPA is proposing to grant a two-year capacity variance to all of the surface-disposed arsenic and selenium nonwastewaters listed above. However, the Agency is requesting information on commercial vitrification capacity.

For arsenic and selenium wastewaters, EPA is proposing treatment standards for which chemical precipitation may be used as an alternative treatment. The TSDR survey indicates that adequate chemical precipitation capacity exists; therefore, EPA is not proposing to grant arsenic and selenium wastewaters a capacity variance.

(b) *Barium Wastes.* For D005 and P013 barium wastes, EPA is proposing acid or water leaching followed by chemical precipitation as sulfate or carbonate or stabilization as methods of treatment for nonwastewaters, and a concentration standard based on chemical precipitation for wastewaters. EPA is not reopening promulgated treatment standards for cyanides in P013 for comment. Sufficient capacity exists to treat surface-disposed D005 and P013 wastes. Therefore EPA is not proposing to grant a national capacity variance for these wastes.

(c) *Cadmium Wastes.* For D006 wastes, EPA is proposing treatment standards for three categories: cadmium batteries, wastewaters, and nonwastewaters. For D006 cadmium batteries, EPA is proposing thermal recovery as a method of treatment. For D006 wastewaters, EPA is proposing concentration standards based on chemical precipitation. For D006 nonwastewaters, EPA is proposing two options: (1) Concentration standards based on stabilization, and (2) stabilization or recovery as a method of treatment. EPA believes that sufficient capacity exists to treat surface-disposed cadmium nonwastewaters and wastewaters. Therefore, EPA is not proposing to grant a national capacity variance for them. Because cadmium batteries are land-disposed but there is no capacity for thermal recovery, EPA is proposing to grant a national capacity variance for cadmium batteries.

(d) *Chromium Wastes.* For D007 chromium waste and U032 (calcium chromate) wastewaters and nonwastewaters, EPA is proposing concentration treatment standards based on chromium reduction and lime or sulfide precipitation and sludge dewatering. EPA believes sufficient treatment capacity exists for the volume of these wastes. Therefore, EPA is not proposing to grant a national capacity variance for them.

(e) *Lead Wastes.*

D008—EP toxic for lead
P110—Tetraethyl lead
U144—Lead acetate
U145—Lead phosphate
U146—Lead subacetate

For D008 high-concentration lead wastes, EPA is proposing thermal

recovery as a method of treatment for nonwastewaters. For D008 low-concentration lead wastes, EPA is proposing treatment standards based on stabilization for nonwastewaters. For D008 low-concentration nonwastewaters containing significant concentrations of organics, EPA is proposing that these wastes be pretreated by incineration prior to stabilization. For all U145 and D008 wastewaters, treatment standards are proposed based on chemical precipitation with lime or sulfide, and sludge dewatering. For D008 lead acid batteries, EPA is proposing thermal recovery as a method of treatment. EPA believes sufficient capacity exists for surface-disposed D008 wastes. Therefore, EPA is not proposing to grant a national capacity variance for them.

EPA solicits comment, however, on the need for a national capacity variance for lead-bearing wastes that are stored in land disposal units such as piles *before* being resmelted. EPA has limited information suggesting that secondary lead smelters may use storage piles for lead-bearing wastes prior to smelting. This storage is a form of land disposal under section 3004(k). (As noted earlier, however, batteries themselves are containers and so placement of a battery in a storage pile is not land disposal under section 3004(k), any more than placement of a 55-gallon drum. The storage standards for containers still apply to battery storage areas, however. See 40 CFR part 266 subpart G.) Consequently, there must be alternative storage (i.e., tanks or no-migration piles) for these materials. EPA therefore solicits comment on the volumes of lead-bearing wastes that are stored in land disposal units prior to treatment by metal recovery facilities, and the need for a national capacity variance for such materials.

For P110, U144, U145, and U146, EPA is proposing treatment standards based on chemical reduction and precipitation with lime or sulfide and sludge dewatering for wastewaters, and stabilization for nonwastewaters. For P110, U144, U145, and U146 nonwastewaters containing significant concentrations of organics, EPA is proposing pretreatment by incineration prior to stabilization. EPA believes sufficient capacity exists for the small volume of these wastes that are surface-disposed; therefore, EPA is not proposing to grant a national capacity variance for them.

(f) *Mercury Wastes.*

D009—EP toxic for mercury
K071—Chlorine production wastes
K106—Wastewater treatment sludges from the mercury cell process in chlorine production
P065—Mercury fulminate
P092—Phenylmercuric acetate
U151—Mercury

For D009, K071, K106, P065, P092 and U151 wastewaters, EPA is proposing concentration standards based on chemical precipitation. Mercury-bearing wastewaters containing hexavalent chromium may require chromium reduction prior to treatment of the mercury. Likewise, wastewaters containing organics may require chemical oxidation prior to treatment of the mercury.

For K106 and U151, EPA is proposing to establish a low mercury subcategory and high mercury subcategory for nonwastewaters. For the high mercury subcategory, EPA is proposing roasting or retorting as a method of treatment. For the low mercury subcategory, EPA is proposing concentration standards based on acid leaching. Residues from the acid leaching of the low mercury subcategory may require thermal recovery of mercury.

Treatment standards for K071 nonwastewaters were originally promulgated in the First Third rule. EPA is proposing to revise the standards for the high mercury concentration subcategory. For these high mercury nonwastewaters, EPA is now proposing roasting or retorting as a method. For the low mercury subcategory, promulgated standards are unchanged.

For D009, P065, and P092 nonwastewaters, EPA is proposing roasting or retorting as a method for high mercury concentrations. If the organic content is too high for the roasting or retorting, incineration would be required as a pretreatment step for these nonwastewaters.

EPA believes sufficient capacity exists to treat the volume of all surface-disposed mercury wastewaters. Thus, EPA is not proposing to grant a variance for them. Current data do not provide sufficient information on the volume of mercury wastes that contain high and low concentrations of mercury. Although EPA does not have any data on these mercury waste volumes, there is no commercial acid leaching capacity and there is insufficient mercury retorting capacity for D009, K071, K106, P065, P092, and U151 nonwastewaters. Thus, EPA is proposing to grant a two-year national variance for mercury nonwastewaters.

(g) *Silver Wastes.* Treatment standards for P099 and P104 nonwastewaters were promulgated in the Second Third final rule. For D011, P099, and P104 wastewaters, EPA is proposing concentration standards based on chemical precipitation. For D011 nonwastewaters, EPA is proposing two alternatives: (1) A concentration standard based on stabilization; or (2) recovery or stabilization as a method of treatment. EPA believes adequate capacity exists to treat surface-disposed D011, P099, and P104 wastes. Therefore, EPA is not proposing a capacity variance for them.

(h) *Thallium Wastes.*

P113—Thallic oxide
P114—Thallium selenite
P115—Thallium (I) sulfate
U214—Thallium (I) acetate
U215—Thallium (I) carbonate
U216—Thallium (I) chloride
U217—Thallium (I) nitrate

For treating P113, P115, U214, U215, U216, and U217, EPA is proposing recovery or stabilization as a method of treatment for nonwastewaters and concentration standards based on chemical oxidation followed by chemical precipitation and filtration for wastewaters. For P114, EPA is proposing stabilization or vitrification for nonwastewaters, and concentration standards based on chemical oxidation followed by chemical precipitation and filtration for wastewaters. Based on the TSDR Survey, adequate capacity exists for surface-disposed thallium wastewaters. Therefore, EPA is not proposing to grant a national capacity variance for thallium wastewaters. No commercial capacity exists for vitrification; therefore, EPA is proposing to grant P114 nonwastewaters a national capacity variance. Capacity is available to treat other thallium nonwastewaters; therefore, EPA is not proposing to grant other thallium nonwastewaters a national capacity variance.

(i) Vanadium Wastes.

P119—Ammonium vanadate
P120—Vanadium pentoxide

For treating these wastes, EPA is proposing thermal recovery or stabilization as a method of treatment for nonwastewaters, and concentration standards based on chemical precipitation for wastewaters. Although no commercial vanadium recovery capacity has been identified, adequate stabilization capacity exists for treating P119 and P120 nonwastewaters. Therefore, EPA is not proposing to grant a two-year national capacity variance for P119 and P120 nonwastewaters. Adequate capacity exists for chemical precipitation, and therefore, EPA is not proposing to grant P119 and P120 wastewaters a national capacity variance.

(5) Specific Treatability Groups. These groups include wastes from pigment production (K002 through K008); cyanide wastes (F006, F019, K011, K013, K014, P031, P033, U246); K015; gases (P076, P078, U115); K086; F002 and F005; K022, K025, K026, K035, and K083; K036 and K037; F024 and F025; K044, K045, K046, K047; K060; K061; K069; K100 wastes; and K048 through K052.

(a) *Cyanide Wastes.* For F006 wastewaters, EPA is proposing BDAT treatment standards based on alkaline chlorination for cyanides and chemical reduction and precipitation with lime and sulfide and sludge dewatering for metals. EPA believes that adequate capacity exists for the volume of surface-disposed F006 wastewaters. Therefore, EPA is not proposing a variance for them.

Treatment standards for F019 wastewaters are based on the performance of wet-air oxidation for cyanides. Treatment standard for metals in wastewaters are based on chromium reduction, chemical precipitation with lime and sulfide, and sludge dewatering. Treatment standards for the nonwastewaters are based on the performance of wet-air oxidation for cyanides and stabilization for metals. EPA believes that inadequate capacity exists for wet-air oxidation; therefore, EPA is proposing to grant a two-year variance to F019 nonwastewaters. Because sufficient wet-air oxidation capacity exists to treat the F019 wastewaters, EPA is not proposing to grant a national capacity variance for F019 wastewaters.

Treatment standards for the surface disposal of nonwastewater forms of K011, K013, and K014 were promulgated in the Second Third rule. For K011, K013, and K014 wastewaters, EPA is proposing BDAT treatment standards based on wet-air oxidation. The TSDR Survey shows that sufficient capacity exists for the volume of surface-disposed K011, K013, and K014 wastewaters. Therefore, EPA is not proposing to grant a capacity variance for them.

For the P and U wastes containing cyanide, P031 (Cyanogen), P033 (Cyanogen chloride), and U246 (Cyanogen bromide), EPA is proposing incineration or alkaline chlorination as methods for both wastewaters and nonwastewaters. EPA has determined that sufficient capacity exists to treat these wastes; therefore, EPA is not proposing to grant a national capacity variance for these wastes.

(b) *F024 and F025 Wastes.* EPA promulgated standards for F024 wastewaters and nonwastewaters in the Second Third rule based on rotary kiln incineration for organic constituents and chemical precipitation and vacuum filtration for metal constituents in wastewaters. Today, EPA is proposing stabilization as the BDAT for treatment of metal constituents in F024 nonwastewaters. The TSDR Survey indicates that adequate treatment capacity exists for the volume of surface-disposed F024 nonwastewaters requiring treatment. Therefore, EPA is not proposing to grant a capacity variance for them. However, the standard for F024 includes a standard for dioxins. There is concern that there may not be adequate capacity for these wastes, because facilities may not be accepting wastes that must meet a dioxin standard. EPA is soliciting comments on the need for and the availability of capacity for F024, including information on capacity needed and available to meet dioxin standards.

Although listing of F025 waste (condensed light ends, spent filters and filter aids, and spent dissicant wastes from the production of certain chlorinated aliphatics) has not been promulgated as a RCRA hazardous waste, EPA believes that promulgation of the listing for F025 will occur prior to the promulgation of the Third Third final rule. Most generators already treat F025 as if it were hazardous, and some facilities comingle F024 and F025. Today EPA is proposing concentration treatment standards for all categories of F025 wastewaters and nonwastewaters. The BDAT for F025 wastewater and nonwastewater light ends, spent filters, filter aids and dessicants is incineration. EPA has determined that no alternative treatment capacity is needed for F025 wastes. Therefore, EPA is not proposing to grant these wastes a national capacity variance.

(c) *Wastes from Inorganic Pigment Production.* EPA is proposing to revoke the no land disposal standard previously promulgated for K004, K005, K007, and K008 nonwastewaters. EPA is proposing BDAT based on chromium reduction and precipitation and filtration for K002, K003, K004, K005, K006, K007, and K008 wastewaters and nonwastewaters. EPA believes that sufficient capacity exists for surface-disposed K002, K003, K004, K005, K006, K007, and K008 wastewaters and nonwastewaters. Therefore, EPA is not proposing to grant a capacity variance for them.

(d) *K015 Wastes.* EPA is proposing to revoke the no land disposal based on no generation standard previously promulgated for K015 (benzyl chloride distillation wastes) nonwastewaters because of the reported generation of ash containing this waste. Consequently, for this waste, EPA is proposing treatment standards for five organic and two metal constituents. Treatment standards for the organic constituents are based on a transfer of the performance data of incineration for similar wastes. Treatment standards for metal constituents are based on a transfer of the performance of stabilization of incinerator ash for similar wastes. These technologies both have available capacity; therefore, EPA is not proposing a variance for K015 nonwastewaters.

(e) *K022, K025, K026, K035, and K083 Wastes.* EPA promulgated treatment standards for K022, K025 and K083 nonwastewaters in the First Third rule. For organics in K022 wastewaters and nonwastewaters, EPA is proposing treatment standards based on incineration. For metals in K022 wastewaters, EPA is proposing treatment standards based on chemical precipitation. Alternatively, EPA is proposing K022 treatment standards expressed as methods of treatment.

For K025 nonwastewaters, EPA is revising the treatment standard of no land disposal based on no generation. For K025 wastewaters, EPA is proposing concentration treatment standards for organics based on liquid-liquid extraction and steam stripping and carbon adsorption. The proposed treatment standards for K025 nonwastewaters are based on incineration. Alternatively, EPA is proposing to require these methods of treatment as a prerequisite for land disposal of K025 wastewaters and nonwastewaters. Incineration of K025 wastewaters is also proposed as an equivalent method of treatment for K025 wastewaters.

For K026 and K035, the treatment standards for wastewaters and nonwastewaters are based on incineration. Alternatively, EPA is proposing to require incineration as a prerequisite for land disposal of K026 wastewaters and nonwastewaters. EPA is revising the standard of no land disposal for K083 nonwastewaters. For organics identified in K083 wastewaters and nonwastewaters, EPA is proposing treatment standards based on incineration. For metals in K083 wastewaters, EPA is proposing treatment standards based on chemical precipitation. For metals in K083 nonwastewaters, EPA is proposing treatment standards based on stabilization. Alternatively, EPA is proposing K083 treatment standards expressed as methods of treatment.

EPA believes that adequate capacity exists for K022 wastewaters, K025

wastewaters and nonwastewaters, K026 wastewaters and nonwastewaters, K035 wastewaters and nonwastewaters, and K083 wastewaters and nonwastewaters, and therefore, EPA is not proposing to grant these wastes a capacity variance.

(f) *K036 and K037 Wastes.* EPA promulgated a treatment standard of no land disposal based on no generation for K036 nonwastewaters in the First Third rule. EPA also promulgated treatment standards based on incineration for K037 wastewaters and nonwastewaters in the First Third rule. Today, EPA is proposing revised treatment standards for the nonwastewater form of K036 (still bottoms from toluene reclamation distillation in the production of disulfoton) and the wastewater form of K037 (wastewater treatment sludges from the production of disulfoton). EPA is proposing to transfer the concentration standards from K037 nonwastewaters based on incineration to other forms of K036 nonwastewaters (e.g., K036 spill residues). EPA believes that adequate capacity exists for these surface-disposed K036 nonwastewaters. Therefore, EPA is not proposing to grant a national capacity variance for them.

For K037 wastewaters, EPA is proposing a revised concentration standard from one based on rotary kiln incineration to one based on biological treatment. EPA believes that adequate capacity exists for surface-disposed K037 wastewaters; therefore, EPA is not proposing a capacity variance for them.

(g) *K044, K045, K046, K047 wastes.* For K044, K045, and K047, EPA is proposing to revoke the no land disposal based on reactivity standard promulgated in the First Third rule. EPA is proposing deactivation as a method of treatment for wastewaters and nonwastewaters. EPA believes adequate capacity exists to treat these wastes; therefore, EPA is not proposing to grant them a national capacity variance.

In the First Third rule, EPA promulgated treatment standards based on stabilization for K046 nonreactive nonwastewaters. Today EPA is proposing standards for K046 reactive nonwastewaters based on stabilization. For K046 reactive wastewaters, EPA is proposing the use of deactivation and chemical precipitation, settling, and filtration as a BDAT. For K046 non-reactives wastewaters, EPA is proposing chemical precipitation, settling and filtration for wastewaters as a BDAT. EPA believes that adequate capacity exists for these wastes and, therefore, EPA is not proposing to grant them a national capacity variance.

(h) *K060 Wastes.* Today EPA is proposing to revoke the no land disposal based on no generation standards promulgated for K060 nonwastewaters in the First Third rule. For K060 nonwastewaters, EPA is proposing incineration as the BDAT. EPA is proposing BDAT standards for K060 wastewaters based on biological treatment. For K060 arsenic nonwastewaters, EPA is proposing BDAT standards based on vitrification. EPA believes that adequate capacity exists for the volume of surface-disposed K060 wastewaters and nonwastewaters requiring treatment. Therefore, it is not proposing to grant a capacity variance for them.

(i) *K061 Wastes.* In the First Third final rule, EPA promulgated treatment standards for K061 nonwastewaters. In this rule, two subcategories for nonwastewater forms of K061 were defined. The low zinc subcategory (less than 15 percent) and the high zinc category (greater than 15 percent) were defined as separate treatability groups. BDAT for the low zinc subcategory was based on the performance of stabilization. For the high zinc subcategory, the final standard was "No Land Disposal Based on High Temperature Metals Recovery as a Method of Treatment" technology. Today, EPA is proposing to revise the promulgated treatment standard for the high zinc subcategory to be resmelting in a high temperature zinc metal recovery furnace. For the First Third final rule, K061 nonwastewaters were granted a national capacity variance. Today's proposed refinement in the treatment standard does not change the schedule for the capacity variance for K061 nonwastewaters.

Today, EPA is proposing the BDAT standard based on chromium reduction and chemical precipitation with lime and sulfide and sludge dewatering for wastewaters. EPA believes adequate capacity exists for the volume of surface-disposed K061 wastewaters. Therefore, EPA is not proposing to grant a variance for them.

(j) *K069 Wastes.* Today, EPA is proposing to revoke the no land disposal based on recycling standard promulgated in the First Third rule for the non-calcium sulfate subcategory for K069 nonwastewaters. For calcium sulfate nonwastewaters, EPA is proposing a standard based on the performance of stabilization. For non-calcium sulfate nonwastewaters, EPA is proposing recycling as a method of treatment. For wastewaters, EPA is proposing a BDAT standard based on chemical precipitation. EPA believes adequate capacity exists to treat the volume of surface-disposed K069 wastewaters and nonwastewaters; therefore, EPA is not proposing a capacity variance for them.

(k) *Revisions to K086 Wastes.* EPA promulgated treatment standards for K086 solvent washes in the First Third Rule based on incineration and stabilization of ash for nonwastewaters and incineration and chromium reduction, chemical precipitation and filtration for wastewaters. Today EPA is proposing to revise these standards and propose standards for the caustic sludges and water sludges subcategories. EPA is proposing treatment standards for all K086 wastewater and nonwastewater wastes based on incineration for organics and chromium reduction, followed by excess lime precipitation, and filtration for metals. As a "worst-case" analysis, EPA included in the capacity analysis conducted for First Third wastes all of the K086 wastes identified in the TSDR Survey. Consequently, no additional capacity will be required by today's proposal, and no capacity variance is being proposed for K086 wastes.

(l) *K100 Wastes.* For K100 nonwastewaters, EPA is proposing to revoke the no land disposal based on no generation standards promulgated in the First Third rule. Today, EPA is proposing treatment standards based on stabilization for nonwastewaters and chemical precipitation for wastewaters. EPA believes adequate capacity exists to treat the volume of surface-disposed K100 wastes. Therefore, EPA is not proposing a capacity variance for them.

(m) *Gases.* This treatability group includes the following groups: P076 (Nitric oxide), P078 (Nitrogen dioxide), and U115 (Ethylene oxide). For P076, P078, and U115 wastewaters and nonwastewaters, EPA is proposing recovery as a method of treatment. EPA believes that these wastes are generated as gases and industry typically reuses or recovers compressed gases directly. EPA also believes that these gases are not land disposed. Although no commercial capacity exists for recovery of these gases, EPA is not proposing to grant a national capacity variance for these wastes, because the Agency believes these wastes will not require commercial alternative treatment.

(n) *Revisions to Petroleum Refining Wastes (K048–K052).* For the First Third rule, EPA promulgated treatment standards for K048 through K052 based on data from incineration, solvent extraction, and treatment of the metals in wastewater and nonwastewater residuals. Today, EPA is proposing additional treatment standards based on a reevaluation of the data and is proposing that these revised standards,

with five exceptions, take effect exactly one year following the Third Third rulemaking promulgation date. The five exceptions, whose standards have been increased based on the revised data are: benzo (a) pyrene, ortho and para cresols, di-n-butyl phthalate, and phenol. For these exceptions, EPA is proposing that the new standards become effective on August 8, 1990, when the capacity variance issued on K048 through K052 wastes expires.

EPA is proposing treatment standards for cyanide K048 through K052 wastewaters based on incineration. EPA is also proposing BDAT concentration standards for organics in K048 through K052 nonwastewaters based on solvent extraction. The Agency is not proposing revisions to promulgated BDAT treatment standards for wastewater constituents in K048 through K052 wastewaters, other than cyanide, nor for any metal constituents in the K048 through K052 wastewaters or nonwastewaters. The Agency has only revised the concentration-based treatment standards for K048 through K052 nonwastewaters; EPA has not reevaluated the selection of solvent extraction and incineration as BDAT for organics in nonwastewaters. Because the capacity analysis was conducted for these wastes in the First Third rule and the technologies needed to achieve BDAT treatment standards are not being revised, EPA did not reevaluate the alternative capacity requirements for K048 through K052 wastes.

(o) *Additional Treatment Standards for F002 and F005 Wastes.* Treatment standards for F002 and F005 were promulgated in the Solvents and Dioxins rule. Today EPA is proposing revisions to the treatment standards for F002 and F005 to account for four newly listed F002 and F005 constituents. The BDAT for wastewaters is based on biological treatment, and liquid-liquid extraction and steam stripping and carbon adsorption. The BDAT for nonwastewaters is based on incineration. The Agency believes that adequate treatment capacity exists for these wastes and therefore, EPA is not proposing a national capacity variance for these wastes.

(p) *Capacity Determination for Multi-Source Leachate*—(1) *Definition and Applicability.* EPA defines multi-source leachate as leachate that is derived from the treatment, storage, disposal, or recycling of more than one listed hazardous waste. Under today's proposed rule, such leachate will be restricted from land disposal. Residues from treating such leachate, as well as residues such as soil and ground water that are contaminated by such leachate, are also restricted from land disposal under this rule. Leachate deriving from a single source must meet the standard developed for the waste code from which it is derived; therefore, such leachate is not subject to the standards developed for multi-source leachate. (EPA is also soliciting comment on modifying the definition of multi-source leachate.)

(2) *Previous Treatment Standards.* EPA originally imposed a land disposal restriction on multi-source leachate under the First Third of the land disposal restrictions (LDRs). Under the LDRs, multi-source leachate would have to be treated to satisfy all the standards applicable to the original wastes from which the leachate is derived (see 53 FR 31146–150 (August 17, 1988)). EPA revisited the issue of treatability of multi-source leachate to address concerns raised by the hazardous waste management industry, and rescheduled promulgation of a land disposal restriction for multi-source leachate to the Third Third of the LDRs in order to fully study the most appropriate section 3004(m) treatment standards for multi-source leachate (see 54 FR 8264 (January 27, 1989)). Leachate derived from disposal of the listed dioxin-containing hazardous wastes and California list wastes were not rescheduled.

(3) *Proposed Treatment Standards.* In section 7.b of this preamble, EPA is proposing two options for the development of treatment standards for multi-source leachate. Under the first option, EPA would continue the application of the carry-through principle under which multi-source leachate must meet the standards established for all the waste codes from which it is derived. Under the second option, EPA would establish one set of wastewater standards and one set of nonwastewater standards for multi-source leachate; these standards would also apply to residuals derived from the storage, treatment, or disposal of multi-source leachate. For treating multi-source leachate in the form of wastewater, EPA is considering recommending the treatment of wastewaters by wet-air oxidation or biological treatment, followed by carbon adsorption, or incineration. For nonwastewaters derived from treating multi-source leachate, EPA is considering a treatment standard based on incineration for organic constituents and on stabilization for metals.

(4) *Determination of Volumes Requiring Alternative Treatment or Recovery Capacity.* EPA relied primarily on data from the TSDR Survey and from the Generator Survey to determine whether sufficient alternative treatment or recovery capacity is available for multi-source leachate. Multi-source leachate is primarily generated in landfills. All the active regulated facilities generating and managing leachate are accounted for in the TSDR and Generator Surveys because (1) the TSDR Survey is a census of all the hazardous waste treatment, storage, disposal, and recycling facilities in the country; and (2) the Generator Survey, while it is a sample of hazardous waste generators, includes every facility that responded to the TSDR Survey.

EPA recognizes that multi-source leachate can also be generated at closed facilities. However, only sparse data characterizing leachate currently exist for those facilities and how much is presently land-disposed in surface disposal units. The Agency requests comments on the characterization of multi-source leachate at closed facilities and how much is presently land-disposed in surface disposal units.

EPA also welcomes the submission of current data from interested parties on the volumes of multi-source leachate generated, the current management of such leachate, the amount of residuals generated, and the waste constituent composition of multi-source leachate.

In addition to data from the TSDR and Generator Surveys, EPA examined data submitted as part of a leachate study plan by four major companies managing hazardous wastes at 17 facilities. These companies included Chemical Waste Management (CWM)/Waste Management of North America (WMNA), Browning Ferris Industries (BFI)/CECOS, DuPont, and Dow Chemical.

Based on evaluation of this information, EPA estimated volume of multi-source leachate requiring alternative treatment or recovery. EPA recognizes that the actual total quantity of multi-source leachate generated, managed, and land-disposed may be much larger than the volumes reported in the surveys upon which this analysis is based. Consequently, EPA welcomes comments by interested parties on the current generation, management, and land disposal of multi-source leachate.

(5) *Determination of National Variances for Multi-Source Leachate.* EPA analyzed the alternative treatment or recovery capacity for two categories of multi-source leachate: wastewaters and nonwastewaters.

Treatment standards for wastewaters are based on wet-air oxidation and carbon adsorption, biodegradation and

carbon adsorption, and incineration for organic constituents; for inorganic constituents, treatment standards are based on chemical precipitation. Given the very low volumes of surface-disposed multi-source leachate wastewaters and the adequate capacity to treat these wastes using the above treatment technologies, EPA is not proposing to grant a variance for surface-disposed multi-source leachate wastewaters.

Treatment standards for nonwastewaters are based on incineration as a method for wastes containing organic constituents, and on stabilization for wastes containing inorganic constituents. EPA is proposing to grant a two-year variance for surface-disposed multi-source leachate nonwastewaters in the form of non-atomizable sludges and solids, because there is insufficient incineration capacity for these wastes. However, EPA is not proposing to grant a national capacity variance to nonwastewater multi-source leachate in the form of atomizable organic liquids because there are very low volumes of such wastes and there is sufficient capacity for them.

(q) *Capacity Determination for Mixed Radioactive Wastes*—(1) *Background.* EPA has defined a mixed RCRA/radioactive waste as any matrix containing a RCRA hazardous waste and a radioactive waste subject to the Atomic Energy Act (53 FR 37045, 37046, September 23, 1988). Regardless of the type of radioactive constituents that these wastes contain (e.g., high-level, low-level, or transuranic), they are subject to RCRA hazardous waste regulations, including the land disposal restrictions.

Radioactive wastes that are mixed with spent solvents, dioxins, or California list wastes are subject to the land disposal restrictions already promulgated for those hazardous wastes. EPA has determined, however, that radioactive wastes that are mixed with First Third and Second Third wastes will be included in the Third Third rulemaking (40 CFR 268.12(c)). Thus, today's proposal addresses radioactive wastes that contain First Third, Second Third, and Third Third wastes.

(2) *Data Sources.* The Department of Energy (DOE) is a major generator of mixed RCRA/radioactive wastes. For data on DOE wastes, EPA used a data set submitted by DOE. The data set, which is based on a recent DOE survey, contains information on mixed RCRA/radioactive waste inventories, generation rates, and existing and planned treatment capacity at 21 DOE facilities.

A variety of non-DOE facilities also generate mixed RCRA/radioactive wastes, including nuclear power plants, academic and medical institutions, and industrial facilities. A variety of information sources were used to identify the non-DOE generators, estimate the quantities and types of mixed RCRA/radioactive wastes that they generate, and determine current management practices and treatment capacity. These sources included the TSDR Survey, the Generator Survey, and other studies.

EPA believes that these sources provide the best available information on non-DOE mixed RCRA/radioactive wastes. However, EPA is interested in obtaining additional information on their generation, characterization, and management.

(3) *Determinations of National Variances for Mixed RCRA/Radioactive Wastes.* After investigating the data sources noted above, EPA estimated that approximately 363 million gallons of radioactive waste mixed with First, Second, and Third Third wastes will require treatment. This volume includes wastes generated annually as well as untreated wastes in storage and contaminated soil and debris. EPA has also determined that alternative treatment capacity is not available for mixed RCRA/radioactive wastes. Consequently, EPA proposes to grant a national variance for mixed RCRA/radioactive wastes. Although DOE has plans to increase its capacity to treat mixed RCRA/ radioactive wastes, data supplied by DOE indicate that DOE currently lacks adequate capacity to treat its mixed RCRA/radioactive wastes. In addition, adequate commercial treatment capacity is not available. Thus, EPA has determined that sufficient alternative treatment capacity is not available and is proposing a two-year national capacity variance for mixed RCRA/radioactive wastes.

EPA recognizes that its information on mixed RCRA/radioactive wastes generated and managed by non-DOE facilities may be incomplete. Consequently, the Agency requests comments by interested parties on the current generation of mixed RCRA/radioactive wastes. Of particular interest to EPA is information on mixtures of radioactive wastes and First, Second, or Third Third waste streams.

2. Determination of Alternative Capacity and Effective Dates for Underground Injected Waste. The Agency is today proposing effective dates for the restrictions against the underground injection of virtually all remaining RCRA section 3004(g) wastes, including characteristic wastes, for which no effective dates have been set. EPA is not acting on certain newly listed or newly identified wastes. EPA solicits comment on the volumes and characteristics of the wastes represented in this section, as well as any information on the characteristics and volumes of any multi-source leachate that is currently being injected.

a. Proposed Effective Date Determinations for Wastes With Treatment Standards Proposed in Today's Rule

Consistent with the policy established in previous land disposal restrictions, the Agency is proposing to restrict on May 8, 1990, the underground injection of all wastes, with treatment standards proposed in today's rule, that are not currently being deepwell-injected. This decision is consistent with the intent of RCRA in moving hazardous wastes away from disposal and toward treatment. Wastes that are not currently being deepwell-injected are listed in Table III.B.2.(a).

The volumes of deepwell-injected wastes that require alternative commercial treatment and/or recycling capacity are presented in Table III.B.2.(b). This table does not include wastes that are currently being deepwell-injected, and the facility has an appropriate on-site alternative treatment technology for treating the waste.

The Agency is proposing effective date determinations for all underground injected wastes in treatability groups. If there is adequate available alternative treatment capacity for all the injected volume in a single treatability group, then every waste in that group will be restricted from underground injection on May 8, 1990. If there is inadequate available alternative treatment capacity for the injected volume in a single treatability group, then the Agency is proposing to allocate as much of the available capacity to the wastes requiring treatment. All remaining wastes in the treatability group, for which no capacity exists, will receive a two-year national capacity variance. EPA believes this is most consistent with Congressional intent, which both favors treatment over disposal, and minimal use of capacity variances. EPA specifically solicits comment on this approach. Table III.B.2.(c) indicates the amount of capacity available for treating underground injected wastes, the

demand from these injected wastes on each treatability group, and which treatability groups require capacity variances. More information on the Agency's procedure for apportioning treatment capacity in these treatability groups can be found in the Third Thirds Background Document for the treatability groups.

TABLE III.B.2.(a)— WASTES (WITH PROPOSED TREATMENT STANDARDS)THAT ARE NOT UNDERGROUND INJECTED

[Banned from underground injection on May 8, 1990]

First Third Codes:
K004, K008, K015 (nonwastewaters, K017, K021 (wastewaters), K022 (wastewaters), K035, K036 (nonwastewaters), K037 (wastewaters), K044, K045, K046 (reactive nonwastewaters and all wastewaters), K047, K060 (wastewaters), K061 (wastewaters), K069 (CaSO4 nonwasterwaters and all wastewaters), K071 (nonwastewaters), K073, K084, K085, K101 (high arsensic nonwastewaters), K102 (high arsenic nonwastewaters), K106, P001, P004, P010 P012, P015, P016, P018, P036, P037, P068, P070, P081, P082, P084, P087, P092, P105, P108, P110, P115, P120, P123, U010, U016, U018, U020, U022, U029, U036, U041, U043, U046, U050, U051, U053, U061, U063, U064, U066, U067, U077, U078, U086, U089, U108, U115, U124, U129, U130, U137, U155, U158, U171, U177, U180, U209, U237, U238, U248, U249

Second Third Codes:
K025 (Wastewaters), K029 (wastewaters), K041, K042, K095 (wastewaters), K096 (wastewaters), K098, K105, P002, P003, P007, P008, P013 (wastewaters), P014, P026, P027, P049, P054, P060, P066, P067, P072, P099, K028 (wastewaters), P112, P113, P114, U003, U005, U011, U014, U015, U021, U023, U025, U026, U035, U047, U049, U057, U059, U060, U062, U073, U083, U092, U093, U094, U095, U097, U098, U099, U101, U109, U110, U111, U114, U116, U119, U127, U128, U131, U135, U142, U143, U144, U146, U149, U150, U161, U163, U164, U168, U172, U173, U174, U176, U178, U179, U189, U193, U196, U203, U205, U206, U208, U213, U214, U215, U216, U217, U218

Third Third Codes:
K003, K005 (wastewaters), K006, K007 (wastewaters), K026, K033, K034, K100 (wastewaters), P006, P009, P017, P022, P023, P024, P028, P031, P033, P034, P038, P042, P045, P046, P047, P064, P065, P073, P076, P077, P078, P088, P093, P095, P096, P101, P103, P116, P118, P119, U004, U006, U017, U024, U027, U030, U033, U038, U039, U042, U048, U052, U068, U071, U072, U075, U076, U079, U081, U082, U084, U085, U090, U091, U096, U117, U120, U121, U123, U125, U126, U132, U136, U139, U141, U145, U148, U152, U153, U156, U166, U167, U181, U182, U183, U184, U186, U187, U191, U201, U202, U204, U207, U222, U225, U234, U236, U240, U243, U247

Newly Listed Wastes:
F025

Table III.B.2.(b)—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR UNDERGROUND INJECTED WASTES

[Million gallons/year]

Waste code	Capacity required for underground injected wastes
First Third Code:	
F006	5.0
F019	<0.1
K011	433.2
K013	407.2
K014	131.0
K031	1.1
K086	0.2
P005	<0.1
P011	<0.1
P020	0.1
P048	0.1
P050	0.4
P058	<0.1
P059	0.4
P069	0.1
P102	<0.1
P122	<0.1
U007	0.1
U009	<0.1
U012	0.1
U019	0.8
U031	0.1
U037	<0.1
U044	0.1
U074	<0.1
U103	<0.1
U105	0.1
U122	0.1
U133	0.1
U134	0.2
U151	0.1
U154	0.3
U157	0.1
U159	<0.1
U185	1.0
U188	0.4
U192	0.1
U200	0.3
U210	1.0
U211	0.1
U219	<0.1
U220	<0.1
U226	0.1
U227	2.7
U228	<0.1
Second Third Code:	
K097	<0.1
P057	<0.1
U002	0.1
U008	0.1
U032	<0.1
U070	0.1
U080	2.8
U106	0.1
U138	0.1
U140	1.0
U147	<0.1
U162	0.1
U165	<0.1
U169	0.1
U170	0.3
U239	0.2
U244	<0.1
Third Third Code:	
D001	6.9
D002	1924.5
D003	1709.2
D004	8.3
D005	1.3
D006	1.6
D007	201.2
D008	3.7
D009	1.2
D010	85.2
D011	0.3
D012	2.3
D013	2.3
D014	2.4
D015	2.3
D016	2.3
D017	2.3
K002	0.1
K032	<0.1
K083	5.0
P051	<0.1
P056	<0.1
P075	<0.1
U001	0.5
U034	<0.1
U045	<0.1
U055	0.1
U056	<0.1
U112	<0.1
U113	<0.1
U118	<0.1
U160	<0.1
U194	<0.1
U197	0.1
Leachate	13.4

TABLE III.B.2.(c)—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT (INCLUDING RECYCLING) CAPACITY FOR UNDERGROUND INJECTED WASTES

[Millions of gallons/yr.]

Technology	Available capacity	Required capacity	Variance
Alkaline Chlorination	1.8	11	Yes.
Alkaline Chlorination and Chemical Precipitation	6.4	<1	No.
Carbon Adsorption and Chemical Precipitation	41	5	No.
Chemical Oxidation and Chemical Precipitation	22	1,684	Yes.

TABLE III.B.2.(c)—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT (INCLUDING RECYCLING) CAPACITY FOR UNDERGROUND INJECTED WASTES—Continued

[Millions of gallons/yr.]

Technology	Available capacity	Required capacity	Variance
Chemical Precipitation	339	117	No.
Chromium Reduction and Chemical Precipitation	12	239	Yes.
Combustion of Atomizable Liquids	233	43	No.
Mercury Retorting	<.01	<.02	Yes.
Neutralization	13	1,638	Yes.
Stabilization	329	3	No.
Treatment of Reactives and Chromium Reduction and Chemical Precipitation	<1	195	Yes.
Wet-Air Oxidation	<1	1,027	Yes.
Wet-Air Oxidation and Carbon Adsorption	<1	<1	No.
Wet-Air Oxidation and Carbon Adsorption and Chemical Precipitation	<1	13.4	Yes.
Wet-Air Oxidation Followed by Chemical Precipitation	<1	<1	No.

A number of the following treatability groups account for relatively small (less than 100,000 gallons/year) amounts of underground injected wastes. The Agency believes that these small streams place little demand on nationwide treatment capacity.

Presented below are the BDATs for treating deepwell-injected wastes.

(1) *Alkaline Chlorination.* Treatment standards based on alkaline chlorination are today being proposed for D003a (cyanide) and P056 wastes. As shown in Table III.B.2.(c), the 1.9 million gallons per year of available capacity are inadequate to address the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. Excluding D003a (cyanide), however, adequate capacity exists for the remaining waste. The Agency is proposing to grant a two-year capacity variance to D003a (cyanide) wastewaters. This waste will be restricted from injection on May 8, 1992.

(2) *Alkaline Chlorination and Chemical Precipitation.* Treatment standards based on alkaline chlorination and chemical precipitation are today being proposed for F006 cyanide wastewaters. As shown in Table III.B.2.(c), the 6.4 million gallons of available capacity is adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment.

(3) *Carbon Adsorption and Chemical Precipitation.* Treatment standards based on carbon adsorption (or wet air oxidation) and chemical precipitation are today being proposed for metals in K022 and K083 wastewaters. As shown in Table III.B.2.(c), the 41 million gallons of available capacity are adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment.

(4) *Chemical Oxidation and Chemical Precipitation.* The treatment standards based on a "treatment train" of chemical oxidation and chemical precipitation are today being proposed for D003b (sulfides) and P122 wastes. As shown in Table III.B.2.(c), the 24 million gallons per year of available capacity are inadequate to address the quantity of hazardous wastes annually deepwell-injected requiring this type of treatment. Excluding D003b (sulfide), however, adequate capacity exists to treat the remaining waste. The Agency is proposing a two-year capacity variance to D003b (sulfide) wastewaters. This waste will be restricted from injection on May 8, 1992.

(5) *Chemical Precipitation.* Wastewater forms of D004, D005, D006, D008a, (lead-non-battery), D009a (inorganic mercury), D010, D011, F006, K031, P011, U134, and U151 represent those wastes best treated by chemical precipitation. As shown in Table III.B.2.(c), the 339 million gallons per year of available chemical precipitation are adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. The Agency is proposing to restrict these wastes from underground injection on May 8, 1990.

(6) *Chromium Reduction and Chemical Precipitation.* Treatment standards based on chromium reduction and chemical precipitation are today being proposed for wastewater forms of D007, K002, K066, and U032. As shown in Table III.B.2.(c), the 48 million gallons per year of available chromium reduction and chemical precipitation are inadequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. Excluding D007, however, adequate capacity exists to treat the remaining wastes. The Agency is proposing to grant a two-year treatment capacity variance to D007, restricting this waste from underground injection on May 8, 1992.

(7) *Combustion of Liquids.* Combustion of liquids is the BDAT for D001a (ignitables), D012, D013, D014, D015, D016, D017, K032, K097, P005, P020, P048, P050, P051, P057, P059, P069, P075, P102, U001, U002, U007, U008, U009, U012, U019, U031, U034, U037, U044, U045, U055, U056, U070, U074, U080, U103, U105, U106, U112, U113, U115, U118, U122, U133, U138, U140, U147, U154, U157, U159, U160, U162, U165, U169, U170, U185, U188, U192, U194, U197, U200, U210, U211, U219, U220, U226, U227, U228, U239, and U244. Although U041, U077, U083, U084, and U213 are also underground injected, because they will be treated on-site, their quantities are not included in required capacity for combustion of liquids. As shown in Table III.B.2.(c), the 233 million gallons per year of available capacity are adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. These wastes will be restricted from underground injection on May 8, 1990.

(8) *Mercury Retorting.* Treatment standards based on mercury retorting are today being proposed for nonwastewater forms of D009 wastes. As shown in Table III.B.2.(c), the less than .01 million gallons per year of available mercury retorting capacity are inadequate to treat the quantity of this waste annually deepwell-injected requiring this type of treatment. The Agency is proposing to grant a two-year treatment capacity variance to the nonwastewater forms of D009, restricting this waste from underground injection on May 8, 1992.

(9) *Neutralization.* Neutralization is the treatment standard for D002 wastes. As shown in Table III.B.2.(c), the 15 million gallons per year of available neutralization capacity are inadequate to treat the quantity of hazardous waste annually deepwell-injected requiring

this type of treatment. The Agency is proposing to grant a two-year treatment capacity variance to the D002 wastewaters, restricting this waste from underground injection on May 8, 1992.

(10) *Stabilization.* For residuals containing D005, D006, D007, D008a (Lead-non-battery), D011, K002, P056, U002, U032, U055, and U188, the treatment standard being proposed is based on stabilization. As shown in Table III.B.2.(c), the 345 million gallons per year of available capacity are adequate to treat the quantity of hazardous waste residuals requiring this type of treatment. These residuals will be restricted from land disposal on May 8, 1990.

(11) *Treatment of Reactives and Chromium Reduction and Chemical Precipitation.* Treatment standards based on treatment of reactives and chromium reduction and chemical precipitation are today being proposed for D003 (explosives/reactives). As shown in Table III.B.2.(c), the less than 1 million gallons per year of available capacity are inadequate to treat the quantity of D003 (explosives/reactives) waste annually deepwell-injected requiring this type of treatment. The Agency is proposing to grant a two-year treatment capacity variance to this waste, restricting D003 (explosives/reactives) wastewaters from underground injection on May 8, 1992.

(12) *Wet-Air Oxidation.* K011, K013, and K014, represent all of the underground injected hazardous wastes addressed in today's rule that are best treated by wet-air oxidation. As shown in Table III.B.2.(c), the less than 1 million gallons of available capacity are inadequate to treat the quantity of K011 wastewaters, K013 wastewaters, and K014 wastewaters annually deepwell-injected requiring this type of treatment; therefore, EPA is proposing to grant a two-year treatment capacity variance to the wastewater forms of K011, K013, and K014, restricting these wastes from underground injection on May 8, 1992.

(13) *Wet-Air Oxidation And Carbon Adsorption.* For P058 wastewaters, treatment standards based on wet-air oxidation and carbon adsorption are being proposed today. As shown in Table III.B.2.(c), the less than 1 million gallons of available capacity are adequate to treat the quantity of P058 annually deepwell-injected requiring this type of treatment; therefore, EPA is not proposing to grant a national capacity variance for this waste.

(14) *Wet-Air Oxidation And Chemical Precipitation.* Treatment Standards based on wet-air oxidation and chemical precipitation are today being proposed for F019 wastewaters. As shown in Table III.B.2.(c), the less than 1 million gallons of available capacity are adequate to treat the quantity of F019 wastewaters annually deepwell-injected requiring this type of treatment; therefore, the Agency is not proposing to grant a two-year treatment capacity variance to F019 wastewaters, restricting this waste from underground injection on May 8, 1990.

Table III.B.2.(d) summarizes the wastes for which EPA isproposing to grant a two-year national capacity variance for underground injected wastes.

b. A Request for Data on Underground Injected K014 Nonwastewaters

EPA addressed the underground injection of K011 and K013 nonwastewaters in the June 8, 1989, Second Third final rule. In that rule, a two-year capacity variance was granted due to the lack of alternative incineration capacity (54 FR 26642). Action of K014 nonwastewaters was deferred so that the Agency could evaluate information on the composition, characteristics, and volumes associated with this waste. EPA currently has no information indicating that K014 nonwastewaters are being underground injected. The Agency specifically solicits information on this situation. EPA is proposing to restrict the underground injection of K014 nonwastewaters on May 8, 1990. EPA will take into account any data received before finalizing this date.

TABLE III.B.2.(d)—SUMMARY OF PROPOSED TWO-YEAR NATIONAL CAPACITY VARIANCE FOR UNDERGROUND INJECTED WASTES

Required alternative treatment technology	Waste code	Physical form
Alkaline Chlorination	D003[4]	Wastewater.
Chemical Oxidation and Chemical Precipitation	D003[5]	Wastewater.
Chromium Reduction and Chemical Precipitation	D007	Wastewater.
Mercury Retorting	D009	Nonwastewater.
Neutralization	D002	Wastewater.
Treatment of Reactives and Chromium Reduction & Chemical Precipitation	D003[6]	Wastewater.
Wet-Air Oxidation	K011	Wastewater.
	K013	Wastewater.
	K014	Wastewater.
Wet-Air Oxidation and Carbon Adsorption, Biological Treatment and Carbon Adsorption, or Incineration.	Leachate[7]	Wastewater.

[4] D003 (Cyanides).
[5] D003 (Sulfides).
[6] D003 (Explosives, Reactives).
[7] Multi-Source Leachate.

c. *Deepwell Injected Multi-Source Leachate.* EPA is estimating that multi-source leachate containing both organic and inorganic constituents are currently underground injected. The Agency is proposing a treatment standard for multi-source leachate wastewaters based on wet-air oxidation followed by carbon adsorption, biological treatment followed by carbon adsorption, or incineration for wastes containing organic constituents, and on chemical precipitation and filtration for wastes containing inorganic constituents. Because there is insufficient capacity to treat wastewaters based on these treatment technologies, EPA is proposing to grant a two-year variance for multi-source leachate that is underground injected.

d. *Mixed Radioactive Wastes.* EPA requires radioactive wastes mixed with RCRA regulated solvents and dioxins to meet LDRs and treatment standards established for those solvents and dioxins when mixed with radioactive wastes. EPA currently has no information on mixed radioactive wastes that are underground injected; therefore, EPA is not proposing to grant a national capacity variance for these wastes. EPA is requesting comments on mixed radioactive wastes that are being underground injected.

3. Capacity Variances for Contaminated Soil and Debris

EPA is proposing today to grant an extension of the effective date for certain First, Second, and Third Third contaminated soil and debris for which the treatment standards proposed today are based on combustion, wet-air oxidation, vitrification, or mercury retorting. RCRA section 3004(h)(2) allows the Administrator to grant an extension to the effective date based on the earliest date on which adequate alternative capacity will be available, but not to exceed two years " * * * after the effective date of the prohibition which would otherwise apply under subsection (d), (e), (f), or (g)." For First Third and Second Third wastes that have heretofore been subject to the "soft hammer" provisions (see section I.B.9) but for which treatment standards are being promulgated today, EPA is interpreting the statutory language " * * * effective date of the prohibition that would otherwise apply to be the date treatment standards are promulgated for these wastes (i.e., May 8, 1989), rather than the date on which the "soft hammer" provisions took effect (i.e., August 8, 1988, and June 8, 1989, respectively)." EPA finds this the best interpretation for two reasons. Extensions of the effective date are based on the available capacity of the BDAT for the waste, so it is reasonable that such an extension begin on the date on which treatment standards based on performance of the BDAT are established. Furthermore, EPA does not intend, in effect, to penalize generators of First Third and Second Third wastes by allowing less time (i.e., 28 months and 37 months, respectively) for the development of needed capacity, while generators of Third Third wastes in the same treatability group are allowed the maximum 48 months (assuming capacity does not become available at an earlier date). The proposed capacity extension would therefore commence for First, Second, and Third Third wastes on May 8, 1990, and would extend (at maximum) until May 8, 1992.

For the purpose of determining whether a contaminated material is subject to this capacity extension, 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 or sludges. EPA will determine on a case-by-case basis whether all or portions of such mixtures should be considered soil (52 FR 31197, November 8, 1986).

Debris is defined as materials that are primarily non-geologic in origin, such as grass, trees, stumps, shrubs, and man-made materials (e.g., concrete, clothing, partially buried whole or crushed empty drums, capacitors, and other synthetic manufactured items).

Debris may also include geologic materials (1) identified as not indigenous to the natural environment at or near the site, or (2) identified as indigenous rocks exceeding a 9.5mm sieve size that are greater than 10 percent by weight, or that are at a total level that, based on engineering judgment, will affect performance of available treatment technologies. In many cases, debris will be mixed with liquids or sludges. EPA will determine on a case-by-case basis whether all or portions of such mixtures should be considered debris.

Analysis of the TSDR Survey data indicated that a volume of approximately 17 million gallons of soil contaminated with wastes subject to this proposal were land-disposed in 1986. However, the Superfund remediation program has expanded significantly since that time. Plans for remediation at Superfund sites indicate that the excavation of soil and debris requiring treatment (including incineration and subsequent land disposal) will be far greater in 1990 than in 1986. Because of the major increase in the Superfund remediation program, EPA believes that capacity is not adequate for combustion of Third Third contaminated soil and debris. In addition, the TSDR Survey indicates that inadequate capacity exists for soils requiring vitrification, mercury retorting, and wet-air oxidation. A two-year extension of the effective date is proposed for Third Third contaminated soil and debris for which BDAT is combustion, vitrification, mercury retorting, or wet-air oxidation.

EPA is also proposing to grant a two-year national capacity variance to all soil and debris contaminated with mixed RCRA/radioactive waste. EPA has estimated that insufficient treatment capacity exists to handle soil and debris contaminated with mixed radioactive waste.

EPA notes that if soil and debris are contaminated with Third Third prohibited wastes whose treatment standard is based on incineration and also with other prohibited wastes whose treatment standard is based on a non-combustion type of technology, the soil and debris would remain eligible for the national capacity variance. This is because the contaminated soil and debris would still have to be treated by some form of combustion technology that EPA has evaluated as being unavailable at present. However, there is one exception to this principle. If the soil and debris are contaminated with a prohibited waste (or wastes) that is no longer eligible for a national capacity extension, such as certain types of prohibited solvent wastes, then the soil and debris would have to be treated to meet the treatment standard for that prohibited waste (or wastes). Any other interpretation would result in EPA's extending the date of a prohibition beyond the dates established by Congress, and therefore beyond EPA's legal authority.

C. Characteristic Wastes

1. General Considerations

In today's rule, EPA is proposing treatment standards for those wastes which exhibit one or more of the following characteristics: ignitability, corrosivity, reactivity or EP toxicity (40 CFR 261.21–24). For the purpose of setting BDAT treatment standards, each characteristic waste is subdivided into subcategories which correspond to waste treatability groups. For example, an ignitable characteristic waste may be subcategorized as an ignitable liquid, ignitable reactive, oxidizer or ignitable gas.

EPA is developing a new toxicity characteristic, known as the toxicity characteristic leaching procedure (TCLP), that is scheduled for promulgation in late 1989. Upon its effective date, this revised characteristic will include a number of additional organic hazardous constituents, and a new extraction protocol will replace the current extraction procedure (EP). The revised toxicity characteristic will include the same 14 hazardous constituents (six pesticides and eight toxic metals) that are now regulated under the existing EP toxicity characteristic. EPA is proposing that the BDAT levels for wastes that exhibit EP toxicity for these 14 hazardous constituents remain the same when the TCLP replaces the EP toxicity characteristic since the extent of achievable treatment should not change.

The Agency received several comments in response to its solicitation in the Second Third rulemaking regarding treatment standards for characteristic wastes. These comments addressed two general areas. First, several commenters questioned the Agency's assertion that the hard hammer provision applies to characteristic wastes. The Agency continues to believe that the statutory

language is unclear, but that the legislative history for HSWA clearly indicates that wastes which exhibited a characteristic of hazardous waste on November 8, 1984 are subject to the hard hammer provision. The issue is of no practical significance in any case, since EPA is promulgating treatment standards for all hazardous wastes that exhibited characteristics as of the date of enactment of HSWA.

Second, several commenters also questioned the use of a "No Land Disposal" treatment standard in any of its forms for characteristic wastes. EPA is not using this standard for characteristic wastes in the proposal.

2. Treatment Below Characteristic Levels

EPA is today proposing standards for certain characteristic wastes which require treatment below the characteristic level. The issues concerning this approach are discussed below.

The threshold question in establishing treatment standards for characteristic wastes that are prohibited from land disposal is whether the treatment standard can be established at a level that is lower than the characteristic level. The legal argument would be that the characteristic level itself imposes a jurisdictional limitation on the extent of treatment because section 3004(m) applies only to wastes that are hazardous, and by EPA's regulations, wastes that no longer exhibit a characteristic are not hazardous wastes.

An alternative reading, however, is that once wastes become subject to section 3004(m), they remain subject to the requirements of that section until the section 3004(m) standard is satisfied. This is in fact the most literal reading of section 3004(m). In the context of toxic characteristic hazardous wastes, this alternative reading also supports the statutory goals and policies of seeking to reduce the uncertainties inherent in the land disposal of hazardous waste by substituting a system whereby hazardous wastes are pretreated in such a way that minimizes threats to human health and the environment associated with land disposal. See RCRA sections 1002(b)(7), 3004 (d), (e), (f), (g), and (m).

There are a number of differences between characteristic wastes and listed wastes that make it important to consider the issue of further treatment for characteristic wastes. First, the EP toxicity characteristic is defined by levels higher than the health-based levels that have been the basis for delisting many hazardous wastes. The Agency has always stated that the EP toxicants' concentrations are levels at which a waste clearly presents a substantial hazard, and that the lower levels also may pose a hazard (see, e.g., 45 FR 33066, May 19, 1980). Thus, in most cases, treatment below the characteristic level would clearly result in further minimization of threats to human health and the environment. Second, delisting is a waste-specific process that allows EPA to consider a number of factors, including concentrations of all Appendix VIII constituents in the waste. On the other hand, characteristic wastes are no longer hazardous when they stop exhibiting a single property or fall below a constituent concentration level. Thus, only under a broad reading of section 3004(m) could EPA address treatment for all Appendix VIII constituents in characteristic wastes, and thus reduce the prohibited waste's toxicity and mobility in a way that further minimizes the threat to human health and the environment. These features of the characteristic waste designation compel the Agency to carefully evaluate the reach of Agency authority under section 3004(m).

EPA believes one permissible construction of the statute is that waste which is hazardous at the point of generation and is destined for land disposal (i.e. a prohibited hazardous waste) remains subject to the requirements of section 3004(m) regardless of its concentration at any subsequent time, or at least must be treated to the section 3004(m) level to avoid violation of section 3004(m). Indeed, this construction is a necessary approach to vindicate the Congressional admonition against dilution in lieu of treatment. *See* Section III(D) below. Once subject to section 3004(m), such wastes must be treated by methods which substantially reduce toxicity and minimize threats to human health and the environment.

Thus, EPA believes it is a permissible construction of RCRA that Congress did not intend to curtail treatment under this standard by the definitional provisions relating to the term "hazardous waste" in 40 CFR part 261. Indeed, the authority in section 3004(m) to subject characteristic wastes to treatment methods contemplates treatment to levels below the characteristic level, since treatment methods—for example, combustion—often cannot be neatly curtailed at the characteristic level. EPA has also stated in other contexts that Subtitle C regulations can continue to apply to management of wastes that no longer exhibit a characteristic. For example, the clean closure standards for regulated units that hold characteristic wastes require removal of hazardous constituents even if the waste no longer exhibits a characteristic. See 53 FR 8705 (March 19, 1987). Thus, the continued regulation of such units under Subtitle C depends on the degree of environmental hazard but not on the continued presence of "hazardous waste". EPA also believes the recent decision in *Hazardous Waste Treatment Council* v. *U.S. Environmental Protection Agency,* No. 86-1657 (D.C. Cir. September 15, 1989) supports the view that EPA has considerable flexibility in setting standards under section 3004(m) and that section 3004(m) can operate independently of other RCRA provisions which do not have the same ultimate standard.[1]

Significant technical differences and gaps in data, however, can make the task of utilizing a more expansive view of EPA authority under section 3004(m) for characteristic wastes—*i.e.*, developing treatment standards that minimize threats below characteristic levels, or that address other toxic constituents—very difficult at this time. The task is not the same as for listed wastes. A listed waste comprises relatively discrete waste types. EPA often segregates listed waste into treatability groups to set section 3004(m) standards. Wastes under a single characteristic designation, however, can cover an enormous range of waste matrices. Segregating the matrices into treatability groups is a difficult task even when considering treatment of only the single characteristic property, let alone the treatment of other BDAT list constituents. Moreover, specifying the lowest achievable level that

[1] EPA has, thus far, set section 3004(m) performance standards for listed hazardous wastes based on the limits of demonstrated available technology, and not on standards adopted under other statutory standards and provisions. This approach was challenged by industry petitioners in *Hazardous Waste Treatment Council* v. *U.S. Environmental Protection Agency,* No. 86-1657 (D.C. Cir. September 15, 1989). In this recent opinion, the Court found EPA's approach to be a permissible construction of RCRA. Specifically, the Court held that section 3004(m) requires EPA to set treatment standards so that "threats to human health and the environment are minimized." The Court found that this standard provides EPA flexibility to establish treatment standards that need not be identical to other regulatory decisions establishing health-based screening levels pursuant to different statutory standards.

Although the Court found EPA's approach to be permissible, it also held that EPA had not adequately articulated a rationale for the Agency's policy choice between a technology-based regime and one which capped treatment levels by risk-based screening levels, the Court thus remanded the rule (leaving treatment standards in place) and directed EPA to articulate the rationale behind any policy choice in this area. EPA is thoroughly studying the Court's decision and its own policies to respond to the Court's remand.

minimizes threats may vary from matrix to matrix. As more data are gathered, the Agency may be in a better position to consider more constituents, different treatability groups, and more specific or lower treatment standards.

There are also significant technical and policy questions which may differentiate the limits of treatment for wastes with the properties of ignitability, corrosivity, and reactivity, as opposed to those with specific concentrations of hazardous constituents. The definitions and units of measurement for the properties ignitability, corrosivity, and reactivity are different from the measurement of EP toxic constituents. For example, EP toxic wastes are defined by a concentration level for a given constituent. Wastes with the characteristic of ignitability, on the other hand, are defined by a flash point below 60 degrees Celsius, and other narrative descriptions. See 40 CFR 261.21. Similarly, wastes with the characteristic of reactivity are described by narrative standards. See 40 CFR 261.23. It is easy to describe a lower concentration as a potentially more protective standard. Changing narrative standards, on the other hand, would involve considerably different technical and policy considerations.

In today's proposal, EPA is both proposing methods of treatment and proposing concentration levels for characteristic wastes. Where EPA is proposing a constituent concentration level it is based on the lowest achievable level without regard to the characteristic level. Where EPA is proposing methods of treatment for certain characteristic wastes the Agency believes that these treatment methods, such as incineration of organics or stabilization of metals, will also treat some of the other BDAT list constituents which may be present. In addition, if a waste is identified as carrying more than one characteristic, it would need to meet each treatment standard or utilize each method.

In light of the above discussion, the Agency requests several types of comments. First, commenters should carefully read the technical background documents and comment on what they believe to be the lowest achievable treatment level. Second, commenters should comment on any legal or policy reasons to curtail the treatment requirement at the characteristic level. It may be that the policy considerations make setting standards lower than the characteristic level difficult in light of EPA's current regulations and enforcement mechanisms. These regulations may simply need revision. Thus, EPA may consider providing a final rule which does not go below characteristic levels as an interim approach until EPA can fully address any significant implementation problems. Commenters should address the validity of a final rule which does not require treatment below characteristic levels as a potential interim approach. Finally, commenters should suggest levels beyond which there is no further minimization of risks to human health and the environment.

For some of the EP toxic wastes, the Agency is considering a treatment level higher than the EP toxic level. In this case, if a waste is treated to meet BDAT, but still exceeds the characteristic level, the waste is still a RCRA hazardous waste and remains subject to subtitle C regulation. In the event treatment reduces the toxic constituent concentration to below the characteristic level, and the waste does not exhibit any other characteristic, the waste is no longer considered a RCRA hazardous waste.

3. Overlap of Standards for Listed Wastes That Also Exhibit A Characteristic

Whichever option EPA chooses, further issues remain regarding situations where a waste could be identified for more than one characteristic waste code, and situations where a listed waste also could be identified for one or more characteristic waste code. In the event a waste could carry more than one characteristic waste code, the Agency proposes that the waste must be treated to meet the treatment standard for each characteristic. EPA believes this reading satisfies the goal of significantly reducing waste toxicity or mobility for the untreated constituent, and consequently satisfies the mandate of section 3004(m).

If a listed waste could also be identified for one or more characteristic waste codes, EPA proposes that the waste would have to be treated to meet the treatment standard for each (of those) waste code(s), with one exception. Under that exception, if the relevant constituents or narrative characteristics are specifically addressed in the treatment standard for the listed waste, then the standard for the listed waste operates in lieu of the standard for the relevant characteristics.

Thus, if nonwastewater F006 is EP toxic for lead, it would not have to be treated to meet the EP toxicity lead standard because the treatment standard for nonwastewater F006 already contains a standard for lead. On the other hand, if the F006 waste were EP toxic for mercury, it would have to be treated to meet the mercury EP toxicity treatment standard, since mercury is not addressed in the F006 standard. The general principle EPA is proposing is that the more specific treatment standard takes precedence. Treatment standards for listed wastes are the more specific because they reflect the Agency's waste-specific determination. This is the same principle EPA adopted with respect to California list wastes that are covered by another treatment standard, an analogous situation. See 52 FR at 25773, 25776 (July 8, 1987). At the same time, when a listed waste exhibits a characteristic that is not addressed by the listed waste's treatment standard, EPA believes it necessary for that characteristic to be treated to meet the characteristic treatment standard. To ignore the characteristic would mean that the Third Third prohibition for that characteristic is being ignored, and that with respect to that constituent, the waste's toxicity or mobility is either not being reduced or not being minimized. Since this outcome would satisfy neither the statutory language nor its policy, EPA is proposing to require treatment. (For the same reason, EPA would also require treatment of listed wastes that are ignitable, reactive, or corrosive to address the characteristic property.) As with the California list wastes, EPA would apply this principle at the point of generation, since otherwise the treatment standard for the characteristic constituent could be ignored by removing the characteristic (assuming the Agency ultimately adopts an approach whereby treatment standards for characteristic hazardous wastes are lower than the characteristic level). See 52 FR at 25766.

EPA notes that under this approach, waste generators must determine not only whether their waste falls under a prohibition for a listed waste, but also a prohibition for a characteristic. EPA is not proposing any amended language to § 268.7(a) to require generators to make this examination (*i.e.*, determining if the listed waste also exhibits a characteristic) because the existing regulatory language requires the generator to determine the "appropriate" treatment standards (*i.e.*, those that are applicable). EPA, however, solicits comment on whether it should promulgate explicit regulatory language in § 268.7 (or perhaps in § 262.11) to address this issue.

Finally, EPA is proposing to implement one further principle with respect to potential overlap of treatment

standards for listed wastes that also exhibit a characteristic. This is where the listed waste does not address a characteristic constituent or property, disposal of a waste which at the point of disposal exhibits a characteristic is prohibited unless the treatment level for that characteristic component is above the characteristic level. This approach is again essentially the same that EPA adopted for the analogous situation involving California list wastes (see 52 FR at 25767), and is needed to insure that the statutory prohibition against disposal of characteristic hazardous wastes is not violated. Although EPA does not anticipate that this type of situation will arise often, if it should, EPA believes that further treatment to address the characteristic would normally be feasible, and therefore necessary to minimize threats to human health and the environment.

EPA solicits comment on the best implementation mechanism for ensuring against disposal of these characteristic wastes. The Agency's preference would be for treatment facilities to test, or otherwise determine that residues sent to disposal have not somehow acquired a characteristic not previously present, and certify that the wastes have not done so.

The following examples illustrate the principles involved in the paragraphs above:

Example 1. Generator A generates a listed, prohibited waste "A" which has a wastewater standard for lead of 1 ppm in the TCLP extract. Waste "A" is also EP toxic for lead, and the treatment standard for lead characteristic wastes (for the sake of this example) is .5 ppm in the TCLP extract. The treatment residue from waste "A" is EP toxic for chromium, a constituent not addressed by the standard for the listed waste "A".

The treatment standard for lead in the wastewater is 1 ppm, because this is the more specific standard for lead in the waste. However, the treatment residue must be treated to meet the treatment standard for chromium before it can be disposed, since there is no more specific treatment standard for that constituent.

Example 2. Generator B generates a listed waste for which the nonwastewater standard for mercury is 1 ppm. The waste exhibits the EP toxicity characteristic for mercury, and the treatment standard for that characteristic (for the sake of this example) is a specified treatment method.

The more specific treatment standard would still control, even though a treatment method is the standard for the characteristic. Thus, this waste would have to be treated to below 1 ppm, the numerical limit.

EPA solicits comments on the legal and policy implications of the above approach. Moreover, EPA requests comments which discuss mechanisms which can provide for enforcement and monitoring of the above scheme.

D. Mixed Hazardous/Radioactive Wastes

On July 3, 1986 (51 FR 4504), EPA determined that mixed wastes (waste that satisfies the definition of radioactive waste subject to the Atomic Energy Act and contains hazardous waste that is either listed as a hazardous waste in Subpart D of 40 CFR part 261 or exhibits any of the hazardous waste characteristics identified in Subpart C of 40 CFR part 261) were subject to the RCRA regulations. This created a dual regulatory framework for mixed wastes because the hazardous component would be regulated under RCRA, and the radioactive component would be regulated under the Atomic Energy Act (AEA). RCRA applies to all radioactive mixed waste, independent of the classification of the radioactive component as low level, high level, or transuranic, but only to the hazardous portions of the mixed waste stream.

Statutorily and administratively, the management of the radioactive component differs. While EPA may develop ambient health and environmental standards, the specific standards for radioactive material management developed under the Atomic Energy Act are administered through the Department of Energy (DOE) for government-owned facilities, and through regulations of the Nuclear Regulatory Commission (NRC) for commercially owned facilities.

There are approximately 30 DOE installations that generate mixed waste. Of these, 13 generate the majority of waste containing low-level, high-level, and transuranic radionuclides. These installations have complex and diverse waste management facilities and generally have RCRA interim status. The site audits, sampling, and analytical studies that have been performed by DOE at these sites provide some information to characterize the mixed wastes.

Approximately 26,000 NRC licensees, including hospitals, universities, and nuclear power plants, generate mixed waste. The radioactive component of this mixed waste primarily consists of low-level radionuclides. The principal RCRA hazardous constituents include solvents, lead, chromium, and other hazardous constituents generated by the biomedical and nuclear power industries. It is estimated that commercially generated mixed waste constitutes about 2 to 30 percent of the low-level radioactive waste generated annually.

There are not adequate government or commercial facilities permitted by both NRC and EPA to dispose of mixed waste. As a result, much of the mixed waste is being managed by either recycling (*e.g.*, mixed wastes containing lead) or incineration, (*e.g.*, scintillation cocktails containing solvents). Most mixed waste is being stored by generators, who require a RCRA permit for storage beyond 90 days.

As noted in section III–B above, after reviewing data collected in the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities, the Agency has determined that there is inadequate nationwide capacity available for mixed wastes. Therefore, EPA is proposing to grant a two-year national capacity variance under section 3004(h)(2) for the scheduled wastes. Since adequate treatment capacity is not expected to be available immediately, these wastes will continue to be stored. Mixed wastes containing listed hazardous waste are expected to be generated in small volumes. Larger volumes of mixed wastes which contain spent solvents and EP toxic metals, such as lead and chromium, are expected to be generated. Mixed wastes containing spent solvents or dioxins, or that are California list wastes, are still subject to the applicable treatment standards once the effective date has passed. For mixed wastes containing certain spent solvents and dioxins, or that are California list wastes, the Agency may also consider petitions for one-year extensions of the effective date. HSWA provides a maximum of two one-year extensions under section 3004(h)(3). Such extensions are determined on a case-by-case basis after consultation with appropriate State agencies, and public notice and comment.

The Agency is performing studies to characterize the mixed waste volumes, characteristics, and treatment options. The Agency also expects to receive treatment data for mixed waste from DOE for review. DOE has been studying how to treat, store, and dispose of waste at its sites. Once received, such data will be made available for public notice and comment.

E. Applicability of Today's Proposed Rule to Mineral Processing Wastes

Section 3001(b)(3)(A)(ii) of RCRA excludes from the hazardous waste

regulations (pending completion of studies by the Agency) solid wastes from the extraction, beneficiation and processing of ores and minerals. On September 1, 1989, EPA published a final rule in the **Federal Register** (54 FR 36592) that narrowed the scope of this temporary exclusion as it applies to mineral processing operations to 25 enumerated wastes that meet the exclusion criteria of "high volume/low hazard," as specified in the September 1 rule. EPA determined that five specific mineral processing wastes clearly remain within the scope of the exclusion, and that 20 additional specified mineral processing wastes remain within the exclusion, pending collection of further volume and hazard data. All previously excluded mineral processing wastes, other than these 25 specified wastes, that exhibit one or more of the characteristics of hazardous waste will no longer be excluded from the hazardous waste regulations when the final rule becomes effective. (On September 25, 1989 (see 54 FR 39298–39318), EPA proposed to remove an additional 7 of these wastes from the exclusion based on additional volume and/or hazard data.)

EPA believes that the wastes are "newly identified" for the purposes of determining applicability of the land disposal prohibitions. Although technically the wastes are not being identified by a new characteristic, they are being brought into the subtitle C system after the date of enactment of the HSWA on November 8, 1984. The clear sense of RCRA section 3004(g)(4) is that wastes brought into the system after the 1984 RCRA amendments are to be prohibited from land disposal under a potentially different schedule than those wastes that were hazardous on the date of enactment of HSWA, and are not to be subject to the statutory hard hammer. Because these wastes are newly identified, the Agency must develop treatment standards for them within six months of their being identified as hazardous wastes (RCRA section 3004(g)(4)(C)).

However, as stated above, these wastes are hazardous because they exhibit one or more of the characteristics of hazardous waste. Today's rule proposes treatment standards for characteristic wastes. The question, therefore, is whether the treatment standards for characteristics should apply to these mineral processing wastes recently determined not to fall within the Bevill exclusion. Put another way, although as newly identified wastes they are not subject to the hard hammer, EPA still has the choice of whether or not to apply the treatment standards for characteristic wastes to them at this time.

The Agency has not yet performed the technical analyses necessary to determine if the treatment standards proposed today as BDAT for EP toxic hazardous wastes can be achieved in treating the various mineral processing wastes. Therefore, EPA is proposing that these newly identified mineral processing wastes *not* be subject to the BDAT standards proposed today for characteristic hazardous wastes. The Agency plans to study the mineral processing wastes in the near future to determine BDAT for these newly identified hazardous wastes. EPA also solicits comment on whether the BDATs proposed today for the EP toxic metals are appropriate for the newly identified mineral processing wastes. Commenters should provide data showing whether particular mining wastes can be treated to meet the proposed standards.

There are circumstances when newly identified mineral processing wastes can, however, be subject to existing hazardous waste prohibitions. Thus, if the mineral processing waste is mixed with other prohibited wastes (*i.e.*, any prohibited solvent, dioxin, First or Second Third hazardous waste), it becomes subject to the prohibition for the prohibited waste with which it is mixed. EPA also is soliciting comment on the applicability of California list prohibitions to newly identified and listed hazardous wastes. See section III.M below.

Whether any of these prohibitions would have immediate regulatory effect would be determined by the authorization status of the State in which the waste is managed. Because the final rule removing wastes from the scope of the Bevill exclusion is not being adopted pursuant to HSWA, it does not take effect immediately in authorized States. Thus, in these States, these mineral processing wastes would only be hazardous wastes if they are included within the scope of the State's authorized program. If they are not, they would not be hazardous wastes until an amended State's program including them is authorized. Only after authorization would the land disposal prohibitions apply in that State. These mineral processing wastes would be hazardous wastes in unauthorized States as soon as the rule removing them from the exclusion becomes effective. At that time, any land disposal prohibitions that apply to them also would take effect.

F. Clarification of "P" and "U" Solid Wastes

EPA is proposing amendments to clarify the existing language of 40 CFR 261.33. The first amendment involves § 261.33(c), a provision that lists residues from containers and inner liners of containers that have held commercial chemical products listed in § 261.33(e). This language is partially in error in that it does not also include residues and inner liners contaminated with the § 261.33(f) materials. All of the other provisions in 40 CFR 261.33 refer to both § 261.33 (e) and (f) wastes, and there is no reason that § 261.33(c) should not as well. The omission results in fact from an oversight, and is not based on any choice by the Agency.

EPA is also proposing a change to clarify when contaminated soil, water, and spill debris contaminated with 40 CFR 261.33 (e) and (f) materials can be solid wastes. Ordinarily, § 261.33 materials are solid wastes only when "discarded" by being abandoned, or by being burned or placed on the land when this is not the materials' normal manner of use (see first sentence of § 261.33). Thus, these materials are not normally classified as RCRA solid wastes when they are recycled. See § 261.2(c) and Table 1. Contaminated spill residues, water, and debris resulting from clean-up actions normally result from the abandonment of § 261.33 materials that have been spilled on land or water, remained there, and eventually necessitate clean-up. Certainly, the reasons behind the statement that § 261.33 materials are not solid wastes when recycled—their near product-like status due to being unused commercial chemical products and their easy means of recycling—do not apply to contaminated soils and other contaminated clean-up residues covered by § 261.33(d). Not only are these materials difficult to recycle and not product-like, but delaying their classification as solid wastes to the moment when a determination as to recycling is made could encourage uncontrolled or haphazard spilling of these materials onto land or water, and discourage their clean-up.

Although such spilled materials already may be considered to be abandoned, the Agency is proposing to amend the rules to make clear that spill residues, and other materials covered by § 261.33(d), are considered to be solid wastes. There could conceivably, however, be some circumstances when a material can be spilled and the contaminated soil or water matrix could be quickly returned to production. EPA

believes that some allowance ought to be made for such situations to avoid interfering with production-related spills that can be returned to the process, or otherwise put to direct use, in a short time. The maximum period for which a spill residue could be returned to the process would appear to be 90 days. This is the maximum length of accumulation time the Agency has recognized, in other contexts, as providing a legitimate accommodation between avoiding disruption with production decisions versus the environmental protection afforded under the RCRA permit process. See 40 CFR 262.34 and 45 FR 12730 (February 26, 1980). Thus, under the clarified proposed regulation, unless contaminated soils or other § 261.33(d) residues are recycled within 90 days of the spill, they would be considered to be solid wastes even if there is a bona fide intent to recycle. Absent a bona fide intent to recycle, the materials are solid wastes immediately upon being spilled because they have been abandoned. The person claiming that spill residues are not solid wastes would have the burden of showing that the spill will be recycled and that recycling has occurred within the specified period (see 40 CFR 261.2(f)—the Agency's *prima facie* case is established by the fact of the spill itself, which is a type of disposal). In addition, any § 261.33(d) material that is not recycled is being disposed, thus triggering all of the Subtitle C requirements for hazardous wastes that are disposed. See 50 FR 28712–713 (July 15, 1985).

EPA further solicits comment on whether the spill residues should automatically continue to be considered solid wastes if they are removed after 90 days for legitimate recycling (even if the spill area itself would be a regulated unit after that time). For example, if the spill residue were to be used as a feedstock in an industrial process, then should the spill residue still be considered to be a solid waste once it is removed? (Cf. 40 CFR 261.1(c)(8), final sentence, noting that materials that are accumulated speculatively do not necessarily remain solid wastes once they are removed from accumulation.) EPA also solicits comment on whether such spill residues should be considered to be inherently waste-like pursuant to § 261.2(d), in which case they would remain solid wastes regardless of their method of subsequent recycling.

G. Determining When Dilution Is Permissible

EPA believes that its existing rules regarding impermissible dilution of prohibited wastes require further clarification when applied to situations involving aggregation for centralized treatment of more than one waste. By way of background, current regulations provide that wastes that are prohibited from land disposal may not be diluted "* * * as a substitute for adequate treatment to achieve compliance with [a treatment standard] * * *, to circumvent the effective date of a prohibition. * * *, to otherwise avoid a prohibition * * *, or to circumvent a [statutory] prohibition. * * *" (see § 268.3). Section 268.41(b), which was added as a means of making this dilution prohibition workable (see 51 FR 40623, Nov. 7, 1986), states that "* * * when wastes with differing treatment standards for a constituent of concern are combined for purposes of treatment, the treatment residue must meet the lowest treatment standard for the constituent of concern."

EPA has further stated in preambles that not all dilution of prohibited wastes is impermissible, and acknowledged a number of times that dilution that occurs as a necessary part of the process to treat a waste is permissible. 51 FR 40592 (Nov. 7, 1986); see also 54 FR 26601–602 (June 23, 1989). EPA has also indicated that certain forms of treatment that result in phase separations that make each phase easier to treat can be permissible forms of treatment. 53 FR 31145 (August 17, 1988) and 54 FR 26603, 26612 (June 23, 1989).

The Agency's concern, echoing Congress' concern in indicating that dilution to avoid proper treatment was impermissible (H.R. Rep. No. 198, Part I, 98th Cong., 1st Sess. 38 (1983)), is that individual prohibited wastes not be mixed with larger volumes of other wastes (whether prohibited or not) to meet treatment standards without undergoing treatment that substantially reduces the prohibited wastes' toxicity or mobility. Another of the Agency's objectives is that heavily concentrated streams amenable to a particular type of treatment technology should be segregated for treatment by that technology rather than being aggregated for less appropriate treatment that does not substantially reduce the waste's toxicity or mobility. See 52 FR 25766, middle column (July 8, 1987).

Consequently, it appears to the Agency that any dilution that fails to meet the standard in § 3004(m) of substantially reducing the prohibited waste's toxicity or mobility is impermissible. To achieve this objective, the Agency believes that there must be some actual reduction in the toxicity or mobility of at least one BDAT constituent in each prohibited waste that is treated, to the extent that these constituents are present in initial concentrations that exceed the treatment standard for that prohibited waste. Further, with respect to organic constituents, "reduction in toxicity" means actual removal of or chemical change to the constituent.

The following examples illustrate how the Agency would apply this interpretation:

Example 1. Facility A mixes a small volume of prohibited nonwastewater containing five percent TOC with a larger volume of wastewaters containing less than one percent TOC. The wastes all contain organic BDAT constituents, but the only treatment the mixture undergoes is for removal of total suspended solids, not for removal of the organic constituents. The treatment system generates a nonwastewater and wastewater treatment residue. The nonwastewater is treated further to achieve BDAT. The wastewater meets the treatment standard for wastewaters.

EPA views this situation as involving impermissible dilution because the treatment system is not removing BDAT constituents, but simply diluting them, such that they are below a BDAT level. Moreover, the initial nonwastewater ordinarily would be amenable to direct treatment and need not be mixed. The result is simply the dilution of the initial nonwastewater. Cf. 53 FR 31145 (Aug. 17, 1988) ("* * * 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.").

Example 2. Facility B generates a prohibited nonwastewater that is a bi-layered waste with an organic phase and a liquid phase. The BDAT constituent in the waste is cyanide. These phases can be separated by skimming the organic phase, after which the nonwastewater organic phase is amenable to incineration treatment and the wastewater phase to wastewater treatment. Instead of doing so, generator B mixes the waste with other wastewaters and generates a wastewater that meets all cyanide treatment standards, although cyanide is not being removed by the treatment system.

This example also involves impermissible dilution due to the lack of removal of the BDAT constituent.

EPA solicits comment on this issue, and asks that commenters provide specific examples where they believe that aggregation for centralized treatment is legitimate even if some dilution is involved. EPA also notes, as

recently explained in a correction notice to the First Third final regulation, that the dilution prohibition in § 268.3 generally only applies to prohibited wastes disposed via a prohibited form of land disposal. See 54 FR 36967–36972 (September 6, 1989). In applying this principle, one looks to the treatability group that is generated and ascertains whether that treatability group is destined for management in a prohibited form of land disposal. For example, if a generator generates a hazardous wastewater that is being mixed in tanks before discharge to a POTW or to waters of the United States, the wastewater is not a prohibited hazardous waste, and the dilution prohibition would not apply to it. (If non-wastewaters are derived from the management of the wastewater, those non-wastewaters are prohibited hazardous wastes because they are destined for a prohibited form of land disposal.) On the other hand, if the wastewater were to be managed in any type of surface impoundment before its discharge, it would be a prohibited hazardous waste, and the dilution prohibition would apply.

Of course, even where one BDAT constituent is treated to reduce its toxicity or mobility, impermissible dilution might occur. For example, a waste with treatable concentrations of metals as well as extremely high concentrations of hazardous organics could be mixed with large volumes of other metal-bearing wastes for metals treatment. To the extent that the high concentrations of organics are diluted by this treatment to below treatable levels, this would constitute impermissible dilution if there is an appropriate organics treatment technology that could be applied prior to metals treatment. In this example, there is an actual reduction in the toxicity or mobility of one BDAT constituent, but dilution to avoid treating organics.

Thus, the requirement that one BDAT constituent be treated so as to substantially reduce its toxicity or mobility is a minimum requirement in all cases. It should not be interpreted as validating all other dilution that may occur.

H. Other Dilution Issues

The second major issue regarding dilution on which EPA is soliciting comment is whether dilution can be used as a means of supplanting a section 3004(m) treatment standard by being used to render a prohibited waste non-hazardous in lieu of actually treating the prohibited hazardous waste prior to land disposal. The issue is most pressing with respect to wastes that exhibit a characteristic of hazardous waste, but can also arise with respect to listed wastes for which delisting is sought.

EPA believes that the standards of section 3004(m) apply to all wastes destined for a prohibited form of land disposal. It is not permissible to dilute a waste to render it nonhazardous in lieu of proper treatment under section 3004(m) (unless dilution is a part of proper treatment under section 3004(m)).

With respect to dilution of characteristic hazardous wastes, EPA is clearly given authority to establish treatment standards for hazardous wastes that exhibit a characteristic. RCRA section 3004(g)(4)(C). This authority includes prescribing methods of treatment for characteristic hazardous wastes. Section 3004(m) (1) and (2). Yet this authority would be largely meaningless if a person could dilute the waste to remove the characteristic rather than treating it (even assuming EPA determines that treatment standards are bounded jurisdictionally by characteristic levels). The same reasoning holds true for listed wastes, except it is more difficult to remove listed wastes from the subtitle C system because delisting requires an administrative determination. Nevertheless, the possibility exists for evading a treatment standard for a listed waste by diluting the waste and seeking a delisting.

The legislative history of HSWA clearly indicates Congress' intention that dilution not be used as a substitute for treatment standards of the land disposal restrictions program promulgated pursuant to RCRA section 3004(m). The legislative history further indicates that a prohibition of this type of dilution "is particularly important where regulations are based on concentrations of hazardous constituents." (H.R. Rep. No. 198, Part I, 98th Cong., 1st Sess. 38 (1983)). This is consistent with the overall policy of requiring hazardous wastes to be *treated* before they are land disposed.

EPA therefore is of the view that it is illegal to render a prohibited waste non-hazardous by engaging in impermissible dilution. An important issue raised by this proposal is the relation of the section 3004 treatment standards and corollary dilution prohibition and the rules implementing RCRA section 3001 that define a hazardous waste. These rules do not prohibit dilution to remove a hazardous waste characteristic or to achieve a delisting level. See §§ 261.3(d)(1) and 260.22 (c) and (d). EPA does not intend to address today the broad question about whether dilution should ever be allowed as a means of rendering a waste non-hazardous. (Were the Agency to regulate such dilution, it might do so based on concerns about mass loadings of hazardous constituents and the statutory preference for proper treatment of hazardous wastes, as well as the statutory goal of waste minimization.) Rather, today's proposal is limited to a context where the land disposal prohibitions apply and is intended to preserve the integrity of treatment standards for prohibited hazardous wastes.

Consequently, under the rules proposed today, if an impermissible form of dilution occurs that renders a toxic hazardous waste non-hazardous, the act of dilution would be illegal but the waste would be non-hazardous for subsequent management purposes. That is, EPA is not today redefining hazardous waste, but is instead imposing a condition on how hazardous wastes can be managed. Thus, penalties for impermissibly diluting a prohibited hazardous waste could include fines and injunctive relief such as digging up the waste and treating it properly. However, a unit receiving a diluted waste which is no longer defined as hazardous would not become a regulated unit subject to subtitle C regulation.

EPA solicits comment on this approach, and also on the broader question of whether the Agency should approach this question as a section 3001 issue relating to whether certain impermissibly diluted hazardous wastes would still be considered to be hazardous in order to reduce mass loadings of toxic constituents. EPA is also interested in comments on what mechanism the Agency should use to determine whether a hazardous waste is to be managed by means other than land disposal, and is thus able to be diluted.

EPA realizes that this interpretation could require some changes in existing hazardous waste management practices, particularly for wastewaters that exhibit a hazardous waste characteristic and that are diluted to remove the characteristic before reaching a land disposal unit. To the extent such wastewater streams are small volume, they could be drummed for off-site treatment or treated on a batch basis. Larger volume wastewaters could require segregated pretreatment. It appears to the Agency that that is a necessary corollary of prohibiting dilution of prohibited hazardous wastes. EPA solicits comment, however, on the volumes of wastes that may be affected and the availability of treatment for waste streams that may need to be

diverted. In addition, the Agency solicits comment on whether the reasons for the dilution prohibition apply equally to the non-toxic characteristic hazardous wastes or whether dilution should be considered to be a permissible type of treatment in some circumstances for these wastes (see the earlier discussion in section III.A.5 regarding the Agency's reasons for believing that such dilution is not appropriate treatment).

I. Storage Prohibition

Section 3004(j) provides that storage of prohibited hazardous wastes is itself 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." This language applies only to storage of prohibited wastes in non-land based storage units (like tanks and containers), land-based storage being a type of disposal.

The intent of RCRA section 3004(j) and 40 CFR 268.50 is to prohibit use of long-term storage to circumvent treatment requirements imposed by the LDRs. 129 Cong. Rec. H8139 (daily ed. October 6, 1983. As the court recently stated in *Hazardous Waste Treatment Council* v. *EPA* ("*HWTC III*") (No. 86-1657, D.C. Cir. September 15, 1989):

> Congress believed that permitting storage of large quantities of waste as a means of forestalling treatment would involve health threats equally serious to those posed by land disposal, and therefore opted in large part for a "treat as you go" regulatory regime.

Slip op. at 5.

No firm time limit is established. Generators and owners or operators can store as long as necessary if such storage is solely for the purpose stated above. However, if prohibited wastes are stored beyond one year, the owner/operator has the burden of proving (in the event of an enforcement action) that such storage is for the allowable reason; prior to one year, EPA maintains the burden of proving that storage has occurred for the wrong reason.

Because EPA is aware of concerns that some legitimate storage technically may be prohibited under the current approach, the Agency is requesting comment on alternative approaches for prohibiting storage. Under one alternative, where prohibited wastes are stored in tanks or containers pending the utilization of proper treatment, recovery or disposal capacity, the storage would not be prohibited. Two examples of allowable storage under this alternative approach are provided below:

(1) Where a generator is storing wastes in tanks for six weeks because of a backup at an incinerator which the generator has a contract to use; and

(2) Where a treatment facility treats a prohibited waste to a level that does not meet the treatment standard and then stores the waste before treating it again to meet the standard.

EPA is soliciting views on these issues today because a literal reading of the statute would likely condemn such storage as unlawful. This is because the statutory language and 40 CFR 268.50 draw a connection between the amount of waste being stored and the purpose of facilitating proper management. Virtually no storage except that undertaken to promote under-utilized proper management capacity would satisfy this literal reading of the provision.

EPA recognizes that under the alternative approach proposed today, the phrase "utilization of proper treatment, recovery or disposal capacity" would need to be further defined. The Agency also seeks comment on how a temporal element might be added to the phrase "pending the utilization * * * " in order to define the limits of the proposed approach.

Accordingly, EPA is soliciting comment on the alternative interpretation (*i.e* that the storage prohibition only applies if storage is surrogate disposal, for example due to failure to utilize existing treatment capacity, or if storage is otherwise undertaken for purposes of evading a land disposal prohibition). Commenters should also address other potential situations where they believe that an overly literal reading of section 3004(j) may have consequences they believe Congress did not intend.

J. Generator Notification Requirements

The generator notification requirements set forth in 40 CFR 268.7 specify that when the generator has determined, either through testing or through knowledge of the waste, that the waste is restricted and does not meet the applicable treatment standards, the generator must, with each shipment of waste, notify the treatment facility in writing of the appropriate treatment standards. This notice must include the EPA Hazardous Waste Number, the corresponding treatment standards and all applicable prohibitions set forth in § 268.32 or RCRA section 3004(d), the manifest number associated with the shipment of waste, and waste analysis data, where available (40 CFR 268.7(a)(1)). If the generator has determined that the waste being shipped is restricted, but can be land disposed without further treatment, he must submit to the land disposal facility the same information, as well as a certification stating that the waste meets the applicable treatment standards (40 CFR 268.7(a)(2)).

The Agency has had a number of questions on whether the actual treatment standards (*i.e.*, the actual number or method) must be placed on the generator notification form, or if it is sufficient to reference the appropriate treatment standards by citation to the applicable part of 40 CFR 268.41, .42, or .43. EPA's interpretation has been that all applicable treatment standards must be listed completely on the generator notification form sent to the treatment, storage or disposal facility. A number of commenters have indicated that they believe the current regulations can be interpreted to allow referencing, rather than listing the specific treatment standards as part of the generator notification. The commenters argue that referencing the standards serves the same purpose as listing the specific treatment standards. Furthermore, they find that the notification forms are becoming longer, more complicated, and unwieldy as new wastes and corresponding treatment standards are added to the list of wastes restricted from land disposal, and thus pose a burden on the generator when each treatment standard must be listed on the notification form.

The Agency is considering changing the interpretation of § 268.7 to allow referencing the treatment standards. The following information would be included in the reference: EPA Hazardous Waste Number, the treatability group(s) of the waste(s) (*e.g.*, wastewater or non-wastewater), and the CFR section where the treatment standards appear. This information replaces only the listing of the applicable treatment standards; all other information would still be required in the notification. EPA is soliciting comment on this proposed re-interpretation to determine if the regulated community anticipates any problems with allowing the option of referencing the treatment standards, and to determine the effect this action would have on hazardous waste generators.

In addition, some commenters have raised concerns about notification requirements in § 268.7, particularly shipments subject to the March 24, 1986 small quantity generator (SQG) rule. This rule exempts SQGs (100-1000 kg/mo.) with tolling agreements (as defined in 40 CFR 262.20(e)) from the full part 262 manifesting requirements pursuant to 40 CFR 262.20(e). EPA is proposing to amend § 268.7 to require a one-time notification and certification for SQG shipments subject to tolling agreements.

Such agreements, as well as the one-time notifications and certifications, must be maintained by the generator for five years in keeping with the five-year retention period established in the First Third rule.

The Agency is proposing this amendment because it believes the subsequent handler of the waste under the contractual tolling arrangement has sufficient notification and knowledge of the nature of the wastes being handled. Tolling agreements provide for the collection and reclamation of a specified waste and for redelivery of regenerated material at a specified frequency. The Agency believes that since the same waste is picked up at regular intervals, one notice will suffice for the duration of the agreement to apprise the subsequent handler of the land disposal restrictions applicable to the waste.

K. Modification to the Framework: Waste Analysis Plans and Treatment/ Disposal Facility Testing Requirements

Treatment and disposal facilities managing prohibited hazardous wastes must test the wastes for compliance with treatment standards at a frequency specified in the facility's waste analysis plan (§§ 268.7 (b) and (c)). The waste analysis plan must be sufficient to comply with all requirements of part 268 (§ 264.13(a)(1)).

A comment in section 264.13(a)(2) states that " * * * the owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the [waste analysis] information required by paragraph (a)(1) of this section." This language has been mistakenly construed to preclude requiring the owner or operator of a treatment or land disposal facility to conduct a detailed chemical and physical analysis of a representative sample of the waste at a specific rate of frequency, without regard to whether information supplied by the generator is sufficient to assure compliance with part 268. Although there are certainly situations where the data submitted by the generator, or the knowledge of the generator, may constitute an essential part of the necessary information, the Agency is today proposing to amend the rules to more clearly specify the circumstances when EPA may require the owner or operator of a treatment or disposal facility to conduct such testing.

The Agency believes that, ordinarily, treatment and disposal facilities should do some corroborative testing to ensure compliance with treatment standards. This is because a crosscheck that treatment has been conducted successfully is needed to ensure that ultimate disposal does not violate the statute and regulations. Corroborative testing will maximize the likelihood of ultimate disposal being legal. The testing will also provide useful records for ascertaining compliance. The Agency does not have the resources to perform such facility-by-facility testing itself; thus, the normal situation should be that treatment and disposal facilities should do some independent testing of prohibited wastes, even if the generator also tests or otherwise certifies. See *Hazardous Waste Treatment Council* v. *EPA* (No. 86-1657, D.C. Cir. September 15, 1989) (slip op. pp. 31-2) finding it reasonable for EPA to require treatment and disposal facilities to do back-up testing.

The Agency further believes that the frequency of testing is best determined on a case-by-case basis by the permit writer. This is because the range of variables (e.g., variety of wastes treated, different types of matrices, number of treatment processes involved) is too broad to realistically evaluate on a national level. Allowing permit writers to make the determination as to frequency of testing as part of the waste analysis plan allows maximum flexibility to take individual facility's circumstances into account, and so clearly appears to EPA to be the correct way to proceed. The Agency is seeking comment on the following two approaches that would specify the circumstances under which EPA may require testing.

The first approach is to amend the comment in 40 CFR 264.13(a)(2) to specify that the owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the waste analysis information only if an EPA-approved waste analysis plan affirmatively allows the generator to supply this information. Further, the Agency is proposing to amend §§ 268.7 (b) and (c) to reflect this change. Specifically, the Agency is specifying that the frequency with which the owner or operator is required by the Regional Administrator or his designee to test will be based on, but not limited to, the criteria included in § 264.13. EPA believes that today's amendment only clarifies existing requirements, since the waste analysis plan regulations already require that the plans be adequate to ensure compliance with part 268, and EPA considers it unlikely that a plan requiring no testing at all could adequately ensure such compliance. If EPA selects this option in the final rule, the sentence in the § 261.13(a)(2) comment that allows the owner or operator of an interim status facility to arrange for the generator to supply part or all of the waste analysis information will be deleted because waste analysis plans for interim status facilities are self-implementing, and approval by EPA is not required. Consequently, under this approach, interim status facilities would no longer be able to rely on the generator's knowledge of the waste.

The second approach also seeks maximum flexibility to take into account individual facilities' circumstances by providing that, for purposes of compliance with part 268, testing frequency will be determined by the Regional Administrator or his designate, but requires that owners/operators of treatment and disposal facilities must conduct waste analyses a minimum of once each year. Under this approach, the requirement to obtain a detailed chemical and physical analysis of a representative sample of the waste (§§ 264.13(a)(1) and 265.13(a)(1)), would be revised to require owners/operators of treatment and disposal facilities to conduct detailed chemical and physical analyses of a representative sample, and to do so a minimum of once each year. In addition, § 268.7 (b) and (c) would be revised to reflect this change. The Agency notes that this second approach would be self-implementing, and would not require revision to existing permits. The Agency also notes that the Regional Administrator or his designate would have the discretion to require more frequent testing in the waste analysis plan based on site-specific circumstances. The Agency believes that the testing being proposed under the second approach is already being conducted by the regulated community since the current waste analysis plan regulations require the plans to be adequate to ensure compliance with part 268. Therefore, although a minimum testing frequency is being established under the second approach, the Agency does not believe that any new requirements are actually being imposed upon the regulated community.

L. Testing of Wastes Treated in 90-Day Tanks or Containers

Under § 268.7(b), treatment facilities treating prohibited hazardous wastes must test the treatment residues that they generate at a frequency determined by their waste analysis plan in order to ascertain compliance with the applicable treatment standards. All treatment facilities operating pursuant to interim status or a full permit must have a waste analysis plan.

There is a regulatory gap, however, with respect to treatment of prohibited wastes that is conducted in so-called 90 day tanks (or containers) regulated

under § 262.34. This is because such tanks (or containers) are not subject to a waste analysis plan requirement. Thus, there is presently no regulatory vehicle for determining testing frequency in such circumstances (although the existing testing requirement obviously applies, and continues to apply, to persons conducting treatment of prohibited wastes in § 262.34 tanks and containers).

In order to close this regulatory gap, EPA is proposing today that persons treating prohibited wastes in § 262.34 tanks and containers must prepare a plan justifying the frequency of testing that they choose to adopt. This plan would be based on a detailed chemical and physical analysis of a representative sample of the prohibited waste(s) being treated, and must contain all information necessary to treat the waste(s) in accordance with requirements of part 268 (this language is drawn from the standard for waste analysis plans in §§ 264.13 and 265.13), including the selected testing frequency. The plan would be self-implementing, in the sense that there is no requirement of prior approval from any regulatory entity. There would, however, be a requirement that the plan be retained as a facility record, where it would serve as the means of justifying to enforcement officials why the frequency of testing selected by the facility is reasonable. Examples of factors EPA would expect to be included in the plan would be discussion of the number of prohibited wastes treated, their variability, and the variability of the treatment process.

M. Relation of California List Prohibitions to Other Standards and Effective Dates

One further issue meriting discussion is what remains of the California list regulatory and statutory prohibitions after promulgation of the Third Third final rule. The Agency has already indicated that California list prohibitions are superseded by more specific prohibitions and treatment standards. See 52 FR 29993 (August 12, 1987) and 52 FR 25773 (July 8, 1987); see also 40 CFR 268.32(h) (HOC prohibition superseded by treatment standard and effective date for a particular HOC). Thus, almost all of the California list prohibitions will be superseded when the Third Third rule is promulgated. The only continued applicability of the California list appears to be for: (1) Liquid hazardous wastes that contain over 50 ppm PCBs, where PCBs are not regulated by the treatment standard; (2) HOC-containing wastes identified as hazardous by a characteristic property that does not involve HOCs, as, for example, an ignitable waste that also contains greater than 1000 ppm HOCs (but not an EP toxic waste that exhibits the characteristic because it contains one of the six chlorinated organic pesticides covered by the EP toxicity characteristic or for liquid wastes that exhibit the EP toxicity characteristic for metals and also contain greater than California list metal concentrations); and (3) liquid hazardous wastes that exhibit a characteristic and also contain over 134 mg/l of nickel and/or 130 mg/l of thallium. As discussed in detail below, California list prohibitions also normally apply during national capacity variance periods for wastes in the First, Second, or Third Third.

1. Applicability of California List Prohibitions During Capacity Variances Based on Superseding Standards

The Agency has previously indicated that California list regulatory and statutory prohibitions are superseded by more specific prohibitions and treatment standards. See 52 FR 29993 (August 12, 1987), 52 FR 25773 (July 8, 1987) and 53 FR 31187 (August 17, 1988); see also 40 CFR 268.32(h) (HOC prohibition superseded by treatment standard and effective date for a particular HOC). The Agency continues to believe this general approach is appropriate. In order to make clear to the regulated community the implications of the California list for the Third Third prohibitions (particularly characteristic wastes) and effective dates, the Agency wishes to reiterate how this approach operates during the period of a national capacity variance for a waste subject to a superseding standard.

As established in the First Third final rule, more specific standards supersede the California list prohibitions only after the actual effective date of the more waste-specific prohibition. During the period of any capacity variance for the more specific waste, however, the California list prohibition would continue to apply. See 53 FR 31188 (August 17, 1988). As discussed below, the Agency believes this approach avoids having a window of time where the waste is not subject to any standards. In some cases, this approach also avoids situations of the Agency effectively granting a capacity variance of over two years to certain California list wastes.

As an example, the prohibition on surface disposal of California list mercury wastes above 20 mg/l level was in effect on July 8, 1987 and would be in effect on August 8, 1990 for injected wastes. See 52 FR 25760 (July 8, 1987); 40 CFR 148.12(b). Today, EPA is proposing BDAT methods and standards for wastes exhibiting the characteristic of EP toxicity for mercury and proposing a two-year national capacity variance for both certain surface disposed and injected wastes. BDATs for other wastes may also specifically address treatment of mercury. Under EPA's current approach, these superseding BDAT standards would take effect after the date of the capacity variance. During the period of any variance, however, the California list prohibition would remain in effect, so that liquid wastes containing greater than 20 mg/l of mercury could not be land disposed.

As another example, EPA has previously provided a two-year capacity variance for injected wastes subject to the California list prohibition on liquid hazardous wastes with pH less than 2. See 52 FR 30908 (August 10, 1988). The effective date for this California list prohibition for injected wastes is August 8, 1990. Today, EPA is proposing to set neutralization to a pH level in the range of 6 to 9 as the BDAT standard for wastes which exhibit the characteristic of corrosivity under 40 CFR 261.22. EPA is also proposing a national capacity variance to May 8, 1992, for injected corrosive wastes, but is proposing no capacity variance for corrosive wastes disposed in surface units.

Under the Agency's current approach, injected California list waste with a pH of less than 2 would be prohibited from land disposal on August 8, 1990. Injected corrosive waste with a pH of 9 or above would not be prohibited until May 8, 1992 (the effective date of the corrosivity characteristic BDAT standard for injected wastes) because there is no California list prohibition on this waste. Surface-disposed waste with a pH of 6 or less and 9 or above would be prohibited from land disposal on May 8, 1990 because the more specific standards for corrosive wastes apply.

The legal basis for EPA's existing approach is that without it, in the case of a waste which received a national capacity variance under the California list rule, EPA would effectively grant a national capacity variance for a California list wastes for longer than two years. For instance, in the example involving corrosive acids given above, the injected corrosive wastes would receive a national capacity variance for three years and nine months from the otherwise applicable California list statutory prohibition. This result may be inconsistent with the express language of section 3004(h)(2). In situations where a California list prohibition has already taken effect but EPA promulgates a later treatment standard with a national

capacity variance that overlaps the California list waste, it makes little sense for the California list prohibition (with which people are already complying) to be nullified by a later treatment standard until the treatment standard actually takes effect. See 53 FR at 31188. The Agency repeats that in such cases, some interim prohibition is better than none at all, and that the express role of the California list prohibitions is to serve as an interim prohibition level or standard. See S. Rep. No. 284, 98th Cong. 2d Sess. 17.

The Agency believes, however, that it is a permissible reading of RCRA that Congress gave the Agency independent authority to reevaluate national capacity for corrosive waste with a pH of less than 2 when setting standards for such wastes, since the Agency has authority to make such determinations for corrosive wastes. If the Agency reads the California list prohibition as controlling for this specific group of wastes, it effectively deprives itself of its section 3004(g)(4) authority to make capacity determinations for corrosive acids in the Third Third rule. Thus, EPA specifically solicits comments on the legal and policy issues as they may relate to California list wastes with a pH of less than 2.

EPA's approach may not be fully clear from a simple reading of the language currently codified at 40 CFR 268.32(h) for HOC wastes. Under that provision, the California list prohibitions for HOC-containing wastes specified in 40 CFR 268.32(a) (3) and (e) do not apply where the waste is subject to a more waste-specific prohibition and effective date. The Agency notes, however, that none of the several examples in the preamble to the California list rule at 52 FR 25760, 25773, 25775, and 25776 (July 8, 1987) addressed the situation where there is a subsequent waste-specific standard which also has a capacity variance. Indeed, one of the functions of the rule at 40 CFR 268.32(h) was "to avoid situations where the Agency would be granting a national capacity variance for a period longer than two years." *Id. at 25773. Moreover, EPA's clarification in the First Third rule was clear and unchallenged.*

Accordingly, EPA is proposing to modify the language of 268.32(h) explicitly to preclude any periods of time where neither California list nor superseding HOC standards would operate.

2. Application of California List Prohibitions to Newly Identified or Listed Wastes

EPA also solicits comment on whether the California list prohibitions apply to newly identified and listed hazardous wastes. The California list statutory prohibitions, on the one hand, can be read as applying to all hazardous wastes, regardless of when they become identified or listed. In addition, Congress viewed these prohibition levels as a first step in the prohibition process, and so the California list prohibitions and treatment standards might be viewed as appropriate to fill the gap until the Agency develops more specific treatment standards for the newly identified or listed wastes.

On the other hand, the statute contemplates that the Agency will have six months to develop treatment standards for newly identified and listed wastes, and that there will be no statutory hammer if the Agency fails to establish such treatment standards. (RCRA section 3004(g)). Given this scheme, it does not appear that Congress necessarily contemplated that these wastes be subject to an immediate California list prohibition. Furthermore, the fact that the California list provision contains a 1987 hard hammer suggests that the provision only was meant to apply to wastes hazardous at that time, rather than to wastes not yet identified or listed.

It thus appears to the Agency that it has a choice as to whether California list prohibitions apply to newly identified or listed wastes. Policy reasons supporting the reading that the prohibitions apply would be the earlier implementation of either treatment standards or interim controls on certain types of land disposal (such as treatment in minimum technology surface impoundments). On the other hand, the Agency is concerned that there not be massive dislocations in the regulated community due to legitimate expectations that land disposal prohibitions for newly identified or listed wastes not take effect until EPA had taken some action specifically directed toward those wastes, normally a waste-specific rulemaking establishing treatment standards.

If EPA determines that California list prohibitions do apply to newly identified or listed wastes, the Agency anticipates the necessity of granting a two-year national capacity variance for certain wastes (*e.g.*, sludge-solids contaminated with HOCs) exhibiting the revised toxicity characteristic that are newly subject to subtitle C.

In addition, if EPA issues a national capacity variance, the Agency would have to reconcile the four-year impoundment retrofit provision in RCRA section 3005(j)(6) with the requirement in section 3004(h) that national capacity variance wastes be placed in minimum technology surface impoundment units. It appears to the Agency, at least at this time, that the two provisions are in conflict. EPA therefore has discretion to craft a reading that best furthers statutory goals. *Citizens to Save Spencer County* v. *EPA*, 600 F. 2d. 844 (D.C. Cir. 1979). EPA's proposed resolution would be to allow impoundments up to four years to retrofit, but to require the wastes to use available treatment capacity if it becomes available sooner (*i.e.*, if no case-by-case variance were to be granted after the two-year national capacity variance is over).

On the other hand, if the Agency ultimately determines that California list prohibitions do not apply to newly identified or listed wastes, then the Agency would delete the existing requirement that California list HOCs be treated in either boilers, furnaces, or incinerators (see 53 FR 31138–31222, August 17, 1988), and instead limit the treatment method to burning in incinerators. EPA amended the treatment standard for HOCs to include boilers and furnaces in significant part to assure available treatment capacity for HOCs and to allow a prohibition to take effect at an earlier date (U.S. EPA, "Comment Response Background Document for the First Third Proposed Land Disposal Restrictions, Volume I," August 8, 1988, page 12–4). Once the Third Third rule is promulgated, and assuming that California list prohibitions do not apply to newly identified and listed wastes, there are virtually no wastes (and possibly none at all) to which the HOC standard would apply. Therefore, it is not necessary that there be additional combustion capacity in the form of boilers and furnaces for these wastes, and EPA can determine on a more particularized basis whether fuel substitution should be a basis for BDAT. EPA therefore solicits comment on whether it should delete the August 17, 1988 rule amending the treatment standard for HOCs to include burning in boilers and industrial furnaces should it determine that California list prohibitions do not apply to newly identified and listed hazardous waste.

IV. 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.

With one exception, 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.

The exception is the proposed clarifying amendments to §§ 261.33 (c) and (d). These clarifications are not effective in authorized States since the requirements are not imposed pursuant to HSWA. Thus, these requirements will be applicable only in those States that do not interim or final authorization. In authorized States, the requirements will not be applicable until the State revises its program to adopt equivalent requirements under State law.

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 proposed 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. The deadline by which the State must modify its program to adopt this proposed regulation will be determined by the promulgation of the final rule in accordance with § 271.21(e). These deadlines can be extended in certain cases (see § 271.21(e)(3)). Once EPA approves the modification, the State requirements become Subtitle C RCRA requirements.

States with authorized RCRA programs may already 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 are not required to include standards equivalent to these regulations in their application. However, the State must modify its program by the deadline set forth in § 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these regulations must include standards equivalent to these regulations in their application. The requirements a state must meet when submitting its final authorization application are set forth in 40 CFR 271.3.

The regulations 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 sections 3004(f) and (g) of RCRA. The conditions under which such an authorization may take place are summarized below and are discussed in a July 15, 1985 final rule (50 FR 28728).

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 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 may be the establishment of a new waste treatability group. All wastes meeting the criteria of these new waste treatability groups may also be subject to the treatment standard established by the variance. Granting such variances may have national impacts; therefore, this aspect of the program is not delegated to the States at this time.

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. 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**.

V. 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 Third 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 Third 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

There could be a potential demand for some of the hazardous wastes included in today's proposed rulemaking to 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 seem to be an attractive alternative. In addition, ocean-based disposal could seem attractive to the regulated community if land-based treatment were not available.

However, the Ocean Dumping Ban Act of 1988 has restricted ocean dumping of sewage sludge and industrial wastes to existing, authorized dumpers until December 31, 1991, after which " * * * it shall be unlawful for any person to dump (sewage sludge or industrial wastes) into ocean waters * * * ". Therefore, the Ocean Dumping Ban Act has made moot any economic or other incentive to ocean dump industrial hazardous wastes, including the wastes subject to this regulation.

C. Wellhead Protection Regulated Under the Safe Drinking Water Act

Section 1428 of the SDWA contains requirements for the development and implementation of state Wellhead Protection (WHP) Programs to protect wells and wellfields which are used, or may be used to provide drinking water to public water systems. Under section 1428, each state must adopt and submit to EPA for approval a WHP program that, at a minimum:

(1) Specifies the duties of state agencies, local governments, and public water systems in the development and implementation of the WHP program;

(2) For each wellhead, determines the wellhead protection area (WHPA), as defined in section 1428(e) of SDWA, based on all reasonably available hydrogeologic information on ground-water flow, recharge, and discharge and other information the state deems necessary to adequately determine the WHPA;

(3) Identifies within each WHPA all potential human sources of contaminants which may have any adverse health effects;

(4) Describes provisions for technical assistance, financial assistance, implementation of control measures, and education, training, and demonstration projects to protect the water supply within WHPAs from such contaminants;

(5) Includes contingency plans for the location and provision of alternate drinking water supplies for each public water system in the event of well or wellfield contamination by such contaminants;

(6) Requires that state and local governments and public water systems consider all potential sources of human contamination within the expected wellhead area of a new water well which serves a public water system; and

(7) Requires public participation in developing the WHP program.

SDWA required all states to submit a WHP program to EPA by June 19, 1989, for EPA review and approval. EPA has received 29 state submittals for review. SDWA requires that all Federal agencies having jurisdiction over any potential source of contaminants identified by a state program under this section shall comply with all the requirements of the state program.

Any private or public entity subject to the land disposal restrictions regulations must also be in compliance with the appropriate state's wellhead protection program. The Agency reiterates that the land disposal of hazardous wastes must comply not only with the land disposal restrictions and other RCRA regulations, but with other environmental programs, such as the Wellhead Protection Program under the Safe Drinking Water Act.

D. Air Emissions Regulated Under the Clean Air Act (CAA)

There are two air emission concerns with respect to the land disposal restrictions. The first is a cross-media concern about air emissions that occur as a result of waste treatment such as incineration of metal-bearing wastes causing metal emissions to the atmosphere. Another concern is with air emissions from the land disposal of the treatment residue. Air emission control programs are under development using both the CAA and RCRA to address these concerns as discussed below.

Specific cross-media air emission concerns have been identified for treatment technologies applicable to

Third Third wastes, but EPA believes that existing Clean Air Act controls adequately address the potential problems. Retorting of mercury sulfide wastes can result in air emissions of both elemental mercury and sulfur dioxide (SO_2). The Agency has promulgated a National Emission Standard for Hazardous Air Pollutants (NESHAP) for mercury emissions under section 112 of the CAA (40 CFR part 61, subpart E). There are no industry-specific national CAA control standards for SO_2 emissions from retorting mercury sulfide wastes. There are, however, regulations for the prevention of significant deterioration (PSD) of air quality that would address not only these SO_2 emissions but also any mercury emissions that are not regulated by the NESHAP.

The NESHAP limits mercury emissions to the atmosphere from mercury processing facilities, mercury cell chlor-alkali plants, and plants that incinerate and/or dry wastewater treatment plant sludges. In all these cases, the NESHAP limits mercury emissions across the entire processing facility to the extent necessary to protect human health. The NESHAP would not apply to a dedicated mercury sulfide waste retorting facility that is not located in an ore processing or a mercury cell chlor-alkali plant.

Under section 165(a) of the CAA, all new major stationary sources and major modifications to existing sources of air pollution must obtain a PSD permit. If the mercury or SO_2 emissions from the retorting process were to come from a major stationary source or a major modification subject to the PSD regulations and would be emitted in significant amounts (greater than 0.1 tons per year of mercury or 40 tons per year of SO_2), then such emissions would be subject to best available control technology (BACT) requirements. An air quality analysis for mercury and SO_2 would also be required under PSD. Moreover, an air quality analysis must be conducted to demonstrate that the SO_2 emissions would neither cause nor contribute to violations of any national ambient air quality standard (NAAQS) or PSD increment for SO_2. Facilities that are located in areas that have failed to meet any NAAQS for SO_2 (i.e., designated nonattachment areas) and emit more than 100 tons per year of SO_2, must not only apply emission controls that meet the lowest achievable emission rate but also offset their remaining SO_2 emissions by acquiring federally enforceable emission reductions from other nearby SO_2 emissions sources.

The Agency is also concerned whether incineration of wastes containing brominated organics or organo-nitrogen compounds may adversely affect air quality. The presence of bromine complicates the evaluation of incineration of these wastes. A detailed discussion of the Agency's approach for brominated organics is contained in section III.A.2.e of today's preamble. A discussion of potential nitrogen oxide emissions from organo-nitrogen wastes is contained in section III.A.3.f.

There are several general regulatory development programs under RCRA that address treatment technology air emissions. The Agency has initiated a three-phased program under section 3004(n) of RCRA to address air emissions from hazardous waste management units other than incinerators. The first phase addresses organic air emissions as a class from two types of emission sources. The first source category is process equipment (pumps, valves, etc.) that contact hazardous waste that contain greater than 10 percent organic compounds, including such as distillation units and incinerators. The second source category is certain vents on various treatment technologies, such as air or steam strippers. These standards were proposed in the **Federal Register** on February 5, 1987 (52 FR 3748) and are scheduled to be promulgated in fall of 1989.

The second phase of standards development under section 3004(n) of RCRA addresses organic air emissions as a class from tanks, containers, and surface impoundments. Treatment technologies that occur in tanks or containers that are not controlled by the Phase I standards would be controlled by these standards. Wastes that would be prohibited from land disposal may continue to be managed in a surface impoundment as long as the treatment residuals that do not meet the applicable treatment standards are removed from the impoundment within one year of entry into the impoundment. These standards will control air emissions from the management of wastes in the surface impoundment. These standards are scheduled to be proposed in the **Federal Register** in fall of 1989.

In the third phase of the section 3004(n) standards development, the Agency will develop additional standards for the sources addressed in the first two phases as necessary to address residual risks.

In addition to the section 3004(n) standards, general standards to control both organic and metal emissions from the combustion of hazardous waste in incinerators and other types of combustion devices are under various stages of development.

In certain cases, waste treatment may occur in treatment technologies that are not required to obtain RCRA permits. Guidance for the control of air emissions from these sources, such as exempt biological treatment tanks and recycling units, is being developed under the CAA.

None of the regulatory efforts discussed above address air emissions from the land disposal of treatment residue in landfills, land treatment units, or waste piles because the Agency presently presumes that these units will only receive wastes that have been treated to meet the BDAT requirements and that this level of treatment comments on this presumption. In a separate rulemaking, the Agency is considering to propose regulations limiting air emissions from land disposal units seeking to land dispose of wastes under a no migration variance.

E. Clean Up Actions Under the Comprehensive Environmental Response, Compensation, and Liability Act

The land disposal restrictions may have significant effects on the selection and implementation of response actions that are taken under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). There are three primary areas in which these effects may occur.

One area that may be affected by the land disposal restrictions is in the selection of treatment standards at the remedial action site. The cleanup standards set at CERCLA sites are risk-based, while treatment standards developed under the land disposal restrictions program are technology-based. Therefore, the technology-based treatment standards may be more stringent than the risk-based cleanup standards developed based on the CERCLA selection of remedy criteria, and vice versa. Another matter that may be affected is the treatment of soil and debris contaminated with wastes restricted from land disposal. Contaminated soil and debris are a primary type of waste that must be remediated at most CERCLA sites. In many cases, the soil matrix is different from that of the industrial wastes for which treatment standards are set. CERCLA site managers must either comply with the treatment standards or request and be granted a variance from the treatment standard (§ 268.44) or

request and be granted a "no-migration" variance (§ 268.6).

Finally, even though the hazardous substances at a CERCLA remediation site may have been disposed prior to the effective date of RCRA, if the action involves removal of restricted wastes after the prohibition effective date, the land disposal restrictions are legally applicable (51 FR 40577, November 7, 1986). See also *Chemical Waste Management* v. *EPA*, 869 F.2d at 1535–37 (D.C. Cir. 1989). For example, if a waste is excavated from a unit, treated, and redisposed, EPA has indicated that "placement" (see RCRA section 3004(k)) of the waste in a land disposal unit has occurred, and the applicable treatment standards must be met (see 53 FR 51444 and 51445, December 21, 1988). However, if the waste is capped in place, removal or "placement" has not occurred, and the treatment standards are not legally applicable.

F. Applicability of Treatment Standards to Wastes From Pesticides Regulated Under the Federal Insecticide, Fungicide, and Rodenticide Act

A number of generators of pesticide waste that have heretofore been comparatively unaware of the land disposal restrictions may be regulated when today's proposed rulemaking is promulgated. This will require that the Agency develop guidance materials and provide training on how to comply with the requirements of the land disposal restrictions.

Generators of significant quantities of pesticide P and U wastes are farmers and commercial pesticide applicators. The provisions of 40 CFR 262.70 and 268.1 exempt farmers from regulation under the land disposal restrictions program; however, no such exemption exists for commercial applicators. Such generators of hazardous wastes have traditionally land disposed their pesticide wastes. Subsequent to promulgation of today's proposed rule, these generators must comply with the requirements of the land disposal restrictions if they dispose a restricted hazardous waste.

G. Regulatory Overlap of Polychlorinated Biphenyls (PCBs) Under the Toxic Substance Control Act (TSCA) and RCRA

Certain P and U listed wastes contain PCBs. The PCB component of such a waste mixture is regulated primarily under TSCA (although it may also be a California list waste, and subject to RCRA regulation (both substantive and administrative as well)), while the listed P or U component of the waste is regulated under RCRA. Such a mixture of listed/PCB waste must meet the applicable requirements under both statutes. Such a waste must go to an incinerator permitted under both TSCA and RCRA. Any ash residual from incineration must meet the treatment standard for the listed waste component prior to land disposal.

VI. Regulatory Requirements

A. Regulatory Impact Analysis—Surface Disposed Wastes

In accordance with Executive Order No. 12291, the Agency has reviewed the costs and benefits of today's rule and has determined that today's rule constitutes a "major regulation" because it is likely to result in an annual cost to the economy in excess of $100 million. As a result of this determination, the Agency has conducted a regulatory impact analysis (RIA) in support of today's rule. The complete RIA document, "Regulatory Impact Analysis of the Land Disposal Restrictions for Third Third Scheduled Wastes Proposed Rule (Draft)," is available for review in the public docket for today's rule. The complete document was also submitted to the Office of Management and Budget for review, as required by Executive Order No. 12291.

This section of the preamble summarizes the results of the regulatory impact analysis of the proposed rule, as detailed in the draft RIA document. Section VI.A.1 below describes the universe of wastes and facilities affected by today's rule. Section VI.A.2 below summarizes the analysis of human health and environmental benefits attributable to today's rule. Section VI.A.3 summarizes the economic cost and impact analysis performed for today's rule.

It is important to note that the summary analysis presented in this section of the preamble and in the draft RIA document does not completely reflect the current status of the proposed rule or the regulated community. For example, when the RIA was begun, the latest data available to describe the universe of facilities managing Third Third wastes was EPA's 1986 "National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities." Between the time of data collection for this survey and today, there have been changes at particular facilities regarding waste practices and volumes. The most dramatic change has been with surface impoundments that have subsequently been closed or no longer receive hazardous wastes. The Agency has updated the data base to reflect these changes wherever possible, but some differences may still exist. Because the data were revised, the Agency believes that this source of discrepancy is small.

As another example, proposed treatment standards had not been established for all affected wastes when the RIA began. Thus, in order to complete the regulatory analysis in time to accompany the proposed rule, the Agency had to make certain assumptions as to what would be selected for proposed treatment standards. Consequently, the standards modelled in the regulatory impact analysis and the standards actually proposed were not identical for 17 of the more than 300 waste codes addressed in the proposed rule. The differences are not expected to have a significant effect on the cost estimates because the technologies assumed for these 17 waste codes were similar in cost to that actually proposed. These and other discrepancies will be addressed in the regulatory impact analysis of the Third Third final rule.

The Agency analyzed benefits, costs and economic impacts using the same approach and methodology that was used for the August 17, 1988, First Third final rule (53 FR 31138).[1] The effects of the proposed rule were estimated by comparing post-regulatory management practices and conditions with those occurring under baseline conditions. The baseline was defined as continued land disposal of wastes in units meeting minimum technological requirements. The baseline for future years was not adjusted to reflect hard hammer provisions that would prohibit land disposal in the absence of the proposed rule after May 8, 1990.

The Agency did adjust reported waste management practices to reflect compliance with the provision of promulgated land disposal restriction rules covering solvents and dioxins, California list wastes, and First and Second Third scheduled wastes. In making these adjustments, EPA assumed that facilities would comply with these other rules by the least costly methods allowable.

1. Overview of Affected Wastes, Facilities, and Management

The universe of waste and facilities examined for the RIA was developed from EPA's 1986 "National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities" (hereafter, the TSDR Survey) and EPA's

[1] For detailed information on the cost methodology, see *Regulatory Impact Analysis of the Land Disposal Restrictions on First Third Wastes: Final Report*, August 1988, ICF Incorporated.

1984 "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated under RCRA in 1981" (hereafter, the RIA Mail survey). Data regarding waste management in surface impoundments in the TSDR Survey has been adjusted to reflect changes in industry practices since 1986. Most treatment and storage surface impoundments in the TSDR Survey have been closed or have been exempted from hazardous waste management regulations.

As with past land disposal restrictions RIAs, the TSDR and RIA Mail surveys provide an overview of the number of facilities treating, storing, or disposing of waste; the quantities and types (by RCRA waste code) of waste managed at each facility; and the current practice or method of treatment. The adjusted information contained in the two surveys is accepted as the baseline (i.e., pre-Third Third rule) practice for this RIA.

Quantity of Affected Waste. Today's rule will potentially affect approximately 379 million gallons of waste per year as shown in Figure VI-1.

TABLE VI-1.—THIRD THIRD RULE QUANTITY BY WASTE TYPE

[In million gallons per year]

	Vol.
Ignitable (D001), Corrosive (D002), and Reactive Wastes (D003)	36
EP Toxic Wastes (D004-D017)	141
Listed Wastes	3
Mixtures of Wastes	135
CBI Wastes	64
Total	379

Characteristic wastes constitute the largest volume of wastes covered by the proposed rule. In addition to the 47 percent identified as D001-D017, the waste mixtures category is dominated by characteristic wastes. For instance, two mixtures of characteristic wastes (D002/D007/D009 and D002/D006/D008) alone account for 110 million gallons, more than 80 percent of the waste mixtures volume. Table VI-2 gives the volumes of the predominant characteristic wastes affected by the proposed rule.

TABLE VI-2.—Predominant Characteristic Wastes by Volume

[in million gallons per year]

	Vol.
Mixture of D002, D007 & D009	99
D008 (EP Toxic for lead)	62
D007 (EP Toxic for chromium)	47
D001 (Ignitable)	15
D002 (Corrosive)	14
D004 (EP Toxic for arsenic)	12
Mixture of D002, D006, D008	11
Other characteristic wastes and mixtures	52
Total	312

Affected Facilities. A total of 111 waste management facilities and over 1,300 waste generators are affected by today's proposed rule. Table VI-3 provides a breakdown of affected facilities and their volumes managed.

TABLE VI-3.—Third Third Rule Volumes by Facility Type

[in million gallons per year]

TSDF facilities	Vol.	No. of affected facilities
Commercial Facilities	229	31
Noncommercial Facilities	150	84
Subtotal TSDFs	379	*111
Generators	**N/A	1,389
Total	379	1,500

* Some TSDFs are both commercial and noncommercial.
** All generator volumes are managed at commercial facilities.

The affected facilities represent a wide variety of industries in 23 major industrial groups. A further examination of the TSDR survey data reveals the following information about the range of industries with large volumes of Third Third wastes.

The volume of noncommercial process waste, which accounts for 39.6 percent of the total waste volume, is distributed across the following Standard Industrial Code (SIC) groups:

- SIC 28, Chemical and Allied Products (71%)
- SIC 33, Primary Metals Industries (11%)
- SIC 49, Electric, Gas, and Sanitary Services (8%)
- SIC 29, Petroleum Refining and Related Industry (4%)
- CBI (4%)
- other industry groups (2%).

The volume of commercial process waste, which accounts for 60.4 percent of the total waste volume, is distributed across the following SIC groups:

- SIC 49, Electric, Gas, and Sanitary Services (39%)
- CBI (26%)
- SIC 99, Nonclassifiable Establishments (8%)
- SIC 89, Services, not classified (8%)
- SIC 28, Chemicals and Allied Products (6%)
- SIC 33, Primary Metals Industries (5%)
- other industry groups (8%).

Waste Management Practices. Based on the TSDR survey, the RIA examined five land disposal baseline management practices: disposal in landfills, disposal by land treatment, disposal in surface impoundments, treatment in waste piles, and storage in waste piles. Table VI-4 provides a breakdown of these baseline management practices by volume and number of facilities. As shown on the table, almost two thirds of the waste volume covered by the proposed rule is currently managed in landfills or disposal surface impoundments. Landfills are also the most prevalent baseline practice, occurring at over 35 percent of the affected facilities. About 30 percent of the wastes are managed in disposal surface impoundments.

TABLE VI-4.—THIRD THIRD RULE BASELINE MANAGEMENT PRACTICES

Baseline Practice	Vol.(MG)	Facilities
Landfill	134.0	35.4
Land treatment	5.0	21.0
Storage waste piles	35.0	22.0
Treatment waste piles	27.0	14.0
Disposal surface impoundments114	7.1	12.0
Confidential business information	64.0	18.0
Total	379.0	111.0

Treatment practices in compliance with today's rule significantly redistribute the quantities of waste among management practices. Most important, while 379 million gallons of waste per year are land disposed under baseline management practices, 209 million gallons of waste per year would be disposed of in landfills after treatment as a result of today's rule. Thus, the proposed rule would result in a 45 percent reduction in the volume of Third Third wastes being land disposed. Most of the wastes covered by the proposed rule would be treated by precipitation or stabilization.

2. Benefits of the Proposed Rule

The proposed rule would result in several benefits including reduced human health risks, improved safety at facilities, and reduced ecological effects. As with previous land disposal restrictions, the Agency quantified the human health benefits and conducted a qualitative analysis of the other benefits.

Human-Health Benefits. The quantitative benefits analysis estimated that over a 70 year lifetime, the proposed rule would reduce cancer cases by 148 and reduce the number of people exposed to at least one noncarcinogens above health based criteria by about 34,700.

Approximately 85% of cancer cases averted are due to reduced exposure to benzene, acrylonitrile, dichloromethane and other carcinogenic constituents in D001 ignitable wastes and arsenic in D004. Treatment of these wastes account for about 10% of the costs of the rule. About 99% of noncarcinogenic benefits are due to reduced exposure to D001 ignitable wastes, cadmium (D006) and chromium (D007) as well as mixtures with these metals or nickel, mercury or barium. Treatment of these wastes account for about 44% of the cost of the rule.

The Agency notes that these estimates are uncertain and may overstate or underestimate the human-health benefits of the proposed rule. The RCRA Risk-Cost Analysis model does not contain enough data to model about 90 of the more than 250 constituents found in the Third Third wastes. As a result, benefits of regulating wastes with one or more of these missing constituents may be underestimated. At the same time, benefits may be overestimated due to conservative exposure assumptions. Exposure scenarios are based on drinking 2 litres/day for seventy years of contaminated water or inhalation of 20 cubic meters/day of air for seventy years.

Safety Benefits. In addition to adverse human-health effects, ignitable (D001) and reactive (D003) wastes may pose a general safety hazard. Land disposal of these wastes are currently only allowed if the waste is either deactivated or precautions are taken to prevent accidental ignition or reaction. Approximately 22 million gallons of D001 and D003 are currently being land disposed without deactivation. Until they are deactivated, there is some on-going risk that the safety precautions may fail, resulting in fires, explosions, or release of toxic gases. The proposed rule would require deactivation, thereby terminating the safety risk.

Environmental Benefits. The proposed rule would result in an overall reduction in toxic releases to the environment, thereby reducing adverse effects to ecosystems. The resulting improvement in ecological health is extremely difficult to quantify due to uncertainty in estimating exposure levels and species populations. However, the sensitivity of certain species to hazardous constituents of wastes covered by the proposed rule suggest a very high potential for ecological effects.

As an example, aquatic species are at least two orders of magnitude more sensitive than humans to arsenic (D004), mercury (D009), silver (D011), lindane (D013), methoxychlor (D014), and toxaphene (D015). Therefore, to the extent that these wastes are released to waterbodies, aquatic ecosystems may be at some risk even when there is no human health risk.

Another way to look at the potential for ecological effects is to consider the proximity of land disposal facilities to waterbodies. A recent Agency study on ecological risks showed that for a sample of 52 National Priorities List sites, almost 90 percent of the sites posed a threat to freshwater ecosystems due to their proximity to waterbodies. [2] Wastes removed from some of these sites may be subject to the treatment standards proposed in this rule. Thus, the proposed rule would reduce ecological risk associated with any Third Third wastes managed at these sites.

3. Costs

The proposed rule would result in an annual incremental costs of approximately $259 million, and would affect over 1400 facilities in 17 industrial sectors. Table VI–5 summarizes the estimated incremental costs associated with today's rule by waste type.

As expected based on volumes, the largest incremental cost is attributed to the management of characteristic wastes. Although the listed wastes are a small volume and have the lowest total cost, expensive treatment technologies such as incineration result in a much higher cost per volume treated. Conversely, the corrosive wastes and mixtures with corrosive wastes are very inexpensive to neutralize, resulting in a very low cost per volume treated.

TABLE VI–6.—THIRD THIRD RULE VOLUMES AND INCREMENTAL COST BY WASTE TYPE

[in million gallons and million dollars per year]

	Volume	Incremental	
		Cost	$/Vol.
Ignitable (D001), corrosive (D002), and reactive wastes (D003)	36	$30.8	$0.86
EP toxic wastes (D004–D017)	141	110.5	0.78
Listed wastes	3	18.4	6.13
Mixtures of wastes	135	33.7	0.25
CBI wastes	64	65.5	1.02
Total	379	258.9	0.68

[2] *Summary of Ecological Risks, Assessment Methods, and Risk Management Decision in Superfund and RCRA* (EPA–230–03–89–046) June 1989.

TABLE VI–6.—THIRD THIRD RULE VOLUMES AND INCREMENTAL COST BY WASTE TYPE—Continued

[in million gallons and million dollars per year]

Five characteristic wastes contribute over 40 percent of the incremental cost of the rule as shown in Table VI–7. EP Toxic wastes for chromium (D007) and lead (D008) are the two single wastes that would incur the most incremental cost, primarily due to their volumes. By volume, D007 and D008 are the two largest individual wastes addressed by the proposed rule. D007 wastes are generally treated by chromium reduction in combination with other treatment steps depending on their characteristics.

Similarly, D008 wastes would be treated by several different techniques, primarily involving precipitation and stabilization.

TABLE VI–7.—WASTES INCURRING THE MOST INCREMENTAL COST

	Cost ($Mill./yr)	% of total incr. cost
CBI Wastes	66	25
D007, EP toxic for chromium	36	14
D008, EP toxic for lead	36	14
D004, EP toxic for arsenic	16	6
D001, ignitable	13	5
D003, reactive	11	4

The cost of treating D002 corrosive wastes attributed to the proposed rule may be overestimated by as much as $6 million per year because some of these wastes may be treated due to the California List Land Disposal Restrictions rule (52 FR 25760). That rule established a performance standard prohibiting land disposal of wastes with a pH less than 2, while the proposed rule would establish a technology-based standard of neutralization. The Agency does not have data on how facilities are meeting the California List standard. Rather than make assumptions about the post-California List practices, the Agency chose to overestimate costs by attributing the entire cost of neutralizing D002 acidic wastes to this proposed rule.

4. Economic Impacts

Table VI–8 summarizes the cost and economic impact of the proposed rule.

Compliance costs are the tax-adjusted revenue requirements needed to fund the incremental costs discussed above. Significantly affected facilities are those who either need to increase costs by more than 5 percent or their compliance costs exceed 5 percent of their cash from operations.

TABLE VI-8.—SUMMARY OF ECONOMIC IMPACT BY TYPE OF FACILITY

Economic impact	Type of facility			Total
	Noncommercial	Commercial	Generator	
Compliance cost ($Mill.)	29	230	221	* 251
Affected facilities	72	39	1,389	1,461
Significantly affected	8	NA	554	562
Estimated closures	2	NA	10	12
Affected industry groups	15	15	17	** 23

* Total tax-adjusted compliance cost is less than the sum of compliance cost by facility type because there are noncommercial processes at commercial facilities.

** Some industry sectors are included under more than one type of facility. Therefore the sum of the three facility types is more than the total.

The economic analysis estimates that the effects of the proposed rule would be distributed over a wide range of industries rather than concentrated in a few. Facilities in 23 major industrial groups (two-digit SIC) are affected by the proposed rule. Significantly affected facilities are found in 8 of these industrial groups. The two groups most affected by the proposed rule are SIC 34 and SIC 28, with 168 and 64 significantly affected generators, respectively.

The analysis estimates that 12 facilities would close as a result of the proposed rule. By comparison, the First Third rule was estimated to result in almost 200 closures.

Generators are the type of facility that incurs the largest economic impact. The analysis estimates that 88 percent of the compliance cost will be borne by generators. Also, almost 40 percent of the affected generators will be significantly affected. Of the 12 potential closures discussed above, 10 are generators, which is less than 2 percent of the 554 significantly affected generators.

The TSDR survey identified only 3 small businesses that currently land dispose Third Third waste. None of the 3 are significantly affected under the proposed rule.

For the Third Thirds Final Rule RIA, the Agency expects the results of the 1988 "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated under RCRA" to be available to support the analysis. Also, a plant-specific analysis for generators will be considered if the data are available in time for the analysis. Additional small businesses possibly affected by the rule may be identified at that time.

B. Regulatory Flexibility Analysis—Surface Disposed Wastes

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 firms employing fewer than 50 persons. Because of data limitations, the Agency was unable to include generators of large quantities of Third Third wastes. The small business population therefore included only two groups: all noncommercial TSDFs employing fewer than 50 persons and all small quantity generators (SQGs) that were also small businesses. As a result, the effect of the proposed rule on small businesses is underestimated. However, the Agency would not expect the conclusions of the small business analysis to change significantly if the generator data were available.

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.

The economic analysis identified only six small businesses potentially affected by the proposed rule. None of these six would be significantly affected. The Administrator therefore certifies that Part 268 will not have significant economic effects on a substantial number of small entities. As a result of this finding, the Agency has not prepared a formal RFA.

C. Regulatory Impact Analysis—Underground Injected Wastes

The Agency has completed a separate regulatory impact analysis for underground injected wastes affected by today's proposed rule.

Sixty-five injection facilities, injecting approximately 6.5 billion gallons of Third Third wastes annually, will be required to either treat wastes or file "no migration" petitions as outlined in 40 CFR 148.20 (See 53 *FR* 28118). The addition of these facilities will contribute substantially to compliance costs already incurred by injection well owners and operators managing hazardous wastes regulated by previous rulemaking.

The Agency analyzed costs and benefits using the same approach and methodology developed in the "Regulatory Impact Analysis of the Underground Injection Control Program: Proposed Hazardous Waste Disposal Injection Restrictions" used for the July 26, 1988, final rule (53 FR 28118) and subsequent rulemaking. An analysis was performed to assess the economic effect of associated compliance costs for the additional volume of injected wastes attributable to today's proposed rule. Total compliance costs for injected wastes are estimated at $54 million annually. Alternative treatment costs are estimated at $53.7 million annually and petition costs are annualized at $0.3 million.

The RIA estimates that 17 facilities will eventually treat their wastes, and therefore be significantly affected economically by today's proposed rule.

The benefits outlined in the RIA are generally defined as the reduced human health risk resulting from fewer instances of groundwater contamination. Potential health risks from Class I hazardous waste injection wells are low, except in a few isolated cases depending on proximity to well location, the geologic setting, unplugged boreholes, and injection well grout seal failure.

D. Regulatory Flexibility Analysis—Underground Injection Wastes

The economic analysis identified only six small businesses potentially affected by part 268 of the proposed rule. None of these six would be significantly affected.

Owners and operators of hazardous waste injection wells are generally major chemical, petrochemical, and other manufacturing companies. The Agency is not aware of any small

entities of injection wells that would be affected by part 148 of today's proposed rule.

The Administrator therefore certifies that part 148 and part 268 will not have significant economic effects on a substantial number of small entities. As a result of this finding, the Agency has not prepared a formal RFA.

E. Paperwork Reduction Act

All information collection requirements in this proposed rule were promulgated in previous land disposal restrictions rulemakings and approved by the Office of Management and Budget (OMB) at that time. Since there are no new information collection requirements being promulgated today, (including those for the Underground Injection Control Program) an Information Collection Request has not been prepared.

F. Review of Supporting Documents

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

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

- "Characterization of Waste Streams Listed in 40 CFR 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);
- Source assessment documents for various industries; and
- "1986–1987 Survey of Selected Firms in the Commercial Hazardous Waste Management Industry: Final Report" (March 1988).

Financial information for the economic impact analysis was obtained from the 1982 Census of Manufacturers and 1984 Annual Survey of Manufacturers. Producer price indices were used to restate 1984 dollars in 1987 terms. For the final rule RIA, the Agency will use these producer price indices to restate 1984 dollars in 1990 terms.

VII. List of Subjects in 40 CFR Part 148, 261, 264, 265, 268, and 271

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

Dated: November 9, 1989.

F. Henry Habicht,

Acting Administrator.

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

PART 148—HAZARDOUS WASTE INJECTION RESTRICTIONS

1. The authority citation for part 148 continues to read as follows:

Authority: Section 3004, Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq.

2. Section 148.14 is amended by redesignating paragraphs (d), (e), (f), and (g) as paragraphs (e), (f), (g), and (i); by revising the introductory text of newly redesignated paragraph (i); and by adding new paragraphs (d) and (h) to read as follows:

§ 148.14 Waste specific prohibitions—first third wastes.

* * * * *

(d) Effective May 8, 1990, the wastes specified in 40 CFR 261.31 as EPA Hazardous Waste number F006 wastewaters and F019 wastewaters; the wastes specified in 40 CFR 261.32 as K004, K008, K014 nonwastewaters, K015 nonwastewaters, K017, K021 wastewaters, K022 wastewaters, K031, K035, K046 reactive nonwastewaters and all wastewaters, K060 wastewaters, K061 wastewaters, K069 calcium sulfate nonwastewaters and all wastewaters, K073, K083, K084, K085, K086 all but solvent washes, K101 high arsenic nonwastewaters, K102 high arsenic nonwastewaters, and K106; and the wastes specified in 40 CFR Part 261.33 as EPA Hazardous Waste numbers P001, P004, P005, P010, P011, P012, P015, P016, P018, P020, P036, P037, P048, P050, P058, P059, P068, P069, P070, P081, P082, P084, P087, P092, P102, P105, P108, P110, P115, P120, P122, P123, U007, U009, U010, U012, U016, U018, U019, U022, U029, U031, U036, U037, U041, U043, U044, U046, U050, U051, U053, U061, U063, U064, U066, U067, U074, U077, U078, U086, U089, U103, U105, U108, U115, U122, U124, U129, U130, U133, U134, U137, U151, U154, U155, U157, U158, U159, U171, U177, U180, U185, U188, U192, U200, U209, U210, U211, U219, U220, U226, U227, U228, U237, U238, U248, and U249 are prohibited from underground injection.

* * * * *

(h) Effective May 8, 1992, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste numbers K011 wastewaters, K013 wastewaters, and K014 wastewaters are prohibited from underground injection.

(i) The requirements of paragraphs (a) through (h) of this section do not apply:

* * * * *

3. Section 148.15 is amended by redesignating paragraphs (d) and (e) as paragraphs (e) and (f); by revising the introductory text of newly redesignated paragraph (f); and by adding adding new paragraph (d) to read as follows:

§ 148.15 Waste specific prohibitions—second third wastes.

* * * * *

(d) Effective May 8, 1990, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste numbers K025 wastewaters, K029 wastewaters, K041, K042, K095 wastewaters, K096 wastewaters, K097, K098, and K105; and the wastes specified in 40 CFR 261.33 as P002, P003, P007, P008, P014, P026, P027, P049, P054, P057, P060, P066, P067, P072, P107, P112, P113, P114, U002, U003, U005, U008, U011, U014, U015, U020, U021, U023, U025, U026, U032, U035, U047, U049, U057, U059, U060, U062, U070, U073, U080, U083, U092, U093, U094, U095, U097, U098, U099, U101, U106, U109, U110, U111, U114, U116, U119, U127, U128, U131, U135, U138, U140, U142, U143, U144, U146, U147, U149, U150, U161, U162, U163, U164, U165, U168, U169, U170, U172, U173, U174, U176, U178, U179, U189, U193, U196, U203, U205, U206, U208, U213, U214, U215, U216, U217, U218, U239, U244 are prohibited from underground injection.

* * * * *

(f) The requirements of paragraphs (a) through (f) of this section do not apply:

* * * * *

4. Section 148.16 is amended by redesignating paragraph (c) as paragraph (g); by revising the introductory text of newly redesignated paragraph (g); and by adding new paragraphs (c), (d), (e), and (f) to read as follows:

§ 148.16 Waste specific prohibitions—third third wastes.

* * * * *

(c) Effective May 8, 1990, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste numbers K002, K003, K005 wastewaters, K006, K007 wastewaters, K023, K026, K032, K033, K034, K093, K094 and K100 wastewaters; the wastes specified in 40 CFR 261.33 as P006, P009, P017, P022, P023, P024, P028, P031, P033, P034, P038, P042, P045, P046, P047, P051, P056, P064, P065, P073, P075, P076, P077, P078, P088, P093, P095, P096, P099, P101, P103, P109, P116, P118, P119, U001, U004, U006, U017, U024, U027, U030, U033, U034, U038, U039, U042, U045, U048, U052, U055, U056, U068, U071, U072, U075, U076, U079, U081, U082, U084, U085, U087, U088, U090, U091, U096, U112, U113, U117, U118, U120, U121, U123, U125, U126, U132, U136, U139, U141, U145, U148, U152, U153, U156, U160, U166, U167, U181, U182, U183, U184, U186, U187, U191, U194, U197, U201, U202, U204, U207, U222, U225, U234, U236, U240, U243, and U247; and the wastes identified in 40 CFR 261.23 or 261.24 as hazardous based on a characteristic alone, designated as D001, D002 (nonwastewaters), D003 (nonwastewaters), D004, D005, D006, D007 (nonwastewaters), D008, D010, D011, D012, D013, D014, D015, D016, and D017 are prohibited from underground injection.

(d) Effective May 8, 1992, the wastes identified in 40 CFR 261.23 or 261.24 as hazardous based on a characteristic alone, designated as D002 wastewaters, D003 wastewaters, D007 wastewaters, and D009 nonwastewaters are prohibited from underground injection.

(e) Effective May 8, 1992, multi-source leachate that is derived from disposal of any listed waste and leachate that exhibits a characteristic of hazardous waste is prohibited from underground injection.

(f) Effective May 8, 1990, mixed radioactive/hazardous waste in 40 CFR 268.10, 268.11, and 268.12, that are mixed radioactive and hazardous wastes, are prohibited from underground injection.

(g) The requirements of paragraphs (a) through (f) of this section do not apply:

* * * * *

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTES

I. In Part 261:

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

Subpart A—General

§ 261.2 [Amended]

2. Section 261.2(b) is amended by adding paragraph (b)(4) to read as follows:

* * * * *

(b) * * *

(4) Residues from spills of commercial chemical products (as defined in § 261.33(d)) that are not legitimately recycled in accordance with § 261.2(e) within 90 days of the date of the spill. Such residues that are legitimately recycled in accordance with § 261.2(e) after 90 days of the date of the spill will cease to be solid wastes when recycled.

* * * * *

3. Table 1 in § 261.2(c) is revised by adding a line at the end to read as follows:

Residues from spills of commercial chemical products as described at 40 CFR 261.(2)(b)(4)	(*)	(*)	(*)	(*)

* * * * *

4. The introductory text and paragraph (c) of § 261.33 are revised to read as follows (the comment paragraph remains):

§ 261.33 Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof.

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded as described in § 261.2(a)(2)(i), when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, when they are otherwise applied to the land or are contained in products that are applied to the land in lieu of their original intended use or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel, or burned as a fuel, or when they are residues described in § 261.33(d) and are not recycled in accordance with § 261.2(e) within 90 days of the initial spill event.

* * * * *

(c) Any residue remaining in a container or inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) or (f) of this section, unless the container is empty as defined in § 261.7(b)(3) of the chapter.

* * * * *

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 B—General Facility Standards

2. The comment following paragraph (a)(2) of § 264.13 is revised to read as follows:

§ 264.13 General waste analysis.

(a)(1) * * *

(2) * * *

[*Comment:* For example, the facility's records of analysis performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the information required by paragraph (a)(1) of this section. For purposes of compliance with Part 268, however, the generator may supply such information only if EPA has specifically authorized the generator to do so in approving the waste analysis plan. If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this section.]

* * * * *

Subpart K—Surface Impoundments

3. The introductory text of § 264.229 is revised to read as follows:

§ 264.229 Special requirements for ignitable or reactive waste.

Ignitable or reactive waste must not be placed in a surface impoundment, unless the waste or impoundment satisfies all requirements of part 268, and:

* * * * *

Subpart L—Waste Piles

4. The introductory text of § 264.256 is revised to read as follows:

§ 264.256 Special requirements for ignitable or reactive waste.

Ignitable or reactive waste must not be placed in a waste pile unless the waste or waste pile satisfies all requirements of part 268, and:

* * * * *

Subpart M—Land Treatment

5. The introductory text of § 264.281 is revised to read as follows:

§ 264.281 Special requirements for ignitable or reactive waste.

The owner or operator must not apply ignitable or reactive waste to the treatment zone unless the waste or the treatment zone meets all applicable requirements of part 268, and:

* * * * *

Subpart N—Landfills

6. The introductory text of paragraph (a) of § 264.312 is revised to read as follows:

264.312 Special requirements for ignitable or reactive waste.

(a) Except as provided in paragraph (b) of this section, and in § 264.316, ignitable or reactive waste must not be placed in a landfill, unless the waste or landfill meets all applicable requirements of part 268 and:

* * * * *

7. In § 264.316, paragraph (f) is added to read as follows:

§ 264.316 Disposal of small containers of hazardous waste in overpacked drums (lab packs).

* * * * *

(f) Hazardous waste in the inside containers meets the applicable treatment standards under §§ 268.41 and 268.43. [Lab packs which contain only waste codes listed in Appendix IV to part 268 may be incinerated according to the provisions of § 268.42. The residuals from such incineration are no longer prohibited from land disposal. Lab packs which contain only waste codes listed in Appendix V to part 268 may be stabilized according to the provisions of § 268.42. The residuals from such stabilization are no longer prohibited from land disposal.]

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

I. 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.

Subpart B—General Facility Standards

2. The comment at the end of paragraph (a) of § 265.13 is revised to read as follows:

§ 265.13 General waste analysis.

(a)(1) * * *

(2) * * *

[Comment: For example, the facility's records of analysis performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this section.]

* * * * *

Subpart K—Surface Impoundments

3. The introductory text of § 265.229 is revised to read as follows:

§ 265.229 Special requirements for ignitable or reactive waste.

Ignitable or reactive waste must not be placed in a surface impoundment, unless the waste or impoundment satisfies all requirements of part 268, and:

* * * * *

Subpart L—Waste Piles

4. The introductory text of § 265.256 is revised to read as follows:

§ 265.256 Special requirements for ignitable or reactive waste.

Ignitable or reactive waste must not be placed in a waste pile unless the waste or waste pile satisfies all requirements of part 268, and:

* * * * *

Subpart M—Land Treatment

5. The introductory text of § 265.281 is revised to read as follows:

§ 265.281 Special requirements for ignitable or reactive waste.

The owner or operator must not apply ignitable or reactive waste to the treatment zone unless the waste or the treatment zone meets all applicable requirements of part 268, and:

* * * * *

Subpart N—Landfills

6. The introductory text of § 265.312 is revised to read as follows:

§ 265.312 Special requirements for ignitable or reactive waste.

(a) Except as provided in paragraph (b) of this section, and in § 265.316, ignitable or reactive waste must not be placed in a landfill, unless the waste or landfill meets all applicable requirements of part 268, and:

* * * * *

7. In section 265.316, paragraph (f) is added to read as follows:

§ 265.316 Disposal of small containers of hazardous waste in overpacked drums (lab packs).

* * * * *

(f) Hazardous waste in the inside containers meets the applicable treatment standards under §§ 268.41 and 268.43. [Lab packs which contain only waste codes listed in Appendix IV to part 268 may be incinerated according to the provisions of § 268.42. The residuals from such incineration are no longer prohibited from land disposal. Lab packs which contain only waste codes listed in Appendix V to part 268 may be stabilized according to the provisions of § 268.42. The residuals from such stabilization are no longer prohibited from land disposal.]

PART 268—LAND DISPOSAL RESTRICTIONS

I. 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 § 268.7, paragraphs (a) (7), (8), and (9) are added, and paragraphs (b) introductory text and (c)(2) are revised to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) * * *

(7) If a generator is managing a lab pack which contains only organic hazardous wastes specified in Appendix IV of this part, with each shipment of waste the generator must certify that the lab pack contains only the waste codes identified in Appendix IV. The generator must also comply with the requirements in (a)(1), (b)(2) and (c) of this section.

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

I certify under penalty of law that to support this certification I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and that the lab pack contains only waste codes specified in Appendix IV to part 268. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

(8) If a generator is managing a lab pack that contains only the constituents identified in Appendix V to this part, the generator must certify that the lab pack contains only constituents identified in Appendix V. The generator must also comply with the requirements in (a)(1), (b)(2) and (c) of this section.

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

I certify under penalty of law that to support this certification I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste, and that the lab pack contains only those constituents specified in Appendix V to part 268. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

(9) Small quantity generators with tolling agreements pursuant to 40 CFR 262.20(e) must comply with the applicable notification and certification requirements of paragraph (a) of this section for the initial shipment of the waste subject to the agreement. Such generators must retain on-site a copy of such notification and certification, together with the tolling agreement, for at least five years from the date of the original shipment. The five year record retention period is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

(b) The frequency with which treatment facilities must test their waste will be determined by the Regional Administrator or his designate, and will be based on the criteria included in §§ 264.13 or 265.13, and will be specified in the facility's waste analysis plan as required by § 264.13 or § 265.13.

* * * * *

(c) * * *

(2) Test the waste, or an extract of the waste or treatment residue developed using the test method described in Appendix I of this part or using any methods required by generators under § 268.32 of this part, to assure that the wastes or treatment residues are in compliance with the applicable treatment standards set forth in subpart D of this part and all applicable prohibitions set forth in § 268.32 of this part or in RCRA section 3004(d). The frequency with which disposal facilities must test their waste will be determined by the Regional Administrator or his designate, and will be based on the criteria included in § 264.13 or § 265.13, and will be specified in the facility's waste analysis plan as required by § 264.13 or § 265.13.

* * * * *

3. Section 268.9 is added to read as follows:

§ 268.9 Special rules regarding wastes that exhibit a characteristic.

(a) The initial generator must determine each waste code applicable to the waste in order to determine the applicable treatment standards under subpart D. For purposes of part 268, waste will carry a waste code designation for any listing under part 261 subpart D, where appropriate, and also one or more waste code designations under part 261 subpart C, where the waste exhibits the relevant characteristic.

(b) Where a prohibited waste is both listed under part 261 subpart D and exhibits a characteristic under part 261 subpart C, the treatment standard for the waste code listed in part 261 subpart D will operate in lieu of the standard for the waste code under part 261 subpart C, provided that the treatment standard for the listed waste covers the constituent that causes the waste to exhibit the characteristic. Otherwise, the waste must meet the treatment standards for all applicable waste codes.

(c) In addition to any applicable standards determined from the initial point of generation, no prohibited waste which exhibits a characteristic under part 261 subpart C may be land disposed unless the treatment level under part 268 is higher than the relevant level in part 261 subpart C and the waste meets the part 268 level.

Subpart C—Prohibitions on Land Disposal

4. Section 268.35 is added to read as follows:

§ 268.35 Waste specific prohibitions-third third wastes.

(a) Effective May 8, 1990, the following wastes specified in 40 CFR 261.31 as EPA Hazardous Waste Nos. F006 (wastewaters) F019 (wastewaters); the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K002; K003; K004 (wastewaters); K005 (wastewaters); K006; K008 (wastewaters); K011 (wastewaters); K013 (wastewaters); K014 (wastewaters); K017; K021 (wastewaters); K022 (wastewaters); K025 (wastewaters); K026; K029 (wastewaters); K031 (wastewaters); K032; K033; K034; K035; K041; K042; K046 (wastewaters); K060 (wastewaters); K061 (wastewaters); K069 (wastewaters); K071 (wastewaters); K073; K083 (wastewaters); K084 (wastewaters); K085; K095 (wastewaters); K096 (wastewaters); K097; K098; K100 (wastewaters); K101 (wastewaters); K102 (wastewaters); K105; K106 (wastewaters); K111; and K112; the wastes specified in 40 CFR 261.33(e) as EPA Hazardous Waste Nos. P001; P002; P003; P004; P005; P006; P007; P008; P009; P010 (wastewaters); P011 (wastewaters); P012 (wastewaters); P014; P015 (wastewaters); P016; P017; P018; (wastewaters); P019 (wastewaters); P020; P022; P023; P024; P026; P027; P028; P031; P033; P034; P036 (wastewaters); P037; P038 (wastewaters); P042; P045; P046; P047; P048; P049; P050; P051; P054; P056; P057; P058; P059; P060; P064; P065 (wastewaters); P066; P067; P068; P069; P070; P072; P073 (wastewaters); P075; P076; P077; P078; P081; P082; P084; P087 (wastewaters); P088; P092 (wastewaters); P093; P095; P096; P101; P102 P103 (wastewaters); P105; P107; P108; P109; P110; P112; P113; P114 (wastewaters); P115; P116; P118; P119; P120; P122; and P123; and the wastes specified in 40 CFR 261.33(f) as EPA Hazardous Waste Nos. U001; U002; U003; U004; U005; U006; U007; U008; U009; U010; U011; U012; U014; U015; U016; U017; U018; U019; U020; U021; U022; U023; U024; U025; U026; U027; U029; U030; U031; U032; U033; U034; U035; U036; U037; U038; U039; U041; U042; U043; U044; U045; U046; U047; U048; U049; U050; U051; U052; U053; U055; U056; U057; U059; U060; U061; U062; U063; U064; U066; U067; U068; U070; U071; U072; U073; U074; U075; U076; U077; U078; U079, U080; U081; U082; U083; U084; U085; U086; U089; U090; U091; U092; U093; U094; U095; U096; U097; U098; U099; U101; U103; U105; U106; U108; U109; U110; U111; U112; U113; U114; U115; U116; U117; U118; U119; U120 (wastewaters); U121; U122; U123; U124; U125; U126; U127; U128; U129; U130; U131; U132; U133; U134; U135; U136 (wastewaters); U137; U138; U139; U140; U141; U142; U143; U144; U145; U146; U147; U148; U149; U150; U151 (wastewaters); U152; U153; U154; U155; U156; U157; U158; U159; U160; U161; U162; U163; U164; U165; U166; U167; U168; U169; U170; U171; U172; U173; U174; U176; U177; U178; U179; U180; U181; U182; U183; U184; U185; U186; U187; U188; U189; U191; U192; U193; U194; U196; U197; U200; U201; U202; U203; U204 (wastewaters); U205 (wastewaters); U206; U207; U208; U209; U210; U211; U213; U214; U215; U216; U217; U218; U219; U220; U222; U225; U226; U227; U228; U234; U236; U237; U238; U239; U240; U243; U244; U246; U247; U248; U249; and the following wastes identified as hazardous based on a characteristic alone: D001 (other than combusted sludge/solids) D002, D003, D004 (wastewaters), D005, D006 (wastewaters); D007, D008, D009 (wastewater), D010 (wastewaters), D011, D012, D013, D014, D015, D016, and D017 are prohibited from land disposal.

(b) Effective August 8, 1990, the following constituents contained in

wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K048 (nonwastewaters); K049 (nonwastewaters); K050 (nonwastewaters); K051 (nonwastewaters); and K052 (nonwastewaters) are prohibited from land disposal: benzo(a)pyrene; ortho-cresols; para-cresols; di-n-butyl phthalate; and phenol.

(c) Effective May 8, 1991, the following constituent contained in wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K048 (wastewaters); K049 (wastewaters); K050 (wastewaters); K051 (wastewaters); and K052 (wastewaters) is prohibited from land disposal: cyanide.

(d) Effective May 8, 1991, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K048 (nonwastewaters); K049 (nonwastewaters); K050 (nonwastewaters); K051 (nonwastewaters); and K052 (nonwastewaters) are prohibited from land disposal, except as provided in paragraph (b) of this section.

(e) Effective May 8, 1992, the following waste specified in 40 CFR 261.31 as EPA Hazardous Waste Nos. F019 (nonwastewaters); the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K031 (nonwastewaters); K071 (nonwastewaters); K084 (nonwastewaters); K101 (nonwastewaters); K102 (nonwastewaters); K106 (nonwastewaters); the wastes specified in 40 CFR 261.33(e) as EPA Hazardous Waste Nos. P010 (nonwastewaters); P011 (nonwastewaters); P012 (nonwastewaters); P015 (nonwastewaters); P019 (nonwastewaters); P036 (nonwastewaters); P038 (nonwastewaters); P065 (nonwastewaters); P073 (nonwastewaters); P087 (nonwastewaters); P092 (nonwastewaters); P103 (nonwastewaters); P114 (nonwastewaters); the wastes specified in 40 CFR 261.33(f) as EPA Hazardous Waste Nos. U136 (nonwastewaters); U151 (nonwastewaters); U204 (nonwastewaters); and U205 (nonwastewaters); and the following wastes identified as hazardous based on a characteristic alone: D001 (nonatomizable sludge/solids); D004 (nonwastewaters); D006 (nonwastewaters); D009 (nonwastewaters); and D010 (nonwastewaters) are prohibited from land disposal.

(f) Effective May 8, 1992, multi-source leachate nonwastewaters in the form of non-atomizable sludges and solids that are derived from disposal of any listed waste and leachate that exhibits a characteristic of hazardous waste is prohibited from land disposal.

(g) Effective May 8, 1992, hazardous wastes listed in 40 CFR 268.10, 268.11, and 268.12 that are mixed radioactive/hazardous wastes are prohibited from land disposal.

(h) Effective May 8, 1992, the wastes specified in this section having a treatment standard in subpart D of this part based on incineration, mercury retorting, vitrification, or wet-air oxidation and which are contaminated soil and debris are prohibited from land disposal.

(i) Between May 8, 1990 and August 8, 1990, wastes included in paragraph (b) 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).

(j) Between May 8, 1990 and May 8, 1991, wastes included in paragraphs (c) and (d) 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).

(k) Between May 8, 1990, and May 8, 1992, wastes included in paragraphs (e), (f), (g), and (h) 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).

(l) The requirements of paragraphs (a), and (b) 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.

(m) To determine whether a hazardous waste listed in §§ 268.10, 268.11, and 268.12 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, or the generator may use knowledge of 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

5. In § 268.41, Table CCWE is amended by adding the following subtables to Table CCWE in alphabetical/numerical order by EPA Hazardous Waste Number:

§ 268.41 Treatment standards expressed as concentrations in waste extract.

(a) * * *

TABLE CCWE—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT

* * * * *

	Concentration (in mg/l)
D004 nonwastewaters (based on EP leachate):	
Arsenic	5.6
D006 nonwastewaters:	
Cadmium	.14
D007 nonwastewaters	
Chromium (Total)	.094
D008 nonwastewaters; Low Lead Subcategory—less than 2.5% Lead:	
Lead	.51
D009 nonwastewaters; Low Mercury Subcategory—less than 16 mg/kg Hg:	
Mercury	.025
D010 nonwastewaters (based on EP leachate):	
Selenium	5.6
D011 nonwastewaters:	
Silver	.072
F019 nonwastewaters:	
Chromium (Total)	5.2
F024 nonwastewaters (See also Table CCW in 268.43):	
Chromium (Total)	.073
Lead	.021
Nickel	.088
K001 nonwastewaters (see also Table CCW in 268.43):	
Lead	.51
K002 nonwastewaters:	
Chromium (Total)	.094
Lead	.37
K003 nonwastewaters:	
Chromium (Total)	.094
Lead	.37
K004 nonwastewaters:	
Chromium (Total)	.094
Lead	.37
K005 nonwastewaters:	
Chromium (Total)	.094
Lead	.37
K006 (anhydrous) nonwastewaters:	
Chromium (Total)	.094
Lead	.37
K006 (hydrated) nonwastewaters:	
Chromium (Total)	5.2
K007 nonwastewaters:	
Chromium (Total)	.094
Lead	.37
K008 nonwastewaters:	
Chromium (Total)	.094
Lead	.37
K015 nonwastewaters (see also Table CCW in 268.43):	
Chromium (Total)	1.7
Nickel	.048
K021 nonwastewaters (based on EP leachate) (see also Table CCW in 268.43):	
Antimony	.23

TABLE CCWE—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

	Concentration (in mg/l)
K028 nonwastewaters (see also Table CCW in 268.43):	
Chromium (Total)	.073
Lead	.021
Nickel	.088
K031 nonwastewaters (based on EP leachate):	
Arsenic	5.6
K046 nonwastewaters:	
Lead	.18
069 nonwastewaters; Calcium Sulfate Subcategory:	
Cadmium	.14
Lead	.24
071 nonwastewaters; Low Mercury Subcategory—less than 16 mg/kg Hg:	
Mercury	.025
083 nonwastewaters (see also Table CCW in 268.43):	
Nickel	.088
084 nonwastewaters (based on EP leachate):	
Arsenic	5.6
086 nonwastewaters (see also Table CCW in 268.43):	
Chromium (Total)	.094
Lead	.37
100 nonwastewaters:	
Cadmium	.066
Chromium (Total)	5.2
Lead	.51
101 nonwastewaters (based on EP leachate):	
Arsenic	5.6
102 nonwastewaters (based on EP leachate):	
Arsenic	5.6
106 nonwastewaters; Low Mercury Subcategory—less than 16 mg/kg Hg:	
Mercury	.025
010 nonwastewaters (based on EP leachate):	
Arsenic	5.6
011 nonwastewaters (based on EP leachate):	
Arsenic	5.6
012 nonwastewaters (based on EP leachate):	
Arsenic	5.6
036 nonwastewaters (based on EP leachate):	
Arsenic	5.6
038 nonwastewaters (based on EP leachate):	
Arsenic	5.6
103 nonwastewaters (based on EP leachate):	
Selenium	5.6
110 nonwastewaters:	
Lead	.51
114 nonwastewaters (based on EP leachate):	
Selenium	5.6
032 nonwastewaters:	
Chromium (Total)	.094
051 nonwastewaters (see also Table CCW in 268.43):	
Lead	.51
136 nonwastewaters (based on EP leachate):	
Arsenic	5.6
144 nonwastewaters:	
Lead	.51

TABLE CCWE—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

	Concentration (in mg/l)
U145 nonwastewaters:	
Lead	.51
U146 nonwastewaters:	
Lead	.51
U151 nonwastewaters; Low Mercury Subcategory—less than 16 mg/kg Hg:	
Mercury	.025
U204 nonwastewaters (based on EP leachate):	
Selenium	5.8
U205 nonwastewaters (based on EP leachate):	
Selenium	5.6
Multi-Source Leachate nonwastewaters (see also Table CCW in 268.43):	
Antimony	.23
Arsenic	5.6
Barium	100
Cadmium	.066
Chromium (Total)	5.0
Lead	.51
Mercury	.2
Nickel	.32
Selenium	5.6
Silver	.072
Thallium	5.6

6. In § 268.42, paragraphs (a)(5), (6), and (7) are added to read as follows:

§ 268.42 Treatment standards expressed as specified technologies.

(a) * * *

(5) Lab packs as defined in 40 CFR 264.316 and 265.316 that contain only organic hazardous wastes specified in Appendix IV of this Part may be incinerated. Such incineration must be in accordance with the requirements of part 264, subpart O, or part 265, subpart O. These treatment standards *do not apply* where the individual waste contained therein meets the applicable treatment standards in §§ 268.41 and 268.43, or the lab pack contains hazardous waste codes listed in Appendix V, or other wastes not specified in Appendix IV to this part. Such lab packs must also comply with the requirements for lab packs specified in 40 CFR 264.316 and 265.316, whichever is applicable.

(6) Lab packs as defined in 40 CFR 264.316 and 265.316 that contain only inorganic hazardous constituents identified in Appendix V of this part may be stabilized using Portland cement in a 20 percent binder-to-waste ratio. These treatment standards *do not apply* where individual constituents contained therein meet the applicable treatment standards in §§ 268.41 and 268.43, or the lab pack contains any constituents other than those specified in Appendix V to this part. Such lab packs must also comply with the requirements for lab packs specified in 40 CFR 264.316 and 265.316, whichever is applicable.

(7) The following wastes identified in §§ 261.21, 261.22, 261.23, 261.24, 268.10, 268.11, and 268.12 must be treated by the specified technologies:

Thermal destruction as a method of treatment for nonwastewater forms of:

P006—Aluminum phosphide
P009—Ammonium picrate
P068—Methyl hydrazine
P081—Nitroglycerin
P096—Phosphine
P105—Sodium azide
P112—Tetranitromethane
P122—Zinc phosphide (>10%)
U023—Benzotrichloride
U086—N,N-Diethylhydrazine
U096—a,a-Dimethyl benzyl hydroperoxide
U098—1,1-Dimethylhydrazine
U099—1,2-Dimethylhydrazine
U103—Dimethyl sulfate
U109—1,2-Diphenylhydrazine
U133—Hydrazine
U135—Hydrogen sulfide
U160—Methyl ethyl ketone peroxide
U189—Phosphorus sulfide
U249—Zinc phosphide (<10%)

Incineration as a method of treatment for nonwastewater forms of:

K025—nonwastewaters
P002—1-Acetyl 2-thiourea
P007—Muscimol (5-Aminoethyl 3-isoxazolol)
P008—4-Aminopyridine
P014—Benzene thiol (Thiophenol)
P016—Bis-chloromethyl ether
P017—Bromoacetone
P018—Brucine
P022—Carbon disulfide
P023—Chloroacetaldehyde
P026—1-(o-Chlorophenyl) thiourea
P027—3-Chloropropionitrile
P028—Benzyl chloride
P034—2-cyclohexyl-4,6-dinitrophenol
P042—Epinephrine
P045—Thiofanox
P046—alpha, alpha-Dimethylphenethylamine
P047—4,6-dinitrocresol salts
P049—2,4-Dithiobiuret
P054—Aziridine
P057—2-Fluoroacetamide
P058—Fluoroacetic acid, sodium salt
P064—Isocyanic acid, ethyl ester
P066—Methomyl
P067—2-Methylaziridine
P069—Methyllactonitrile
P070—Aldicarb
P072—1-Naphthyl-2-thiourea (Bantu)
P075—Nicotine and salts
P084—N-Nitrosomethylvinylamine
P093—N-Phenylthiourea
P095—Phosgene
P108—Strychnine and salts
P116—Thiosemicarbazide
P118—Trichloromethanethiol
U006—Acetyl Chloride
U007—Acrylamide
U010—Mitomycin C
U011—Amitrole

U014—Auramine
U015—Azaserine
U016—Benz(c)acridine
U017—Benzal chloride
U020—Benzenesulfonyl chloride
U021—Benzidine
U026—Chloronaphazine
U033—Carbonyl fluoride
U034—Trichloroacetaldehyde
U035—Chlorambucil
U041—n-Chloro-2,3-epoxypropane
U042—2-Chloroethyl vinyl ether
U046—Chloromethyl methyl ether
U049—4-Chloro-o-toluidine hydrochloride
U055—Cumene (isopropyl benzene)
U056—Cyclohexane
U059—Daunomycin
U062—Diallate
U064—1,2,7,8-Dibenzopyrene
U089—Diethyl stilbestrol
U090—Dihydrosafrole
U091—3,3-Dimethoxybenzidine
U092—Dimethylamine
U094—7,12-Dimethyl benz(a)anthracene
U095—3,3'-Dimethylbenzidine
U097—Dimethylcarbomyl chloride
U110—Dipropylamine
U114—Ethylene bis-dithiocarbamic acid
U116—Ethylene thiourea
U119—Ethyl methane sulfonate
U143—Lasiocarpine
U148—Maleic Hydrazide
U149—Malononitrile
U150—Melphalan
U153—Methane thiol
U156—Methyl chlorocarbonate
U163—N-Methyl N-nitro N-nitroguanidine
U164—Methylthiouracil
U171—2-Nitropropane
U173—N-Nitroso-di-n-ethanolamine
U176—N-Nitroso-N-ethylurea
U177—N-Nitroso-N-methylurea
U178—N-Nitroso-N-methylurethane
U188—1,3-Pentadiene
U191—2-Picoline
U193—1,3-Propane sultone
U194—n-Propylamine
U200—Reserpine
U202—Saccharin and salts
U206—Streptozotocin
U218—Thioacetamide
U219—Thiourea
U222—o-Toluidine hydrochloride
U234—sym-Trinitrobenzene
U236—Trypan Blue
U237—Uracil mustard
U238—Ethyl carbamate
U240—salts and esters of 2,4-D
U244—Thiram

Incineration or fuel substitution as methods of treatment for nonwastewater forms of:

P001—Warfarin (>3%)
P003—Acrolein
P005—Allyl alcohol
P088—Endothall
P102—Propargyl alcohol
U001—Acetaldehyde
U008—Acrylic acid
U053—Crotonaldehyde
U085—1,2:3,4-Diepoxybutane
U113—Ethyl acrylate
U122—Formaldehyde
U123—Formic acid
U124—Furan
U125—Furfural
U126—Glycidaldehyde
U147—Maleic anhydride
U154—Methanol
U182—Paraldehyde
U213—Tetrahydrofuran
U248—Warfarin (<3%)

Incineration, fuel substitution, or recovery as methods of treatment for all forms of:

D001—Ignitable liquids subcategory based on 261.21(a)(1)

Incineration or carbon adsorption as a method of treatment for wastewater forms of:

P009—Ammonium picrate
P068—Methyl hydrazine
P081—Nitroglycerin
P112—Tetranitromethane
U023—Benzotrichloride
U086—N,N-Diethylhydrazine
U096—a,a-Dimethyl benzyl hydroperoxide
U098—1,1-Dimethylhydrazine
U099—1,2-Dimethylhydrazine
U103—Dimethyl sulfate
U109—1,2-Diphenylhydrazine
U133—Hydrazine
U160—Methyl ethyl ketone peroxide

Incineration, or liquid-liquid extraction followed by steam stripping followed by carbon adsorption as a method of treatment for wastewater (<1% TSS and <4% TOC) forms of:

K025—wastewaters

Incineration of vented* ignitable gases; or recovery as methods of treatment for all forms of:

*—Ignitable gases may be vented directly into an incinerator or vented into a suitable adsorbent prior to incineration. Although the gases, once vented, are no longer compressed in a cylinder the Agency does not consider that treatment has occurred until the ignitable gas has been incinerated. Adsorption of the ignitable gas into either a solid or liquid adsorbent is typically a reversible physical process. Thus, the ignitable chemical has not been destroyed.

D001—Ignitable compressed gases based on 261.21(a)(3)

Incineration followed by roasting or retorting of incinerator nonwastewater residues (ash and wastewater treatment sludges from treatment of the incinerator scrubber waters) provided such residues exceed 16 mg/kg total mercury; and scrubber waters from incineration must comply with the 0.030 mg/l wastewater standard as methods of treatment for nonwastewater forms of:

P065—Mercury fulminate
P092—Phenyl mercury acetate

Incineration as a method of treatment with incinerator residues meeting the following: (1) ash and wastewater treatment sludges from treatment of the incinerator scrubber waters must comply with a TCLP concentration of 0.025 mg/l; and (2) scrubber waters must comply with a total concentration of 0.030 mg/l wastewater standard:

D009—Hydraulic oil contaminated with mercury radioactive materials subcategory

Vitrification or stabilization as methods of treatment for nonwastewater forms of:

P114—Thallium (I) selenite

Deactivation as a method of treatment for all forms of:

D001—Ignitable reactives based on 261.21(a)(2)
D001—Oxidizers based on 261.21(a)(4)
D003—Explosives based on 261.23(a) (3), (6), (7) and (8)
D003—Water reactives based on 261.23(a) (2), (3), and (4)
D003—Other reactives based on 261.23(a) (1) and (4)

Deactivation as a method of treatment for nonwastewater forms of:

K044—nonwastewaters
K045—nonwastewaters
K047—nonwastewaters

Deactivation to: SAE 1020 steel corrosion rate <6.35 mm/yr; as a method of treatment for all forms of:

D002—Other corrosives based on 261.22(a)(2)

Surface deactivation or removal of radioactive lead portions followed by encapsulation; or direct encapsulation of radioactive lead solids as methods of treatment for all forms of:

D008—Radioactive Lead Solids (Note: These lead solids include, but are not limited to, all forms of lead shielding, lead "pigs", and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organo-lead materials that can be incinerated and then stabilized as ash.)

Amalgamation with zinc as a method of treatment for all forms of:

D009—Elemental mercury contaminated with radioactive materials
U151—Elemental mercury contaminated with radioactive materials

Thermal recovery as a method of treatment for nonwastewater forms of:

D008—High lead subcategory—greater than or equal to 2.5% total lead
D008—Lead acid batteries (Note: This standard only applies to lead acid batteries that are identified as RCRA hazardous wastes and that are not excluded elsewhere from regulation under the land disposal restrictions of 40 CFR 268 or exempted under other EPA regulations (see 40 CFR 266.80).
D006—Cadmium batteries

Thermal recovery or stabilization as methods of treatment for nonwastewater forms of:

P119—Ammonium vanadate
P120—Vanadium pentoxide

Resmelting in high temperature zinc metal recovery furnace as a method of treatment for nonwastewater forms of:

K061—High zinc subcategory (greater than 15% total zinc)

Roasting or retorting as a method of treatment; or incineration followed by roasting or retorting of incinerator nonwastewater residues (ash and wastewater treatment sludges from treatment of the incinerator scrubber waters) provided such residues exceed 16 mg/kg total mercury for nonwastewater forms of:

D009—High mercury subcategory—greater than or equal to 16 mg/kg total mercury

Roasting or retorting as a method of treatment for nonwastewater forms of:

K106—High mercury subcategory—greater than or equal to 16 mg/kg total mercury
U151—High mercury subcategory—greater than or equal to 16 mg/kg total mercury
K071—High mercury subcategory—greater than or equal to 16 mg/kg total mercury (Note: This standard creates a new subcategory identified as K071 High Mercury Subcategory and would replace the K071 nonwastewater treatment standard promulgated August 17, 1988 (53 FR 31167) for wastes that would now fall into this new subcategory.)

Recycling as a method of treatment for nonwastewater forms of:

K069—Non-Calcium Sulfate Subcategory

Recovery as a method of treatment for all forms of:

P015—Berylium dust
P073—Nickel carbonyl
P076—Nitric oxide
P076—Nitrogen dioxide
P087—Osmium tetroxide
U115—Ethylene oxide

Recovery or stabilization as methods of treatment for nonwastewater forms of:

P113—Thallic oxide
P114—Thallium (I) selenite
P115—Thallium (I) sulfate
U214—Thallium (I) acetate
U215—Thallium (I) carbonate
U216—Thallium (I) chloride
U217—Thallium (I) nitrate

(Wet air oxidation or chemical oxidation) followed by carbon adsorption; or incineration as methods of treatment for wastewater forms of:

P016—Bis-chloromethyl ether
P023—Chloroacetaldehyde
P026—1-(o-Chlorophenyl) thiourea
P027—3-Chloropropionitrile
P028—Benzyl chloride
P057—2-Fluoroacetamide
P058—Fluoroacetic acid, sodium salt
P095—Phosgene
P118—Trichloromethanethiol
U006—Acetyl Chloride
U017—Benzal chloride
U020—Benzenesulfonyl chloride
U026—Chloronaphazine
U033—Carbonyl fluoride
U034—Trichloroacetaldehyde
U041—n-Chloro-2,3-epoxypropane
U042—2-Chloroethyl vinyl ether
U046—Chloromethyl methyl ether
U049—4-Chloro-o-toluidine hydrochloride
U062—Diallate
U097—Dimethylcarbomyl chloride
U156—Methyl chlorocarbonate
U222—o-Toluidine hydrochloride
U240—salts and esters of 2,4-D

(Wet air oxidation or chemical oxidation) followed by carbon adsorption; biodegradation followed by carbon adsorption; or incineration; as methods of treatment for wastewater forms of:

P001—Warfarin (>3%)
P002—1-Acetyl 2-thiourea
P005—Allyl alcohol
P007—Muscimol (5-Aminoethyl 3-isoxazolol)
P008—4-Aminopyridine
P014—Benzene thiol (Thiophenol)
P017—Bromoacetone
P018—Brucine
P022—Carbon disulfide
P034—2-cyclohexyl-4,6-dinitrophenol
P042—Epinephrine
P045—Thiofanox
P046—alpha, alpha-Dimethylphenethylamine
P047—4,6-dinitrocresol salts
P049—2,4-Dithiobiuret
P054—Aziridine
P064—Isocyanic acid, ethyl ester
P066—Methomyl
P067—2-Methylaziridine
P069—Methyllactonitrile
P070—Aldicarb
P072—1-Naphthyl-2-thiourea (Bantu)
P075—Nicotine and salts
P084—N-Nitrosomethylvinylamine
P088—Endothall
P093—N-Phenylthiourea
P102—Propargyl alcohol
P108—Strychnine and salts
P116—Thiosemicarbazide
U001—Acetaldehyde
U008—Acrylic acid
U007—Acrylamide
U010—Mitomycin C
U011—Amitrole
U014—Auramine
U015—Azaserine
U016—Benz(c)acridine
U021—Benzidine
U035—Chlorambucil
U053—Crotonaldehyde
U055—Cumene (isopropyl benzene)
U056—Cyclohexane
U059—Daunomycin
U064—1,2,7,8-Dibenzopyrene
U085—1,2,3,4-Diepoxybutane
U089—Diethyl stilbestrol
U090—Dihydrosafrole
U091—3,3-Dimethoxybenzidine
U092—Dimethylamine
U094—7,12-Dimethyl benz(a)anthracene
U095—3,3'- Dimethylbenzidine
U110—Dipropylamine
U113—Ethyl acrylate
U114—Ethylene bis-dithiocarbamic acid
U115—Ethylene oxide
U116—Ethylene thiourea
U119—Ethyl methane sulfonate
U122—Formaldehyde
U123—Formic acid
U124—Furan
U125—Furfural
U126—Glycidaldehyde
U143—Lasiocarpine
U147—Maleic anhydride
U148—Maleic Hydrazide
U149—Malononitrile
U150—Melphalan
U153—Methane thiol
U154—Methanol
U163—N-Methyl N-nitro N-nitroguanidine
U164—Methylthiouracil
U171—2 Nitropropane
U173—N-Nitroso-di-n-ethanolamine
U176—N-Nitroso-N-ethylurea
U177—N-Nitroso-N-methylurea
U178—N-Nitroso-N-methylurethane
U182—Paraldehyde
U186—1,3-Pentadiene
U191—2-Picoline
U193—1,3-Propane sultone
U194—n-Propylamine
U200—Reserpine
U202—Saccharin and salts
U206—Streptozotocin
U213—Tetrahydrofuran
U218—Thioacetamide
U219—Thiourea
U234—sym-Trinitrobenzene
U236—Trypan Blue
U237—Uracil mustard
U238—Ethyl carbamate
U244—Thiram
U246—Warfarin (<3%)

(Alkaline chlorination, chemical oxidation, or incineration) followed by precipitation to insoluble sulfates as methods of treatment for all forms of:

D003—Reactive sulfides subcategory based on 261.23(a)(5)

Alkaline chlorination or incineration as methods of treatment for all forms of:

P031—Cyanogen
P033—Cyanogen chloride
U246—Cyanogen bromide

Acid or water leaching followed by chemical precipitation as sulfate or carbonate or stabilization for nonwastewater forms of:

D005—EP toxic for barium
P013—Barium cyanide

Chemical oxidation followed by precipitation to insoluble salts as a method of treatment for wastewater forms of:

P006—Aluminum phosphide
P096—Phosphine
P105—Sodium azide
P122—Zinc phosphide (<10%)
U135—Hydrogen sulfide
U189—Phosphorus sulfide
U249—Zinc phosphide (<10%)

Neutralization with acids to: 6< pH <9 and insoluble salts; or recovery for all forms of:

D002—Alkaline subcategory based on 261.22(a)(1)

Neutralization with bases to :6< pH <9 and insoluble salts; or recovery for all forms of:

D002—Acid Subcategory based on 261.22(a)(1)

Solubilization in water followed by precipitation as calcium fluoride; or recovery as methods of treatment for nonwastewater forms of:

P056—Flourine
U134—Hydrogen flouride.

* * * * *

7. In § 268.43, paragraph (a) Table CCW is amended by adding the following subtables in alphabetical/numerical order by EPA Hazardous Waste number, and paragraph (b) is amended by removing waste codes: K044, K045, K047, K060, K069, and K100 from the Subtable for No Land Disposal.

§ 268.42 Treatment standards expressed as waste concentrations.

(a) * * *

TABLE CCW.—CONSTITUENT CONCENTRATION IN WASTES

[* * * * *]

	Concentration (in mg/kg)
D003 nonwastewaters (Reactive Cyanides Subcategory): As analyzed using SW-846 Method 9010; sample size: 0.5–10; distillation time: one hour to one hour fifteen minutes	
Cyanides (Total)	110
Cyanides (Amenable)	9.1
	Concentration (in mg/l)
D003 wastewaters (Reactive Cyanides Subcategory): As analyzed using SW-846 Method 9010; sample size: 0.5–10; distillation time: one hour to one hour fifteen minutes	
Cyanides (Total)	1.9
Cyanides (Amenable)	0.10
D004 wastewaters:	
Arsenic	0.79
	Concentration (in mg/l) 24 hour composite
D005 wastewaters:	
Barium	1.15
	Concentration (in mg/l)
D006 wastewaters:	
Cadmium	0.20

TABLE CCW.—CONSTITUENT CONCENTRATION IN WASTES—Continued

[* * * * *]

	Concentration (in mg/kg)
D007 wastewaters:	
Chromium (Total)	0.32
D008 wastewaters:	
Lead	0.040
D009 wastewaters:	
Mercury	0.030
D010 wastewaters:	
Selenium	0.79
D011 wastewaters:	
Silver	0.29
	Concentration (in mg/kg)
D012 nonwastewaters:	
Endrin	0.13
	Concentration (in mg/l)
D012 wastewaters:	
Endrin	0.00052
	Concentration (in mg/kg)
D013 nonwastewaters:	
Lindane	0.066
	Concentration (in mg/l)
D013 wastewaters:	
Lindane	0.00024
	Concentration (in mg/kg)
D014 nonwastewaters:	
Methoxychlor	0.18
	Concentration (in mg/l)
D014 wastewaters:	
Methoxychlor	0.00036
	Concentration (in mg/kg)
D015 nonwastewaters:	
Toxaphene	1.3
	Concentration (in mg/l)
D015 wastewaters:	
Toxaphene	0.014
	Concentration (in mg/kg)
D016 nonwastewaters:	
2,4-D	10
	Concentration (in mg/l)
D016 wastewaters:	
2,4-D	0.013

TABLE CCW.—CONSTITUENT CONCENTRATION IN WASTES—Continued

[* * * * *]

	Concentration in mg/kg)
D017 nonwastewaters:	
2,4,5-TP	2.8
	Concentration (in mg/l)
D017 wastewaters:	
2,4,5-TP	2.5
	Concentration (in mg/kg)
F002 nonwastewaters:	
1,1,2-Trichloroethane	6.2
	Concentration (in mg/l)
F002 wastewaters:	
1,1,2-Trichloroethane	0.054
	Concentration (in mg/kg)
F005 nonwastewaters:	
Benzene	3.72
2-Ethoxyethanol	47.5
2-Nitropropane	5.6
	Concentration (in mg/l)
F005 wastewaters:	
Benzene	0.07
2-Ethoxyethanol	73.3
2-Nitropropane	0.073
F006 wastewaters:	
Cyanides (Total)	1.9
Cyanides (Amenable)	0.10
Cadmium	1.6
Chromium	0.32
Lead	0.040
Nickel	0.44
F019 wastewaters:	
Cyanides (Total)	0.27
Cyanides (Amenable)	0.11
Chromium (Total)	0.32
	Concentration (mg/kg)
F019 nonwastewaters: As analyzed using SW-846 Method 9010 using a sample size: 0.5–10 grams distillation time: 1 hr to 1:15 hr	
Cyanides (Total)	390
Cyanides (Amenable)	20
F025 nonwastewaters: Light Ends Subcategory	
Chloroform	6.2
1,2-Dichloroethane	6.2
1,1 Dichloroethylene	6.2
Methylene chloride	31
Carbon tetrachloride	6.2
1,1,2-Trichloroethane	6.2
Trichloroethylene	5.6
Vinyl chloride	0.035

	Concentration (in mg/l)
F025 wastewaters:	
Light Ends Subcategory	
Chloroform	0.035
1,2-Dichloroethane	0.007
1,1-Dichloroethylene	0.007
Methylene chloride	0.037
Carbon tetrachloride	0.007
1,1,2-Trichloroethane	0.007
Trichloroethylene	0.007
Vinyl chloride	0.033

	Concentration (in mg/kg)
F025 nonwastewaters:	
Spent Filters/Aids and Desiccants Subcategory	
Chloroform	6.2
Methylene chloride	31
Carbon tetrachloride	6.2
1,1,2-Trichloroethane	6.2
Trichloroethylene	5.6
Vinyl chloride	0.035
Hexachlorobenzene	37
Hexachlorobutadiene	28
Hexachloroethane	30

	Concentration (in mg/l)
F025 wastewaters:	
Spent Filters/Aids and Desiccants Subcategory	
Chloroform	0.035
Methylene chloride	0.037
Carbon tetrachloride	0.007
1,1,2-Trichloroethane	0.007
Trichloroethylene	0.007
Vinyl chloride	0.033
Hexachlorobenzene	0.055
Hexachlorobutadiene	0.031
Hexachloroethane	0.034

	Concentration (in mg/kg)
K001 nonwastewaters (see also Table CCWE in 268.41):	
Naphthalene	1.5
Pentachlorophenol	7.4
Phenanthrene	1.5
Pyrene	1.5
Toluene	28
Xylenes (Total)	33

	Concentration (in mg/l)
K001 wastewaters:	
Naphthalene	0.031
Pentachlorophenol	0.18
Phenanthrene	0.031
Pyrene	0.028
Toluene	0.028
Xylene (Total)	0.032
Lead	0.037

	Concentration (in mg/l)	
	30 day maximum	24 hour maximum
K002 wastewaters:		
Chromium (Total)	1.2	0.9
Lead	1.4	3.4
K003 wastewaters:		
Chromium (Total)	1.2	0.9
Lead	1.4	3.4

	Concentration (in mg/l)	
	30 day maximum	24 hour maximum
K004 wastewaters:		
Chromium (Total)	1.2	0.9
Lead	1.4	3.4
K005 wastewaters:		
Chromium (Total)	1.2	0.9
Lead	1.4	3.4
Cyanides (Total)	0.31	0.74
K006 wastewaters:		
Chromium (Total)	1.2	0.9
Lead	1.4	3.4
K007 wastewaters:		
Chromium (Total)	1.2	0.9
Lead	1.4	3.4
Cyanides (Total)	0.31	0.74
K008 wastewaters:		
Chromium (Total)	1.2	0.9
Lead	1.4	3.4

	Concentration (in mg/l)
K011 wastewaters:	
Acetonitrile	38
Acrylamide	19
Acrylonitrile	0.06
Benzene	0.02
Cyanides (Total)	21
K013 wastewaters:	
Acetonitrile	38
Acrylamide	19
Acrylonitrile	0.06
Benzene	0.02
Cyanides (Total)	21
K014 wastewaters:	
Acetonitrile	38
Acrylamide	19
Acrylonitrile	0.06
Benzene	0.02
Cyanides (Total)	21

	Concentration (in mg/kg)
K015 nonwastewaters (see also Table CCWE in 268.41):	
Anthracene	3.4
Benzal chloride	6.2
Benzo(b/k)fluoranthene	3.4
Phenanthrene	3.4
Toluene	6.0
K017 nonwastewaters:	
1,2-Dichloropropane	0.014
1,2,3-Trichloropropane	0.014
Bis(2-chloroethyl)ether	1.8

	Concentration (in mg/l)
K017 wastewaters:	
1,2-Dichloropropane	0.014
1,2,3-Trichloropropane	0.014
Bis(2-chloroethyl)ether	0.037

	Concentration (in mg/kg)
K021 nonwastewaters (see also Table CCWE in 268.41):	
Chloroform	6.2
Carbon tetrachloride	6.2

	Concentration (in mg/l)
K021 wastewaters:	
Chloroform	0.008
Carbon tetrachloride	0.008
Antimony	0.60

	Concentration (in mg/l)
K022 wastewaters:	
Toluene	0.017
Acetophenone	0.036
Diphenylamine/ diphenylnitrosamine	0.036
Phenol	0.091
Chromium (Total)	0.35
Nickel	0.47

	Concentration (in mg/l)
K025 wastewaters:	
2,4-Dinitrotoluene	0.67
Nitrobenzene	0.084
4-Nitrophenol	0.67

	Concentration (in mg/kg)
K025 nonwastewaters:	
2,4-Dinitrotoluene	2.3
Nitrobenzene	2.3
4-Nitrophenol	2.3

	Concentration (in mg/l)
K026 nonwastewaters:	
Pyridine	14

	Concentration (in mg/l)
K026 wastewaters:	
Pyridine	0.017
K029 wastewaters:	
Chloroform	0.007
1,2-Dichloroethane	0.007
1,1-Dichloroethylene	0.033
1,1,1-Trichloroethane	0.007
Vinyl chloride	0.033

	Concentration (in mg/l)
K031 wastewaters:	
Arsenic	0.79

	Concentration (in mg/kg)
K032 nonwastewaters:	
Hexachlorocyclopentadiene	2.0
Chlordane	0.13
Heptachlor	0.066
Heptachlor epoxide	0.066

	Concentration (in mg/l)
K032 wastewaters:	
Hexachlorocyclopentadiene	0.047
Chlordane	0.00039
Heptachlor	0.00022
Heptachlor epoxide	0.00022

	Concentration (in mg/kg)
K033 nonwastewaters:	
Hexachlorocyclopentadiene	2.0

	Concentration (in mg/l)
K033 wastewaters:	
Hexachlorocyclopentadiene	0.047

	Concentration (in mg/kg)
K034 nonwastewaters:	
Hexachlorocyclopentadiene	2.0

	Concentration (in mg/l)
K034 wastewaters:	
Hexachlorocyclopentadiene	0.047

	Concentration (in mg/kg)
K035 wastewaters:	
Benz(a)anthracene	0.028
Chrysene	0.14
o-Cresol	0.028
p-Cresol	0.028
Fluoranthene	0.028
Naphthalene	0.028
Phenanthrene	0.028
Phenol	0.031
Pyrene	0.056

	Concentration (in mg/kg)
K035 nonwastewaters:	
Acenaphthene	3.4
Anthracene	3.4
Benz(a)anthracene	3.4
Chrysene	3.4
K035 nonwastewaters:	
Dibenz(a,h)anthracene	3.4
Fluoranthene	3.4
Fluorene	3.4
Indeno(1,2,3-cd)pyrene	3.4
Naphthalene	3.4
Phenanthrene	3.4
Pyrene	8.2
K036 nonwastewaters:	
Disulfoton	0.1

	Concentration (in mg/l)
K037 wastewaters (based on composite sample):	
Disulfoton	0.025
Toluene	0.080

	Concentration (in mg/kg)
K041 nonwastewaters:	
Toxaphene	0.13

	Concentration (in mg/l)
Toxaphene	0.00039

	Concentration (in mg/kg)
K042 nonwastewaters:	
1,2,4,5-Tetrachlorobenzene	4.4
o-Dichlorobenzene	4.4
p-Dichlorobenzene	4.4
Pentachlorobenzene	4.4
1,2,4-Trichlorobenzene	4.4

	Concentration (in mg/l)
K042 wastewaters:	
1,2,4,5-Tetrachlorobenzene	0.092
o-Dichlorobenzene	0.092
p-Dichlorobenzene	0.092
Pentachlorobenzene	0.092
1,2,4-Trichlorobenzene	0.092
K044 wastewaters:	
Lead	0.037
K045 wastewaters:	
Lead	0.037
K046 wastewaters:	
Lead	0.037
K047 wastewaters:	
Lead	0.037
K048 wastewaters:	
Cyanides (Total)	0.028

	Concentration (in mg/kg)
K048 nonwastewaters:	
Benzene	3.9
Benzo(a)pyrene	1.4
Bis(2-ethylhexyl)phthalate	4.3
Chrysene	0.84
Di-n-butyl phthalate	4.3
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Pyrene	1.1
Toluene	3.9
Xylene(s)	8.5

	Concentration (in mg/l)
K049 wastewaters:	
Cyanides (Total)	0.028

	Concentration (in mg/kg)
K049 nonwastewaters:	
Anthracene	1.4
Benzene	3.9
Benzo(a)pyrene	1.4
Bis(2-ethylhexyl)phthalate	4.3
Chrysene	0.84
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Pyrene	1.1
Toluene	3.9
Xylene(s)	8.5

	Concentration (in mg/l)
K050 wastewaters:	
Cyanides (Total)	0.028

	Concentration (in mg/kg)
K050 nonwastewaters:	
Benzo(a)pyrene	1.4
Phenol	4.3

	Concentration (in mg/l)
K051 wastewaters:	
Cyanides (Total)	0.028

	Concentration (in mg/kg)
K051 nonwastewaters:	
Anthracene	1.4
Benzene	3.9
Benzo(a)anthracene	1.4
Benzo(a)pyrene	1.4
Bis(2-ethylhexyl)phthalate	4.3
Chrysene	0.84
Di-n-butyl phthalate	4.3
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Pyrene	1.1
Toluene	3.9
Xylene(s)	8.5

	Concentration (in mg/l)
K052 wastewaters:	
Cyanides (Total)	0.028

	Concentration (in mg/kg)
K052 nonwastewaters:	
Benzene	3.9
Benzo(a)pyrene	1.4
o-Cresol	6.8
p-Cresol	6.8
Ethylbenzene	0.08
Naphthalene	0.84
Phenanthrene	0.84
Phenol	4.3
Toluene	3.9
Xylene(s)	8.5

	Concentration (in mg/l)
K060 wastewaters (based on composite samples):	
Benzene	0.17
Benzo(a)pyrene	0.035
Naphthalene	0.028
Phenol	0.042

	Concentration (in mg/l)
K060 wastewaters (based on grab samples):	
Cyanides (Total)	1.9

	Concentration (in mg/kg)
K060 nonwastewaters:	
Benzene	0.071
Benzo(a)pyrene	3.6
Naphthalene	3.4
Phenol	3.4
Cyanides (Total)	1.2

	Concentration (in mg/l)
K061 wastewaters:	
Cadmium	1.61
Chromium (Total)	0.32
Lead	0.04
Nickel	0.44

	Concentration (in mg/l)
K069 wastewaters:	
Cadmium	1.61
Lead	0.040

	Concentration (in mg/kg)
K073 nonwastewaters:	
Carbon tetrachloride	6.2
Chloroform	6.2
Hexachloroethane	28
Tetrachloroethane	6.2
1,1,1-Trichloroethane	6.2

	Concentration (in mg/l)
K073 wastewaters:	
Carbon tetrachloride	0.008
Chloroform	0.008
Hexachloroethane	0.033
Tetrachloroethene	0.008
1,1,1-Trichloroethane	0.008

	Concentration (in mg/kg)
K083 nonwastewaters (see also Table CCWE in 268.41):	
Benzene	6.6
Aniline	14
Diphenylamine/ diphenylnitrosamine	14
Nitrobenzene	14
Phenol	5.6
Cyclohexanone	30

	Concentration (in mg/l)
K083 wastewaters:	
Benzene	0.008
Aniline	0.017
Diphenylamine/ diphenylnitrosamine	0.017
Nitrobenzene	0.017
Phenol	0.007
Cyclohexanone	0.036
Nickel	0.47

	Concentration (in mg/l)
K084 wastewaters:	
Arsenic	0.79

	Concentration (in mg/kg)
K085 nonwastewaters:	
Benzene	4.4
Chlorobenzene	4.4
o-Dichlorobenzene	4.4
m-Dichlorobenzene	4.4
p-Dichlorobenzene	4.4
1,2,4-Trichlorobenzene	4.4
1,2,4,5-Tetrachlorobenzene	4.4
Pentachlorobenzene	4.4
Hexachlorobenzene	4.4
Aroclor 1016	0.13
Aroclor 1221	0.13
Aroclor 1232	0.13
Aroclor 1242	0.13
Aroclor 1248	0.13
Aroclor 1254	0.13
Aroclor 1260	0.13

	Concentration (in mg/l)
K085 wastewaters:	
Benzene	0.092
Chlorobenzene	0.092
o-Dichlorobenzene	0.092
m-Dichlorobenzene	0.092
p-Dichlorobenzene	0.092
1,2,4-Trichlorobenzene	0.092
1,2,4,5-Tetrachlorobenzene	0.092
Pentachlorobenzene	0.092
Hexachlorobenzene	0.092
Aroclor 1016	0.00036
Aroclor 1221	0.00036
Aroclor 1232	0.00036
Aroclor 1242	0.00036
Aroclor 1248	0.00036
Aroclor 1254	0.00036
Aroclor 1260	0.00036

	Concentration (in mg/kg)
K086 nonwastewaters (see also Table CCWE in 268.41):	
Acetone	0.14
Acetophenone	9.6
Bis(2-ethylhexyl)phthalate	28
n-Butyl alcohol	2.6
Butylbenzylphthalate	28
Cyclohexanone	1.9
1,2-Dichlorobenzene	6.2
Diethyl phthalate	28
Dimethyl phthalate	28
Di-n-butyl phthalate	28
Di-n-octyl phthalate	28
Ethyl acetate	5.6
Ethylbenzene	33
Methanol	140
Methyl isobutyl ketone	33
Methyl ethyl ketone	200
Methylene chloride	31
Napthalene	5.9
Nitrobenzene	14
Toluene	28
1,1,1-Trichloroethane	6.2
Trichloroethylene	5.6
Xylenes (Total)	33
Cyanides (Total)	1.5

	Concentration (in mg/l)
K086 wastewaters:	
Acetone	0.25
Acetophenone	0.17
Bis(2-ethylhexyl)phthalate	0.54
n-Butyl alcohol	0.56
Butylbenzylphthalate	0.54
Cyclohexanone	1.4
1,2-Dichlorobenzene	0.058
Diethyl phthalate	0.54
Dimethyl phthalate	0.54
Di-n-butyl phthalate	0.54
Di-n-octyl phthalate	0.54
Ethyl acetate	0.0052
Ethylbenzene	0.032
Methanol (based on composite sample)	0.033
Methyl isobutyl ketone	0.028
Methyl ethyl ketone	0.14
Methylene chloride	0.037
Napthalene	0.007
Nitrobenzene	0.033
Toluene	0.032
1,1,1-Trichloroethane	0.007
Trichloroethylene	0.007
Xylenes (Total)	0.028
Cyanides (Total)	1.9
Chromium (Total)	0.32
Lead	0.037

	Concentration (in mg/l)
K095 wastewaters:	
1,1,1,2-Tetrachloroethane	0.007
1,1,2,2-Tetrachloroethane	0.007
Tetrachloroethene	0.007
1,1,2-Trichloroethane	0.007
Trichloroethene	0.007
Hexachloroethane	0.033
Pentachloroethane	0.007

	Concentration (in mg/l)
K096 wastewaters:	
1,1,1,2-Tetrachloroethane	0.007
1,1,2,2-Tetrachloroethane	0.007
Tetrachloroethene	0.007
1,1,2-Trichloroethane	0.007
Trichloroethene	0.007
1,3-Dichlorobenzene	0.008
Pentachloroethane	0.007
1,2,4-Trichlorobenzene	0.023

	Concentration (in mg/kg)
K097 nonwastewaters:	
Hexachlorocyclopentadiene	2.0
Chlordane	0.13
Heptachlor	0.066
Heptachlor epoxide	0.66

	Concentration (in mg/1)
K097 wastewaters:	
Hexachlorocyclopentadiene	0.047
Chlordane	0.00039
Heptachlor	0.00022

	Concentration (in mg/kg)
Heptachlor epoxide	0.00022

	Concentration (in mg/kg)
K098 nonwastewaters:	
Toxaphene	0.13

	Concentration (in mg/l)
K098 wastewaters:	
Toxaphene	0.00039
K100 wastewaters:	
Cadmium	1.61
Chromium (Total)	0.32
Lead	0.040
K101 wastewaters:	
Ortho-nitroaniline	0.27
Arsenic	0.79
Cadmium	0.24
Lead	0.17
Mercury	0.082
K102 wastewaters:	
Ortho-nitrophenol	0.028
Arsenic	0.79
Cadmium	0.24
Lead	0.17
Mercury	0.082

	Concentration (in mg/kg)
K105 nonwastewaters:	
Benzene	4.4
Chlorobenzene	4.4
o-Dichlorobenzene	4.4
p-Dichlorobenzene	4.4
2,4,5-Trichlorophenol	4.4
2,4,6-Trichlorophenol	4.4
2-Chlorophenol	4.4
Phenol	4.4

	Concentration (in mg/l)
K105 wastewaters:	
Benzene	0.092
Chlorobenzene	0.092
o-Dichlorobenzene	0.092
p-Dichlorobenzene	0.092
2,4,5-Trichlorophenol	0.092
2,4,6-Trichlorophenol	0.092
2-Chlorophenol	0.092
Phenol	0.092
K106 wastewater	
Mercury	0.030
P003 wastewaters:	
Acrolein	3.6

	Concentration (in mg/kg)
P004 nonwastewaters:	
Aldrin	0.066

	Concentration (in mg/l)
P004 wastewaters:	
Aldrin	0.00024
P010 wastewaters:	
Arsenic	0.79
P011 wastewaters:	
Arsenic	0.79
P012 wastewaters:	
Arsenic	0.79

	Concentration (in mg/l) 24 hour composite
P013 wastewaters:	
Barium	1.15

	Concentration (in mg/kg)
P020 nonwastewaters:	
2-sec-Butyl-4,6-dinitrophenol	2.5

	Concentration (in mg/l)
P020 wastewaters:	
2-sec-Butyl-4,6-dinitrophenol	0.036

	Concentration (in mg/kg)
P024 nonwastewaters:	
p-Chloroaniline	16

	Concentration (in mg/l)
P024 wastewaters:	
p-Chloroaniline	0.28
P036 wastewaters:	
Arsenic	0.79

	Concentration (in mg/kg)
P037 nonwastewaters:	
Dieldrin	0.13

	Concentration (in mg/l)
P037 wastewaters:	
Dieldrin	0.00052
P038 wastewaters:	
Arsenic	0.79

	Concentration (in mg/kg)
P047 nonwastewaters: (see also 268.42 for salts and esters)	
4,6-dinitrocresol	140

	Concentration (in mg/l)
P047 wastewaters: (see also 268.42 for salts and esters):	
4,6-dinitrocresol	0.18

	Concentration (in mg/kg)
P048 nonwastewaters:	
2,4-dinitrophenol	140

	Concentration (in mg/l)
P048 wastewaters:	
2,4-dinitrophenol	0.18

	Concentration (in mg/kg)
P050 nonwastewaters:	
Endosulfan I	0.066
Endosulfan II	0.13
Endosulfan sulfate	0.13

	Concentration (in mg/l)
P050 wastewaters:	
Endosulfan I	0.00024
Endosulfan II	0.00052
Endosulfan sulfate	0.00052

	Concentration (in mg/kg)
P051 nonwastewaters:	
Endrin	0.13
Endrin aldehyde	0.13

	Concentration (in mg/l)
P051 wastewaters:	
Endrin	0.00052
Endrin aldehyde	0.00052
P056 wastewaters:	
Flouride	35

	Concentration (in mg/kg)
P059 nonwastewaters:	
Heptachlor	0.066
Heptachlor epoxide	0.066

	Concentration (in mg/l)
P059 wastewaters:	
Heptachlor	0.00022
Heptachlor epoxide	0.00024

	Concentration (in mg/kg)
P060 nonwastewaters:	
Isodrin	0.010

	Concentration (in mg/l)
P060 wastewaters:	
Isodrin	0.00020
P065 wastewaters:	
Mercury	0.030

	Concentration (in mg/kg)
P077 nonwastewaters:	
p-Nitroaniline	28

	Concentration (in mg/l)
P077 wastewaters:	
p-Nitroaniline	0.25

	Concentration (in mg/kg)
P082 nonwastewaters: N-Nitrosodimethylamine	56

	Concentration (in mg/l)
P082 wastewaters: N-Nitrosodimethylamine	0.67

P092 wastewaters: Mercury	0.030
P099 wastewaters: Silver	0.29

	Concentration (in mg/kg)
P101 nonwastewaters: Propanenitrile	360

	Concentration (in mg/l)
P101 wastewaters: Propanenitrile	0.64
P103 wastewaters: Selenium	0.79
P104 wastewaters: Silver	0.29
P110 wastewaters: Lead	0.040
P113 wastewaters: Thallium	0.14
P114 wastewaters: Selenium	0.79
Thallium	0.14
P115 wastewaters: Thallium	0.14
P119 wastewaters: Vanadium	0.042
P120 wastewaters: Vanadium	0.042

	Concentration (in mg/kg)
P123 nonwastewaters: Toxaphene	1.3

	Concentration (in mg/l)
P123 wastewaters: Toxaphene	0.014

	Concentration (in mg/kg)
U002 nonwastewaters: Acetone	0.14

	Concentration (in mg/l)
U002 wastewaters: Acetone	0.25

	Concentration (in mg/kg)
U003 nonwastewaters: Acetonitrile	0.35

	Concentration (in mg/l)
U003 wastewaters: Acetonitrile	0.42

	Concentration (in mg/kg)
U004 nonwastewaters: Acetophenone	9.6

	Concentration (in mg/l)
U004 wastewaters: Acetophenone	0.17

	Concentration (in mg/kg)
U005 nonwastewaters: 2-Acetylaminofluorene	13

	Concentration (in mg/l)
U005 wastewaters: 2-Acetylaminofluorene	0.058

	Concentration (in mg/kg)
U009 nonwastewaters: Acrylonitrile	0.28

	Concentration (in mg/l)
U009 wastewaters: Acrylonitrile	0.64

	Concentration (in mg/l)
U012 nonwastewaters: Aniline	14

	Concentration (in mg/kg)
U012 wastewaters: Aniline	0.033

	Concentration (in mg/kg)
U017 nonwastewaters: Benzal chloride	6.2

	Concentration (in mg/l)
U017 wastewaters: Benzal chloride	0.28

	Concentration (in mg/kg)
U018 nonwastewaters: Benz(a)anthracene	3.6

	Concentration (in mg/l)
U018 wastewaters: Benz(a)anthracene	0.030

	Concentration (in mg/kg)
U019 nonwastewaters: Benzene	36

	Concentration (in mg/l)
U019 wastewaters: Benzene	0.033

	Concentration (in mg/kg)
U022 nonwastewaters: Benzo(a)pyrene	3.6

	Concentration (in mg/l)
U022 wastewaters: Benzo(a)pyrene	0.030

	Concentration (in mg/l)
U024 nonwastewaters: Bis-(2-chloroethoxy)methane	7.2

	Concentration (in mg/kg)
U024 wastewaters: Bis-(2-chloroethoxy)methane	0.064

	Concentration (in mg/kg)
U025 nonwastewaters: Dichloroethyl ether	7.2

	Concentration (in mg/l)
U025 wastewaters: Dichloroethyl ether	0.013

	Concentration (in mg/kg)
U027 nonwastewaters: Bis-(2-chloroisopropyl) ether	7.2

	Concentration (in mg/l)
U027 wastewaters: Bis-(2-chloroisopropyl) ether	0.064

	Concentration (in mg/kg)
U029 nonwastewaters: Methyl Bromide	15

	Concentration (in mg/l)
U029 wastewaters: Methyl Bromide	16

	Concentration (in mg/kg)
U030 nonwastewaters: 4-Bromophenel Phenyl Ether	15

	Concentration (in mg/l)
U030 wastewaters:	
4-Bromophenel Phenyl Ether	16

	Concentration (in mg/kg)
U031 nonwastewaters:	
n-Butanol	2.6

	Concentration (in mg/l)
U031 wastewaters:	
n-Butanol	0.56

	Concentration (in mg/l)
U032 wastewaters:	
Chromium (Total)	0.32

	Concentration (in mg/kg)
U036 nonwastewaters:	
Chlordane	0.13

	Concentration (in mg/l)
U036 wastewaters:	
Chlordane	0.00044

	Concentration (in mg/kg)
U037 nonwastewaters:	
Chlorobenzene	5.7

	Concentration (in mg/l)
U037 wastewaters:	
Chlorobenzene	0.014

	Concentration (in mg/kg)
U038 nonwastewaters:	
Chlorobenzilate	6.6

	Concentration (in mg/l)
U038 wastewaters:	
Chlorobenzilate	0.292

	Concentration (in mg/kg)
U039 nonwastewaters:	
p-Chloro-m-cresol	14

	Concentration (in mg/l)
U039 wastewaters:	
p-Chloro-m-cresol	0.062

	Concentration (in mg/kg)
U043 nonwastewaters:	
Vinyl chloride	0.035

	Concentration (in mg/l)
U043 wastewaters:	
Vinyl chloride	0.033

	Concentration (in mg/kg)
U044 nonwastewaters:	
Chloroform	6.2

	Concentration (in mg/kg)
U044 wastewaters:	
Chloroform	0.007

	Concentration (in mg/kg)
U045 nonwastewaters:	
Chloromethane	5.6

	Concentration (in mg/l)
U045 wastewaters:	
Chloromethane	0.023

	Concentration (in mg/kg)
U047 nonwastewaters:	
2-Chloronaphthalene	5.6

	Concentration (in mg/l)
U047 wastewaters:	
2-Chloronaphthalene	0.073

	Concentration (in mg/kg)
U048 nonwastewaters:	
2-Chlorophenol	5.7

	Concentration (in mg/l)
U048 wastewaters:	
2-Chlorophenol	0.056

	Concentration (in mg/kg)
U050 nonwastewaters:	
Chrysene	3.6

	Concentration (in mg/l)
U050 wastewaters:	
Chrysene	0.15

	Concentration (in mg/kg)
U051 nonwastewaters (see also Table CCWE in 268.41):	
Naphthalene	1.5
Pentachlorophenol	7.4
Phenanthrene	1.5
Pyrene	1.5
Toluene	28
Xylenes (Total)	33

	Concentration (in mg/kg)
U051 wastewaters:	
Naphthalene	0.031
Pentachlorophenol	0.18
Phenanthrene	0.031
Pyrene	0.028
Toluene	0.028
Xylene (Total)	0.032
Lead	0.037

	Concentration (in mg/kg)
U052 nonwastewaters:	
o-Cresol	5.6
Cresols (m- and p- isomers)	3.2

	Concentration (in mg/l)
U052 wastewaters:	
o-Cresol	0.0066
Cresols (m- and p- isomers)	0.028

	Concentration (in mg/kg)
U057 nonwastewaters:	
Cyclohexanone	1.9

	Concentration (in mg/l)
U057 wastewaters:	
Cyclohexanone	1.4

	Concentration (in mg/kg)
U060 nonwastewaters:	
o,p'-DDD	0.087
p,p'-DDD	0.087

	Concentration (in mg/l)
U060 wastewaters:	
o,p'-DDD	0.00036
p,p'-DDD	0.00036

	Concentration (in mg/kg)
U061 nonwastewaters:	
o,p'-DDT	0.087
p,p'-DDT	0.087
o,p'-DDD	0.087
p,p'-DDD	0.087
o,p'-DDE	0.087
p,p'-DDE	0.087

	Concentration (in mg/l)
U061 wastewaters:	
o,p'-DDT	0.00036
p,p'-DDT	0.00036
o,p'-DDD	0.00036
p,p'-DDD	0.00036
o,p'-DDE	0.00036

	Concentration (in mg/kg)
p,p'-DDE	0.00036

	Concentration (in mg/kg)
U063 nonwastewaters: Dibenzo(a,h)anthracene	13

	Concentration (in mg/l)
U063 wastewaters: Dibenzo(a,h)anthracene	0.012

	Concentration (in mg/kg)
U066 nonwastewaters: 1,2-Dibromo-3-Chloropropane	15

	Concentration (in mg/l)
U066 wastewaters: 1,2-Dibromo-3-Chloropropane	16

	Concentration (in mg/kg)
U067 nonwastewaters: Ethylene Dibromide	15

	Concentration (in mg/l)
U067 wastewaters: Ethylene Dibromide	16

	Concentration (in mg/kg)
U068 nonwastewaters: Dibromomethane	15

	Concentration (in mg/l)
U068 wastewaters: Dibromomethane	16

	Concentration (in mg/kg)
U070 nonwastewaters: o-Dichlorobenzene	6.2

	Concentration (in mg/l)
U070 wastewaters: o-Dichlorobenzene	0.058

	Concentration (in mg/kg)
U071 nonwastewaters: m-Dichlorobenzene	6.2

	Concentration (in mg/l)
U071 wastewaters: m-Dichlorobenzene	0.072

	Concentration (in mg/kg)
U072 nonwastewaters: p-Dichlorobenzene	6.2

	Concentration (in mg/l)
U072 wastewaters: p-Dichlorobenzene	0.058

	Concentration (in mg/kg)
U073 nonwastewaters: 3,3'-Dichlorobenzidine	16

	Concentration (in mg/l)
U073 wastewaters: 3,3'-Dichlorobenzidine	0.022

	Concentration (in mg/kg)
U074 nonwastewaters: cis-1,4-Dichloro-2-butene	30
trans-1,4-Dichloro-2-butene	30

	Concentration (in mg/l)
U074 wastewaters: cis-1,4-Dichloro-2-butene	0.034
trans-1,4-Dichloro-2-butene	0.034

	Concentration (in mg/kg)
U075 nonwastewater: Dichlorodifluoromethane	10

	Concentration (in mg/l)
U075 wastewaters: Dichlorodifluoromethane	0.14

	Concentration (in mg/kg)
U078 nonwastewaters: 1,1-Dichloroethane	6.2

	Concentration (in mg/l)
U076 wastewaters: 1,1-Dichloroethane	0.007

	Concentration (in mg/kg)
U077 nonwastewaters: 1,2-Dichloroethane	6.2

	Concentration (in mg/l)
U077 wastewaters: 1,2-Dichloroethane	0.007

	Concentration (in mg/kg)
U078 nonwastewaters: 1,1-Dichloroethylene	6.2

	Concentration (in mg/l)
U078 wastewaters: 1,1-Dichloroethylene	0.007

	Concentration (in mg/kg)
U079 nonwastewaters: trans-1,2-Dichloroethylene	6.2

	Concentration (in mg/l)
U079 wastewaters: trans-1,2-Dichloroethylene	0.007

	Concentration (in mg/kg)
U080 nonwastewaters: Methylene chloride	31

	Concentration (in mg/l)
U080 wastewaters: Methylene chloride	0.037

	Concentration (in mg/kg)
U081 nonwastewaters: 2,4-Dichlorophenol	14

	Concentration (in mg/l)
U081 wastewaters: 2,4-Dichlorophenol	0.052

	Concentration (in mg/kg)
U082 nonwastewaters: 2,6-Dichlorophenol	14

	Concentration (in mg/l)
U082 wastewaters: 2,6-Dichlorophenol	0.018

	Concentration (in mg/kg)
U083 nonwastewaters: 1,2-Dichloropropane	15

	Concentration (in mg/l)
U083 wastewaters: 1,2-Dichloropropane	0.067

	Concentration (in mg/kg)
U084 nonwastewaters:	
cis-1,3-Dichloropropene	15
trans-1,3-Dichloropropene	15

	Concentration (in mg/l)
U084 wastewaters:	
cis-1,3-Dichloropropene	0.067
trans-1,3-Dichloropropene	0.067

	Concentration (in mg/kg)
U093 nonwastewaters:	
p-Dimethylaminoazobenzene	29

	Concentration (in mg/l)
U093 wastewaters:	
p-Dimethylaminoazobenzene	0.74

	Concentration (in mg/kg)
U101 nonwastewaters:	
2,4-Dimethyly phenol	14

	Concentration (in mg/l)
U101 wastewaters:	
2,4-Dimethyl phenol	0.045

	Concentration (in mg/kg)
U105 nonwastewaters:	
2,4-Dinitrotoluene	140

	Concentration (in mg/l)
U105 wastewaters:	
2,4-Dinitrotoluene	0.17

	Concentration (in mg/kg)
U106 nonwastewaters:	
2,6 Dinitrotoluene	28

	Concentration (in mg/l)
U106 wastewaters:	
2,6-Dinitrotoluene	0.051

	Concentration (in mg/kg)
U108 nonwastewaters:	
1,4-Dioxane	280

	Concentration (in mg/l)
U108 wastewaters:	
1,4-Dioxane	0.080

	Concentration (in mg/kg)
U111 nonwastewaters:	
Di-n-propylnitrosoamine	14

	Concentration (in mg/l)
U111 wastewaters:	
Di-n-propylnitrosoamine	0.065

	Concentration (in mg/kg)
U112 nonwastewaters:	
Ethyl acetate	5.6

	Concentration (in mg/l)
U112 wastewaters:	
Ethyl acetate	0.0052

	Concentration (in mg/kg)
U117 nonwastewaters:	
Ethyl ether	140

	Concentration (in mg/l)
U117 wastewaters:	
Ethyl ether	0.28

	Concentration (in mg/kg)
U118 nonwastewaters:	
Ethyl methacrylate	160

	Concentration (in mg/l)
U118 wastewaters:	
Ethyl methacrylate	0.47

	Concentration (in mg/kg)
U120 nonwastewaters:	
Fluoranthene	3.6

	Concentration (in mg/l)
U120 wastewaters:	
Fluoranthene	0.030

	Concentration (in mg/kg)
U121 nonwastewaters:	
Fluorotrichloromethane	33

	Concentration (in mg/l)
U121 wastewaters:	
Fluorotrichloromethane	0.13

	Concentration (in mg/kg)
U127 nonwastewaters:	
Hexachlorobenzene	37

	Concentration (in mg/l)
U127 wastewaters:	
Hexachlorobenzene	0.055

	Concentration (in mg/kg)
U128 nonwastewaters:	
Hexachlorobutadiene	28

	Concentration (in mg/l)
U128 wastewaters:	
Hexachlorobutadiene	0.031

	Concentration (in mg/kg)
U129 nonwastewaters:	
alpha-BHC	0.066
beta-BHC	0.066
delta-BHC	0.066
gamma-BHC (Lindane)	0.066

	Concentration (in mg/l)
U129 wastewaters:	
alpha-BHC	0.00024
beta-BHC	0.00024
delta-BHC	0.00024
gamma-BHC (Lindane)	0.00024

	Concentration (in mg/kg)
U130 nonwastewaters:	
Hexachlorocyclopentadiene	4.8

	Concentration (in mg/l)
U130 wastewaters:	
Hexachlorocyclopentadiene	0.096

	Concentration (in mg/l)
U131 nonwastewaters:	
Hexachloroethane	30

	Concentration (in mg/l)
U131 wastewaters:	
Hexachloroethane	0.034

	Concentration (in mg/kg)
U132 nonwastewaters:	
Hexachlorophene	1.1

	Concentration (in mg/l)
U132 wastewaters: Hexachlorophene	58
U134 wastewaters: Fluoride	35
U136 wastewaters: Arsenic	0.79
	Concentration (in mg/kg)
U137 nonwastewaters: Indeno(1,2,3,-c,d)pyrene	3.6
	Concentration (in mg/l)
U137 wastewaters: Indeno(1,2,3,-c,d)pyrene	0.030
	Concentration (in mg/kg)
U138 nonwastewaters: Iodomethane	65
	Concentration (in mg/l)
U138 wastewaters: Iodomethane	0.23
	Concentration (in mg/kg)
U140 nonwastewaters: Isobutanol	170
	Concentration (in mg/l)
U140 wastewaters: Isobutanol	1.4
	Concentration (in mg/kg)
U141 nonwastewaters: Isosafrole	2.6
	Concentration (in mg/l)
U141 wastewaters: Isosafrole	0.076
	Concentration (in mg/kg)
U142 nonwastewaters: Kepone	0.043
	Concentration (in mg/l)
U142 wastewaters: Kepone	0.0011
U144 wastewaters: Lead	0.040
	Concentration (in mg/l)
U145 wastewaters: Lead	0.040
U146 wastewaters: Lead	0.040
U151 wastewaters: Mercury	0.030
	Concentration (in mg/kg)
U152 nonwastewaters: Methacrylonitrile	84
	Concentration (in mg/l)
U152 wastewaters: Methacrylonitrile	0.47
	Concentration (in mg/kg)
U155 nonwastewaters: Methapyrilene	6.9
	Concentration (in mg/l)
U155 wastewaters: Methapyrilene	0.15
	Concentration (in mg/kg)
U157 nonwastewaters: 3-Methylchloanthrene	33
	Concentration (in mg/l)
U157 wastewaters: 3-Methylchloanthrene	0.58
	Concentration (in mg/kg)
U158 nonwastewaters: 4,4'-Methylene-bis-(2-chloroaniline)	29
	Concentration (in mg/l)
U158 wastewaters: 4,4'-Methylene-bis-(2-chloroaniline)	0.74
	Concentration (in mg/kg)
U159 nonwastewaters: Methyl ethyl ketone	200
	Concentration (in mg/l)
U159 wastewaters: Methyl ethyl ketone	0.14
	Concentration (in mg/l)
U161 nonwastewaters: Methyl isobutyl ketone	33
	Concentration (in mg/l)
U161 wastewaters: Methyl isobutyl ketone	0.028
	Concentration (in mg/kg)
U162 nonwastewaters: Methyl methacrylate	160
	Concentration (in mg/l)
U162 wastewaters: Methyl methacrylate	0.47
	Concentration (in mg/kg)
U165 nonwastewaters: Naphthalene	5.9
	Concentration (in mg/l)
U165 wastewaters: Naphthalene	0.007
	Concentration (in mg/kg)
U166 nonwastewaters: 1,4-Naphthoquinone	1.9
	Concentration (in mg/l)
U166 wastewaters: 1,4-Naphthoquinone	0.073
	Concentration (in mg/kg)
U167 nonwastewaters: 1-Naphthylamine	15
	Concentration (in mg/l)
U167 wastewaters: 1-Naphthylamine	0.37
	Concentration (in mg/kg)
U168 nonwastewaters: 2-Naphthylamine	15
	Concentration (in mg/l)
U168 wastewaters: 2-Naphthylamine	1.8

	Concentration (in mg/kg)
U169 nonwastewaters: Nitrobenzene	14
	Concentration (in mg/l)
U169 wastewaters: Nitrobenzene	0.033
	Concentration (in mg/kg)
U170 nonwastewaters: 4-Nitrophenol	65
	Concentration (in mg/l)
U170 wastewaters: 4-Nitrophenol	0.18
	Concentration (in mg/kg)
U172 nonwastewaters: N=Nitroso-di-n-butlyamine	54
	Concentration (in mg/1
U172 wastewaters: N-Nitroso-di-n-butlyamine	0.67
	Concentration (in mg/kg)
U174 nonwastewaters: N-Nitrosodiethylamine	28
	Concentration (in mg/l)
U174 wastewaters: N Nitrosodiethylamine	0.67
	Concentration (in mg/kg)
U179 nonwastewaters: N-Nitrosopiperidine	220
	Concentration (in mg/l)
U179 wastewaters: N-Nitrosopiperidine	1.3
	Concentration (in mg/kg)
U180 nonwastewaters: N-Nitrosopyrrolidine	220
	Concentration (in mg/l)
U180 wastewaters: N-Nitrosopyrrolidine	1.3
	Concentration (in mg/kg)
U181 nonwastewaters: 5-Nitro-o-toluidine	56
	Concentration (in mg/l)
U181 wastewaters: 5-Nitro-o-toluidine	2.2
	Concentration (in mg/kg)
U183 nonwastewaters: Pentachlorobenzene	37
	Concentration (in mg/l)
U183 wastewaters: Pentachlorobenzene	0.096
	Concentration (in mg/kg)
U184 nonwastewaters: Pentachloroethane	31
	Concentration (in mg/l)
U184 wastewaters: Pentachloroethane	0.037
	Concentration (in mg/kg)
U185 nonwastewaters: Pentachloronitrobenzene	4.8
	Concentration (in mg/l)
U185 wastewaters: Pentachloronitrobenzene	0.096
	Concentration (in mg/kg)
U187 nonwastewaters: Phenacetin	16
	Concentration (in mg/l)
U187 wastewaters: Phenacetin	0.36
	Concentration (in mg/kg)
U188 nonwastewaters: Phenol	6.2
	Concentration (in mg/l)
U188 wastewaters: Phenol	0.091
	Concentration (in mg/kg)
U192 nonwastewaters: Pronamide	1.5
	Concentration (in mg/l)
U192 wastewaters: Pronamide	0.039
	Concentration (in mg/kg)
U196 nonwastewaters: Pyridine	16
	Concentration (in mg/l)
U196 wastewaters: Pyridine	0.031
	Concentration (in mg/kg)
U197 nonwastewaters: p-Benzoquinone	180
	Concentration (in mg/l)
U197 wastewaters: p-Benzoquinone	13
	Concentration (in mg/kg)
U201 nonwastewaters: Resourcinol	1.8
	Concentration (in mg/l)
U201 wastewaters: Resourcinol	8.2
	Concentration (in mg/kg)
U203 nonwastewaters: Safrole	22
	Concentration (in mg/l)
U203 wastewaters: Safrole	1.3
U204 wastewaters: Selenium	0.79
U205 wastewaters: Selenium	0.79
	Concentration (in mg/kg)
U207 nonwastewaters: 1,2,4,5-Tetrachlorobenzene	19
	Concentration (in mg/l)
U207 wastewaters: 1,2,4,5-Tetrachlorobenzene	0.023
	Concentration (in mg/kg)
U208 nonwastewaters: 1,1,2,2-Tetrachloroethane	6.2
	Concentration (in mg/l)
U208 wastewaters: 1,1,1,2-Tetrachloroethane	0.007

	Concentration (in mg/kg)
U209 nonwastewaters: 1,1,2,2-Tetrachloroethane	6.2
	Concentration (in mg/l)
U209 wastewaters: 1,1,2,2-Tetrachloroethane	0.007
	Concentration (in mg/kg)
U210 nonwastewaters: Tetrachloroethylene	6.2
	Concentration (in mg/l)
U210 wastewaters: Tetrachloroethylene	0.007
	Concentration (in mg/kg)
U211 nonwastewaters: Carbon tetrachloride	6.2
	Concentration (in mg/l)
U211 wastewaters: Carbon tetrachloride	0.007
U214 wastewaters: Thallium	0.14
U215 wastewaters: Thallium	0.14
U216 wastewaters: Thallium	0.14
U217 wastewaters: Thallium	0.14
	Concentration (in mg/kg)
U220 nonwastewaters: Toluene	28
	Concentration (in mg/l)
U220 wastewaters: Toluene	0.028
	Concentration (in mg/kg)
U225 nonwastewaters: Bromoform	15
	Concentration (in mg/l)
U225 wastewaters: Bromoform	16

	Concentration (in mg/kg)
U226 nonwastewaters: 1,1,1,-Trichloroethane	6.2
	Concentration (in mg/l)
U226 wastewaters: 1,1,1,-Trichloroethane	0.007
	Concentration (in mg/kg)
U227 nonwastewaters: 1,1,2-Trichloroethane	6.2
	Concentration (in mg/l)
U227 wastewaters: 1,1,2-Trichloroethane	0.007
	Concentration (in mg/kg)
U228 nonwastewaters: Trichloroethylene	5.6
	Concentration (in mg/l)
U228 wastewaters: Trichloroethylene	0.007
	Concentration (in mg/kg)
U239 nonwastewaters: Xylenes (Total)	33
	Concentration (in mg/l)
U239 wastewaters: Xylenes (Total)	0.032
	Concentration (in mg/kg)
U240 nonwastewaters (see also 268.42 for salts and esters): 2,4-D	10
	Concentration (in mg/l)
U240 wastewaters (see also 268.42 for salts and esters): 2,4-D	0.013
	Concentration (in mg/kg)
U243 nonwastewaters: Hexachloropropene	37
	Concentration (in mg/l)
U243 wastewaters: Hexachloropropene	0.047

	Concentration (in mg/kg)
U247 nonwastewaters: Methoxychlor	0.18
	Concentration (in mg/l)
U247 wastewaters: Methoxychlor	0.00036

Multi-source leachate nonwastewaters	Total composition (mg/kg)
Acetone	0.14
Acenaphthalene	3.4
Acenaphthene	9.1
Acetonitrile	0.35
Acrolein	2.8
Acetophenone	9.6
Acrylamide	1.5
2 Acetylaminofluorene	13
Acrylonitrile	0.28
Aldrin	0.066
4-Aminobiphenyl	13
Aniline	14
Anthracene	7.7
Aramite	2.5
Aroclor 1016	0.92
Aroclor 1221	0.92
Aroclor 1232	0.92
Aroclor 1242	0.92
Aroclor 1248	0.92
Aroclor 1254	1.8
Aroclor 1260	1.8
alpha-BHC	0.066
beta-BHC	0.066
delta-BHC	0.066
gamma-BHC	0.066
Benzene	36
Benzal chloride	6.2
Benzene thiol	6.2
Benzo(a)anthracene	3.6
Benzo(b)fluoranthene	3.4
Benzo(k)fluoranthene	3.4
Benzo(g,h,i)perylene	1.8
Benzo(a)pyrene	3.6
p-Benzoquinone	180
Bromodichloromethane	16
Bromoform	16
Bromomethane (methyl bromide)	16
4-Bromophenyl phenyl ether	16
n-Butanol	2.6
Butyl benzyl phthalate	15
2-sec-Butyl-4,6-dinitrophenol	2.5
Carbon tetrachloride	6.2
Chlordane	0.13
p-Chloroaniline	16
Chlorobenzene	5.7
Chlorobenzilate	6.6
2-Chloro-1,3-butadiene	28
Chlorodibromomethane	16
Chloroethane	6.0
bis-(2-Chloroethoxy) methane	7.2
bis-(2-Chloroethyl) ether	7.2
Chloroform	6.2
bis-(2-Chloroisopropyl) ether	7.2
p-Chloro-m-cresol	14
Chloromethane	5.6
2-Chloronaphthalene	5.6
2-Chlorophenol	5.7
3-Chloropropene	28
Chrysene	3.6
o-Cresol	5.6
Cresol (m- and p- isomers)	3.2
Cyclohexanone	1.9

Multi-source leachate nonwastewaters	Total composition (mg/kg)
1,2-Dibromo-3-Chloropropane	16
1,2-Dibromoethane (Ethylene dibromide)	16
Dibromomethane	16
2,4-Dichlorophenoxyacetic acid (2,4-D)	10
o,p'-DDD	0.087
p,p'-DDD	0.087
o,p'-DDE	0.087
p,p'-DDE	0.087
o,p'-DDT	0.087
p,p'-DDT	0.087
Dibenzo(a,h)anthracene	13
1.,2,7,8-Dibenzapyrene	22
tris-(2,3-Dibromopropyl) phosphate	0.1
m-Dichlorobenzene	6.2
o-Dichlorobenzene	6.2
p-Dichlorobenzene	6.2
3,3'-Dichlorobenzidine	16
cis-1,4-Dichloro-2-butene	30
trans-1,4-Dichloro-2-butene	30
Dichlorodifluoromethane	10
1,1-Dichloroethane	6.2
1,2-Dichloroethane	6.2
1,1-Dichloroethylene	6.2
trans-1,2-Dichloroethylene	6.2
2,4-Dichlorophenol	14
2,6-Dichlorophenol	14
1,2-Dichloropropane	15
cis-1,3-Dichloropropene	15
trans-1,3-Dichloropropene	15
Dieldrin	0.13
Diethyl phthalate	28
p-Dimethylaminoazobenzene	29
2,4-Dimethyl phenol	14
Dimethyl phthalate	28
Di-n-butyl phthalate	28
1,4-Dinitrobenzene	2.3
4,6-Dinitrocresol	140
2,4-Dinitrophenol	140
2,4-Dinitrotoluene	140
2,6-Dinitrotoluene	28
Di-n-octyl phthalate	28
Diphenylamine	13
Diphenylnitrosoamine	13
Di-n-propylnitrosoamine	14
1,4-Dioxane	280
Disulfoton	0.1
Endosulfan I	0.066
Endosulfan II	0.13
Endosulfan sulfate	0.13
Endrin	0.13
Endrin aldehyde	0.13
Ethyl acetate	5.6
Ethyl benzene	6.0
Ethyl ether	140
bis-(2-Ethylhexyl) phthalate	28
Ethyl methacrylate	160
Famphur	0.1
Fluoranthene	3.6
Fluorene	7.7
Fluorotrichloromethane	33
Heptachlor	0.066
Heptachlor epoxide	0.066
Hexachlorobenzene	37
Hexachlorobutadiene	28
Hexachlorocyclopentadiene	4.8
Hexachlorodibenzo-furans	0.001
Hexachlorodibenzo-p-dioxins	0.001
Hexachloroethane	30
Hexachlorophene	1.1
Hexachloropropene	37
Indeno(1,2,3,-c,d)pyrene	3.6
Iodomethane	65
Isobutanol	170
Isodrin	0.010
Isosafrole	2.6
Kepone	0.043
Methacrylonitrile	84
Methanol	140
Methapyrilene	6.9
Methoxychlor	0.18
3-Methylchloanthrene	33
4,4-Methylene-bis-(2-chloroaniline)	29
Methylene chloride	31
Methyl ethyl ketone	200
Methyl isobutyl ketone	33
Methyl methacrylate	160
Methyl Parathion	0.1
Naphthalene	5.9
1,4-Naphthoquinone	1.9
1-Naphthylamine	15
2-Naphthylamine	15
p-Nitroaniline	28
Nitrobenzene	14
5-Nitro-o-toluidine	56
4-Nitrophenol	65
N-Nitrosodiethylamine	28
N-Nitrosodimethylamine	56
N-Nitroso-di-n-butlyamine	54
N-Nitrosomethylethylamine	2.3
N-Nitrosomorpholine	2.3
N-Nitrosopiperidine	220
N-Nitrosopyrrolidine	220
Parathion	0.1
Pentachlorobenzene	37
Pentachlorodibenzo-furans	0.001
Pentachlorodibenzo-p-dioxins	0.001
Pentachloroethane	31
Pentachloronitrobenzene	4.8
Pentachlorophenol	37
Phenacetin	16
Phenanthrene	3.4
Phenol	6.2
Phorate	0.1
Phthalic anhydride (measured asphthalic acid)	28
Propanenitrile	360
Pronamide	1.5
Pyrene	9.1
Pyridine	16
Resourcinol	1.6
Safrole	22
Silvex (2,4,5-TP)	2.1
2,4,5-T	2.1
1,2,4,5-Tetrachlorobenzene	19
Tetrachlorodibenzo-furans	0.001
Tetrachlorodibenzo-p-dioxins	0.001
1,1,1,2-Tetrachloroethane	6.2
1,1,2,2-Tetrachloroethane	6.2
Tetrachloroethylene	6.2
2,3,4,6-Tetrachlorophenol	37
Toluene	28
Toxaphene	1.3
1,2,4-Trichlorobenzene	19
1,1,1-Trichloroethane	6.2
1,1,2-Trichloroethane	6.2
Trichloroethylene	5.6
2,4,5-Trichlorophenol	37
2,4,6-Trichlorophenol	37
1,2,3-Trichloropropane	28
1,1,2-Trichloro-I,2,2-trifluoro-ethane	28
Vinyl chloride	0.035
Xylene(s)	33
Cyanides (Total)	1.5
Cyanides (Amenable)	0.10

Multi-source leachate wastewaters [1]	Total Composition (mg/l)
Acetone	0.162
Acenaphthalene	0.059
Acenaphthene	0.059
Acetonitrile	0.097
Acrolein	0.162
Acetophenone	41.198
Acrylamide	1.042
2-Acetylaminofluorene	0.040
Acrylonitrile	0.242
Aldrin	0.021
4-Aminobiphenyl	0.095
Aniline	0.807
Anthracene	0.059
Aramite	0.020
Aroclor 1016	0.013
Aroclor 1221	0.014
Aroclor 1232	0.013
Aroclor 1242	0.017
Aroclor 1248	0.013
Aroclor 1254	0.014
Aroclor 1260	0.014
alpha-BHC	0.00014
beta-BHC	0.00014
delta-BHC	0.023
gamma-BHC	0.00168
Benzal chloride	0.040
Benzene	0.136
Benzene thiol	0.219
Benzo(a)anthracene	0.059
Benzo(a)pyrene	0.061
Benzo(b)fluoranthene	0.040
Benzo(g,h,i)perylene	0.004
Benzo(k)fluoranthene	0.059
p-Benzoquinone	0.020
Bromodichloromethane	0.198
Bromomethane (methyl bromide)	0.065
4-Bromophenyl phenyl ether	0.040
n-Butanol	0.137
Butyl benzyl phthalate	0.012
2-sec-Butyl-4,6-dinitrophenol	1.436
Carbon tetrachloride	0.032
Carbon disulfide	0.179
Chlordane	0.00327
p-Chloroaniline	43.736
Chlorobenzene	0.032
Chlorobenzilate	0.072
2-Chloro-1,3-butadiene	0.032
Chlorodibromomethane	0.032
Chloroethane	0.268
bis-(2-Chloroethoxy) methane	0.008
bis-(2-Chloroethyl) ether	0.024
2-Chloroethyl vinyl ether	0.035
Chloroform	0.046
bis-(2-Chloroisopropyl) ether	0.040
p-Chloro-m-cresol	0.053
Chloromethane (methyl chloride)	0.190
2-Chloronaphthalene	0.040
2-Chlorophenol	0.051
3-Chloropropene	0.021
Chrysene	0.059
o-Cresol	0.189
Cresol (m- and pisomers)	1.315
Cyclohexanone	0.020
1,2-Dibromo-3-chloropropane	0.065
1,2-Dibromoethane	0.016
Dibromomethane	0.065
2,4-Dichlorophenoxyacetic acid	0.721
o,p'-DDD	0.023
p,p'-DDD	0.023
o,p'-DDE	0.031
p,p' DDE	0.031
o,p'-DDT	0.00392
p,p'-DDT	0.00392
Dibenzo(a,e)pyrene (1:2;7:8)	0.041
Dibenzo(a,h)anthracene	0.040
tris-(2,3-Dibromopropyl) phosphate	0.080
m-Dichlorobenzene	0.014
o-Dichlorobenzene	0.064
p-Dichlorobenzene	0.088
3,3'-Dichlorobenzidine	0.095
cis-1,4-Dichloro-2-butene	0.021
trans-1,4-Dichloro-2-butene	0.021
Dichlorodifluoromethane	0.130
1,1-Dichloroethane	0.059
1,2-Dichloroethane	0.211
1,1-Dichloroethylene	0.025
trans-1,2-Dichloroethylene	0.054
2,4-Dichlorophenol	0.076
2,6-Dichlorophenol	0.076
1,2-Dichloropropane	0.482
cis-1,3-Dichloropropene	0.021
trans-1,3-Dichloropropene	0.021
Dieldrin	0.017
Diethyl phthalate	0.203
3,3-Dimethoxybenzidine	0.095
p-Dimethylaminoazobenzene	0.095
3,3'-Dimethylbenzidine	0.095
2,4-Dimethyl phenol	0.036
Dimethyl phthalate	0.047
Di-n-butyl phthalate	0.057
1,4-Dinitrobenzene	0.231
4,6-Dinitrocresol	0.277
2,4-Dinitrophenol	0.123
2,4-Dinitrotoluene	0.235
2,6-Dinitrotoluene	0.398
Di-n-octyl phthalate	0.012
Di-n-propylnitrosoamine	0.400
Diphenylamine	0.378
1,2-Diphenyl hydrazine	0.063
Diphenylnitrosoamine	0.290
1,4-Dioxane	28
Disulfoton	0.770
Endosulfan I	0.023
Endosulfan II	0.029
Endosulfan sulfate	0.029
Endrin	0.00279
Endrin aldehyde	0.025
Ethyl acetate	0.195
Ethyl benzene	0.032
Ethyl ether	0.067
bis-(2-Ethylhexyl) phthalate	0.279
Ethyl methacrylate	0.032
Ethylene oxide	127.4
Famphur	0.336
Fluoranthene	0.068
Fluorene	0.059
Fluorotrichloromethane	0.023
Heptachlor	0.00116
Heptachlor epoxide	0.016
Hexachlorobenzene	0.040
Hexachlorobutadiene	0.040
Hexachlorocyclopentadiene	0.041
Hexachlorodibenzo-furans	0.000035
Hexachlorodibenzo-p-dioxins	0.000031
Hexachloroethane	0.040
Hexachlorophene	0.00111
Hexachloropropene	0.025
Indeno(1,2,3,-c,d)pyrene	0.004
Iodomethane	0.162
Isobutanol	0.125
Isodrin	0.021
Isosafrole	9.542
Kepone	0.0095
Methacrylonitrile	28.
Methanol	0.033
Methapyrilene	9.542
Methoxychlor	0.252
3-Methylchloanthrene	0.004
4,4-Methylene-bis-(2-chloroaniline)	0.358
Methylene chloride	0.089
Methyl ethyl ketone	0.016
Methyl isobutyl ketone	0.032
Methyl methacrylate	0.032
Methyl Parathion	0.336
Naphthalene	0.059
1,4-Naphthoquinone	0.020
1-Naphthylamine	0.378
2-Naphthylamine	0.378
p-Nitroaniline	0.020
Nitrobenzene	0.068
5-Nitro-o-toluidine	0.230
4-Nitrophenol	0.124
N-Nitrosodiethylamine	0.290
N-Nitrosodimethylamine	0.290
N-Nitroso-di-n-butylamine	0.290
N-Nitrosomethylethylamine	0.290
N-Nitrosomorpholine	0.290
N-Nitrosopiperidine	0.010
N-Nitrosopyrrolidine	0.010
Parathion	0.336
Pentachlorobenzene	0.040
Pentachlorodibenzo-furans	0.000023
Pentachorodibenzo-p-dioxins	0.000018
Pentachloroethane	0.040
Pentachloronitrobenzene	0.040
Pentachlorophenol	0.082
Phenacetin	9.542
Phenanthrene	0.059
Phenol	0.026
Phorate	0.770
Phthalic anhydride (measured as phthalic acid)	0.020
Propanenitrile (ethyl cyanide)	23.0
Pronamide	0.083
Pyrene	0.067
Pyridine	0.008
Resorcinol	0.042
Safrole	9.542
Silvex (2,4,5-TP)	0.721
2,4,5-T	0.721
1,2,4,5-Tetrachlorobenzene	0.040
Tetrachlorodibenzo-furans	0.0000088
Tetrachlorodibenzo-p-dioxins	0.0000062
1,1,1,2-Tetrachloroethane	0.032
1,1,2,2-Tetrachloroethane	0.032
Tetrachloroethylene	0.056
2,3,4,6-Tetrachlorophenol	0.051
Toluene	0.080
Toxaphene	0.0095
Tribromomethane (bromoform)	0.357
1,2,4-Trichlorobenzene	0.046
1,1,1-Trichloroethane	0.054
1,1,2-Trichloroethane	0.054

Multi-source leachate wastewaters [1]	Total Composition (mg/l)
Trichloroethylene	0.054
2,4,5-Trichlorophenol	0.008
2,4,6-Trichlorophenol	0.008
1,2,3-Trichloropropane	0.482
1,1,2 Trichloro-1,2,2-trifluoroethane	6.496
Vinyl chloride	0.268
Xylene(s)	0.182
Cyanides (Total)	1.9
Cyanides (Amenable)	0.10
Fluoride	35.
Sulfide	14.
Antimony	1.930
Arsenic	1.390
Barium	1.150
Beryllium	0.820
Cadmium	0.200
Chromium (Total)	0.370
Copper	1.280
Lead	0.280
Mercury	0.150
Nickel	0.550
Selenium	0.820
Silver	0.290
Thallium	1.400
Vanadium	0.042
Zinc	1.020

[1] Note: These proposed standards for wastewater forms of Multi-source leachate represent alternative standards for the U and P wastewaters that correspond to chemicals listed in this table. As an example: the standard for acetone listed above is an alternative standard for U002 (acetone) wastewaters, etc. Not all constituents listed in the above table have a corresponding U or P waste codes. These generally represent other Appendix VIII (40 CFR 261) constituents that were not listed as U or P wastes. See background information on the development of these alternative standards in section III.A.1.h.(6.)(b.).

* * * * *

8. Appendix IV is added to Part 268 to read as follows:

APPENDIX IV—ORGANIC LAB PACKS

Hazardous waste with the following EPA waste codes may be placed in an "organic lab pack."

P001, P002, P003, P004, P005, P007, P008, P014, P016, P017, P018, P022, P023, P024, P026, P027, P028, P034, P037, P039, P040, P041, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P057, P058, P059, P060, P062, P064, P066, P067, P069, P070, P071, P072, P075, P077, P082, P085, P088, P089, P093, P094, P101, P108, P109, P111, P116, P118, P123

U001, U002, U003, U004, U005, U006, U008, U010, U011, U012, U014, U015, U016, U017, U018, U019, U021, U022, U024, U025, U026, U027, U030, U031, U034, U035, U036, U037, U039, U041, U042, U044, U046, U047, U048, U049, U050, U051, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U070, U071, U072, U073, U074, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U087, U089, U090, U091, U092, U093, U094, U095, U097, U101, U105, U106, U108, U110, U111, U112, U113, U114, U116, U117, U118, U119, U120, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U137, U138, U140, U141, U142, U143, U147, U148, U150, U154, U156, U157, U158, U159, U161, U165, U166, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U187, U188, U191, U192, U193, U194, U197, U200, U201, U202, U203, U206, U207, U208, U209, U210, U211, U213, U218, U219, U220, U222, U225, U226, U227, U228, U235, U236, U237, U238, U239, U240, U243, U244, U247, U248

F001, F002, F003, F004, F005, F010, F020, F021, F023, F026, F027, F028

K009, K010, K014, K015, K016, K017, K018, K019, K020, K021, K023, K024, K030, K031, K032, K033, K034, K035, K036, K038, K039, K040, K041, K042, K043, K054, K073, K085, K093, K094, K095, K096, K097, K098, K105, K107, K111, K112, K113, K114, K115, K116, K071

D001, D012, D013, D014, D015, D016, D017.

9. Appendix V is added to part 268 to read as follows:

APPENDIX V—INORGANIC LAB PACKS

Inorganic hazardous waste streams which contain only the following constituents may be placed in an "inorganic lab pack."

Barium
Cadmium
Trivalent chromium
Lead
Silver

* * * * *

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

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

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

Subpart A—Requirements for Final Authorization

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

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

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

Promulgation date	Title of regulation	FEDERAL REGISTER reference	Effective date
[Insert date of publication].	Land Disposal Restrictions for Third Third wastes.	[Insert page numbers].	May 8, 1990.

3. Section 271.1(j) is amended by revising the entry for May 8, 1990 in Table 2 to read as follows:

§ 271.1 Purpose and Scope.

* * * * *

(j) * * *

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

Effective date	Self-implementing provision	RCRA citation	FEDERAL REGISTER reference
May 8, 1990.	Prohibition on land disposal of 3/3 of listed wastes.	3004(g)(6)(C)	[Insert date of publication and page numbers of this document.]

[FR Doc. 89-27028 Filed 11-21-89; 8:45 am]

BILLING CODE 6560-50-M