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would be a demonstration that all of the BDAT constitutents not common to both the scrap metal and the listed prohibited waste meet the treatment standards. In addition, it may be possible to remove common constituents to the level found in unadulterated scrap metal. In this way, the applicant could show compliance with as much of the treatment standard for the listed waste as is readily demonstrable.) As the Agency studies the whole issue of treatment standards for debris further, it may prove that such situations can be dealt with by rule, rather than on a case-by-case basis. At present, however, EPA believes that an individualized approach is preferable.

8. Radioactive Mixed Waste

Radioactive mixed wastes are those wastes that satisfy the definition of radioactive waste subject to the Atomic Energy Act (AEA) that also contain waste that is either listed as a hazardous waste in subpart D of 40 CFR part 261, or that exhibits any of the hazardous waste characteristics identified in subpart C of 40 CFR part 261. On July 3, 1986 (51 FR 4504), EPA determined that the hazardous portions of mixed wastes are subject to the RCRA regulations. This created a dual regulatory framework for mixed waste because the hazardous component is regulated under RCRA, and the radioactive component is regulated under the AEA.

Statutorily and administratively, management of the radioactive component of mixed wastes differs from that of the RCRA hazardous component. Although EPA may develop ambient health and environmental standards for the RCRA hazardous component, the specific standards for radioactive material management developed under the AEA are administered by the Department of Energy (DOE) for government owned facilities, and by the Nuclear Regulatory Commission (NRC) for commercially owned facilities.

Since the hazardous portions of the mixed waste are subject to RCRA, the land disposal restrictions apply to such waste. This means that the RCRA hazardous portion of all mixed waste must meet the appropriate treatment standards for all applicable waste codes before land disposal.

There are a number of potential problems presented by applying the land disposal restrictions to mixed waste relating to technical achievability of all of the proposed standards, as well as to whether treatment standards can be achieved consistently with requirements imposed pursuant to the AEA. These problems may be resolved by establishing specific treatment standards for certain mixed waste, as the Agency has done in this final rule. In addition, site-specific variances from the treatment standard (40 CFR 268.44) may be used to resolve such problems. If the treatment technologies determined to represent BDAT (and used to establish the treatment standards) are "inappropriate" due to the radioactive hazard of a mixed waste (i.e., requiring a different technology design), a demonstration may be made to this effect in a petition to the Agency for a site-specific variance from the promulgated treatment standard. If such a variance is granted, alternative treatment standards would be established (for the mixed waste at the site) that must be met prior to land disposal.

a. Characterization and Industries Affected

Based on information provided by generators of mixed wastes, the majority of mixed wastes can be divided into three categories based on the radioactive component of the waste: (1) Low-level wastes, (2) transuranic (TRU) wastes, and (3) high-level wastes. Low-level wastes include radioactive waste that is not classified as spent fuel from commercial nuclear power plants, or defense high-level radioactive waste from producing weapons. TRU wastes are those wastes containing elements with atomic numbers greater than 92, the atomic number for uranium. These wastes generally pose greater radioactivity hazards than the low-level wastes because they contain long-lived alpha radiation emitters. High-level radioactive wastes are defined as spent fuel from commercial nuclear power plants, and defense high-level radioactive waste from the production of weapons.

Mixed low-level wastes may be generated in several ways. For example, medical diagnostic procedures use scintillation fluids that contain small amounts of radioactivity in toxic organic solvents (e.g., xylene and toluene). These solvents generally pose a greater chemical hazard than does the low-level radioactivity. The principal generators of low-level mixed wastes are nuclear power plants, DOE, academic, and medical institutions.

One commenter submitted a list of substances generated at commercial nuclear power plants that may be classified as low-level mixed wastes. This included a wide variety of liquid organic wastes such as spent solvents containing suspended or dissolved radionuclides, scintillation cocktails, spent freon used for cleaning protective garments, acetone or solvents used for cleaning pipes or other equipment, and still bottoms from the distillation of freon. Also, the list included a wide variety of solid materials such as spent ion-exchange resins (contaminated with various metals), filters used in reclaiming freon, adsorbents, residues from the cleanup of spills, lead shields, lead-lined containers, welding rods, and batteries.

Military weapons production involves the generation of large amounts of wastes that can fall into the low-level and TRU categories of mixed waste. These wastes are similar in form, but TRU waste is considered by government regulators to be more dangerous because of the alpha radiation emitters.

High-level mixed wastes are extremely dangerous to handle due to their high level of radioactivity. The DOE is responsible for the storage and disposal of all the nation's high-level mixed wastes. High-level wastes are defined as the waste resulting from the reprocessing of irradiated fuel rods from commercial and military nuclear reactors. This reprocessing involves the handling of materials that are extremely hot both thermally and radiologically. One of the reprocessing steps involves dissolving the fuel rods in a nitric acid bath so that plutonium-239 and tritium can be recovered. It is the high-level waste generated from this reprocessing that is considered mixed waste and which requires treatment. DOE has indicated that this high-level waste is EP-toxic for several metals, including lead (D008), silver (D011), chromium (D007), barium (D005), and mercury (D009), and may also exhibit the characteristic of corrosivity (D002).

b. Applicable Technologies

The Agency believes that for treatment of metals in low-level mixed wastes and for some TRU mixed wastes containing low radioactive components, chemical precipitation will remove the metals in wastewaters, and stabilization technologies will reduce the leachability of the metal constituents in nonwastewater matrices. These are the same technologies that are applicable to nonradioactive wastes containing metals.

DOE submitted data demonstrating the applicability of stabilization as a treatment technology for the low-level waste fractions that are separated from the high-level waste generated during the reprocessing of fuel rods. As used by one particular facility, a stabilization process called grout stabilization involves blending commercially produced cement-based reagents with

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the liquid low-level waste fraction. The material sets up as a solid mass, immobilizing the waste. The performance data indicate that stabilization provides immobilization of the characteristic metal constituents and radioactive contaminants for this low-level radioactive waste, and that it is possible to stabilize the RCRA hazardous portions to meet the treatment levels for the characteristic metals.

For organic low-level mixed wastes, the Agency believes that incineration is an applicable technology for organic compounds in both wastewater and nonwastewater matrices, and that technologies such as carbon adsorption can achieve removal of organics in wastewaters where incineration is not practical. DOE has submitted information indicating that plans are in place to begin incineration of a D001 ignitable liquid mixed waste containing benzene. Incineration is also an applicable technology for D001 Ignitable Liquids Subcategory nonradioactive wastes. Therefore, this particular mixed waste, if incinerated, would meet the treatment standard for D001 Ignitable Liquids Subcategory.

For TRU mixed wastes with considerable radioactive components, and for high-level wastes, EPA believes that vitrification is an applicable technology for treatment of both organic and inorganic constituents. DOE provided information to support that vitrification is an applicable technology for their high-level wastes generated from the reprocessing of fuel rods. Treatment can be accomplished by using either direct vitrification or a more complex treatment process which includes a series of chemical steps that separate the low-level radioactive waste fractions from the high-level radioactive waste. The high-level radioactive portion is then vitrified. When using separation technologies such as precipitation followed by settling or filtration, the bulk of the radioactivity can be incorporated into a high-level liquid waste containing up to 99 percent of the radioactivity of the original irradiated fuel rods. By separating high-level and low-level mixed wastes, the amount of high-level waste that may require vitrification treatment can be reduced.

DOE submitted specific data on how vitrification will be used to treat high-level mixed waste. As used in the facility design, the vitrification process will incorporate the high-level mixed waste into a glass matrix, achieving a reduction in the mobility of its RCRA hazardous and radioactive constituents. The waste will enter the vitrification system as a slurry (i.e., a blend of solid particles in a liquid base). The mixture will be pumped into a glass melter and heated so that the water is evaporated and the solid glass and waste particles melt and blend. After the mixture has been converted into molten glass, it will be poured into protective stainless steel canisters, where it will harden to form borosilicate glass. The canisters will then be capped and decontaminated and a second cap will be welded into place, forming an additional seal.

c. Determination of BDAT for Certain Mixed Wastes

In many cases, current practice or planned treatment will achieve the promulgated treatment standards for the RCRA hazardous wastes. For example, DOE generates radioactive zirconium fines that are pyrophoric under 40 CFR 261.21(a)(2) (i.e., that cause fire through friction). Consequently, the RCRA hazardous portion of this mixed waste is considered a characteristic ignitable waste included under the D001 Reactive Ignitable Subcategory by EPA. The Agency is promulgating "Deactivation as a Method of Treatment" as the treatment standard for D001 Ignitable Reactives Subcategory. The DOE submitted data which indicate that this waste can be stabilized to remove the characteristic, thereby achieving the treatment standard.

(1) *Treatment Standards for Mixed Wastes Not Otherwise Subcategorized.* The Agency is reiterating that as of the effective date of today's rule, all promulgated treatment standards for RCRA listed and characteristic wastes apply to the RCRA hazardous portion of mixed radioactive (high-level, TRU, and low-level) wastes, unless EPA has specifically established a separate treatability group for a specific category of mixed waste. In other words, unless specifically noted in §§ 268.41, 268.42, or 268.43 of today's rule, the standards located in these sections apply to all mixed wastes. (All alternative standards that are specifically discussed later in this section of the preamble that apply only to specific mixed wastes are identified in § 268.42 Table 3 of today's rule.) All handling requirements for radioactive materials set forth by the Nuclear Regulatory Commission must also be met.

(2) *Treatment Standards for Specific High-Level Wastes.* For most characteristic metal wastes, the Agency has determined that conventional stabilization is BDAT, and has developed treatment standards using stabilization performance data. The Agency does not believe, however, that stabilization using cementitious binders is an appropriate treatment for high-level radioactive mixed wastes generated specifically during the reprocessing of fuel rods. Such mixed wastes exhibit the characteristic of toxicity for certain RCRA hazardous metals (lead, chromium, barium, mercury, and silver). While stabilization would reduce the leaching potential of the characteristic metals, it would not provide treatment of the high-level radioactive portion of the mixed waste.

The Agency provided notice in the proposed rule (54 FR 48492) that DOE was providing to the Agency treatment data for mixed waste. These data were received and placed in the docket for the proposed rule and were available during the comment period for notice and public comment. The Agency analyzed these data and performed a subsequent site visit to the vitrification unit to assess the treatment process. Based upon these data and the site visit, the Agency has concluded that vitrification will provide effective immobilization of the inorganic constituents (i.e., both radioactive and RCRA hazardous) in high-level mixed waste generated during the reprocessing of fuel rods. The Agency is hereby specifying that vitrification is BDAT for these wastes.

The Agency lacks, however, performance data upon which to base a concentration-based standard for this mixed waste. Additionally, the Agency believes that the potential hazards associated with exposure to radioactivity during analysis of this high-level mixed waste preclude setting a concentration-based treatment standard. For these reasons, the Agency is promulgating "Vitrification of High Level Radioactive Waste as a Method of Treatment" as the treatment standard for the high-level fraction of the mixed waste generated during the reprocessing of fuel rods exhibiting the characteristics of corrosivity (D002) and toxicity for metals (D004–D011). (See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.)

BDAT TREATMENT STANDARDS FOR D002, D004, D005, D006, D007, D008, D009, D010, AND D011

[Radioactive high-level wastes generated during the reprocessing of fuel rods subcategory]

Vitrification of high-level radioactive waste (HLVIT) as a method of treatment

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(3) *Treatment Standards for D008 Radioactive Lead Solids.* The Agency proposed to develop a subcategory within the D008 wastes and to establish separate treatment standards for specific radioactive lead solids (54 FR 48439). These lead solids were proposed to include, but not be limited to, all forms of lead shielding, lead "pigs", and other elemental forms of lead. The proposed treatment standard for these wastes was "Surface Deactivation or Removal of Radioactive Lead Portions Followed by Encapsulation; or Direct Encapsulation as Methods of Treatment."

The Agency received comments requesting that the Agency clarify what would be included in "lead solids" for purposes of meeting this treatment standard. To clarify this point, today's treatment standard applies to all forms of radioactive mixed waste containing elemental lead (including discarded equipment containing elemental lead that served a personnel- or equipment-shielding purpose prior to becoming a RCRA hazardous waste). These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ash that can undergo conventional pozzolanic stabilization, nor do they include organo-lead materials that can be incinerated and then stabilized as ash.

One commenter challenged the Agency's proposed approach, stating that the proposed method that included "Surface Deactivation" was not based on a demonstrated, available technology. The Agency has information indicating that the lead surface of a shield can be decontaminated using a number of commercially available processes. The Agency agrees, however, that these processes have not been adequately investigated to determine which may be considered "demonstrated" or "best". The Agency, therefore, is dropping "Surface Deactivation" from the final treatment standard.

The Agency is today promulgating a treatment standard expressed as a required method of treatment for the radioactive lead solids treatability group: "Macroencapsulation as a Method of Treatment" (MACRO). See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.) Pretreatment practices such as surface decontamination are not precluded by this final rule. Following pretreatment, any nonradioactive lead is subject to the treatment standard for characteristic lead wastes, 5.0 mg/l.

For low-level radioactive wastes containing lead, conventional stabilization technologies generally should not be affected by the presence of radioactive versus nonradioactive lead. As a result, the Agency is not including mixed wastes such as wastewater treatment residues and incinerator ash containing radioactive lead in a separate treatability group, except for the purpose of determining availability of treatment capacity (i.e., stabilization processes for radioactive materials should employ special safety precautions due to the radioactivity).

BDAT TREATMENT STANDARDS FOR D008

[Radioactive Lead Solids [a] Subcategory]

Macroencapsulation (MACRO) of radioactive lead solids as a method of treatment

[a] These lead solids include 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.

(4) *Treatment Standards for Mixed Waste Containing Elemental Mercury.* Elemental mercury is typically found in vacuum pumps and related manometers. In the nuclear industry, this form of mercury has been contaminated with radioactive tritium (a radio-isotope of hydrogen). These wastes are identified as D009 or U151 mixed wastes.

The Agency proposed a treatment standard for radioactive wastes containing elementary mercury expressed as a method of treatment, "Amalgamation with Zinc as a Method of Treatment" (54 FR 48442–48443). A separate treatability group was established because the proposed treatment standard for nonradioactive wastes of this type was "Roasting or Retorting as a Method of Treatment", and the Agency had no information indicating that these processes could separate the mercury from the radioactive material (i.e., tritium). The Agency based its proposed treatment standard for radioactive wastes containing elemental mercury on data involving the application of elemental zinc powder dampened with dilute sulfuric acid (5–10%) to form a mercury amalgam.

The Agency is promulgating this treatment standard as proposed. The Agency is convinced that amalgamation provides significant reduction in the air emissions of mercury, as well as provides a change in mobility from liquid mercury to a paste-like solid, and potentially reduces leachability. In response to comments stating that in addition to zinc, other inorganic reagents such as copper, nickel, gold, and sulfur were effective in forming mercury amalgamations, the required method, "Amalgamation" (AMLGM), may be accomplished using any of these reagents. (See § 268.42 Table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.) Roasting, retorting, or other recovery processes are not precluded from use by this standard as long as all residuals from these recovery processes comply with the amalgamation treatment standard prior to land disposal.

BDAT TREATMENT STANDARDS FOR D009 AND U151

[Radioactive elemental mercury subcategory]

Amalgamation (AMLGM) as a method of treatment

(5) *Treatment Standards for Mercury-Containing Hydraulic Oil Contaminated with Radioactive Materials.* The Agency proposed a treatment standard of "Incineration as a Method of Treatment with Incinerator Residues Meeting 0.2 mg/l" for D009 hydraulic oil contaminated with radioactive materials (54 FR 48443). This treatment standard was based on EPA's determination that a technology applicable to nonradioactive mercury wastes that contain high levels of organics was incineration. No comments were received on the proposed treatment standard. Upon reexamination of the proposed standard, however, the Agency is dropping the requirements that the treatment residues meet a specified level. This is consistent with the general land disposal restrictions policy that treatment residues resulting from the use of a required method of treatment are not required to also meet a concentration-based standard (see section III.A.1.b). Today's final treatment standard for D009 hydraulic oil contaminated with radioactive materials is "Incineration as a Method of Treatment" (INCIN). (See § 268.42 table 1 in today's rule for a detailed description of the technology standard referred to by the five letter technology code in the parentheses.)

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BDAT TREATMENT STANDARDS FOR D009 [Mercury-containing hydraulic oil contaminated with radioactive materials subcategory]
Incineration (INCIN) as a method of treatment

9. Alternate Treatment Standards for Lab Packs

a. Background

The Agency received several comments in response to the Second Third proposed rule (54 FR 1056, January 11, 1989) 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 residues from analytical samples. These lab packs may contain hundreds of restricted wastes, and the applicable treatment standards 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 being 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. As a result, the Agency proposed alternate treatment standards in the Third Third proposed rule (54 FR 48372, November 22, 1989), which generators would have the option of utilizing in managing "organic" and "inorganic" lab packs. The Agency received numerous comments in response to the proposal, and is today promulgating the alternate treatment standards with some revisions.

b. Alternate Treatment Standards

Many commenters suggested that EPA expand the universe of waste allowed in organic and inorganic lab packs. The Agency agrees with some of the information and suggestions provided by the commenters, and is promulgating revisions to the alternate treatment standards for lab packs in response to these comments. In order to facilitate implementation of the lab pack standards, the Agency is expanding the proposed list of waste codes in appendix IV to part 268 to include certain inorganic and organometallic hazardous wastes. The revised appendix IV includes the following hazardous wastes:

(1) Inorganic;
(2) Organometallic;
(3) Organic;
(4) D003 reactives; and
(5) D002 corrosives.

The Agency is promulgating an alternate treatment standard of incineration as a specified method followed by a requirement to meet the treatment standards for the EP toxic metals included in appendix IV (*i.e.*, D004–D008, and D010–D011; mercury wastes may not be included in appendix IV lab packs). Such lab packs are hereafter referred to as appendix IV lab packs.

The Agency is also revising the proposed appendix V to part 268, which now identifies organic hazardous wastes that can be effectively destroyed by incineration. The Agency is promulgating an alternate standard of incineration for lab packs containing organic hazardous wastes identified in appendix V to part 268, hereafter referred to as appendix V labpacks.

Generators may commingle unregulated (nonhazardous) waste in both appendix IV and appendix V lab packs. Generators may also commingle hazardous wastes that already meet the treatment standards in the appropriate appendix IV or V lab pack.

The Agency believes that the alternate approach being promulgated in today's final rule is broader in scope than the proposed approach and provides substantial administrative relief. 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, except for the EP toxic metal constituents of organometallic, inorganic, D002 corrosive, and D003 reactive wastes where the waste codes are identified in appendix IV. As explained below, these waste streams must continue to meet all applicable treatment standards for the EP toxic metal constituents.

Generators who wish to use the alternate treatment standards for lab packs must notify the treatment facility in writing of the EPA Hazardous Waste Number(s) for each hazardous waste contained therein. Generators must submit such notices with each shipment of waste. Appendix V organic lab packs treated by the specified technology may be disposed of in subtitle C facilities without further testing or analysis for compliance with part 268. (The Agency reiterates, however, that owners/operators are responsible for determining whether all treatment residuals exhibit one or more of the characteristics of hazardous waste before land disposal, either by waste analysis or knowledge of the waste.)

The Agency notes that the alternate treatment standard is not mandatory, and does not preempt the requirements for lab packs in 40 CFR 264.316 and 265.316. Generators may continue to ship regulated waste that meets all applicable treatment standards to land disposal facilities in accordance with the provisions of these sections. Generators of lab packs who wish to comply with the current implementation of the land disposal restrictions regulatory framework (*i.e.*, waste code carry through) as it applies to lab packs are free to do so. Lab packs containing hazardous wastes other than those specified in appendices IV and V are not eligible for the alternate treatment standards, and must meet the applicable treatment standard for each waste contained in the lab pack.

c. Agency Response To Major Comments

The Agency received numerous public comments on the proposed standards for lab packs. In general, commenters agreed with the proposed approach; however, they provided recommendations for further relief from the administrative and technical requirements for lab packs. The issues raised by commenters are addressed in the preamble and background document to today's final rule.

(1) *Inorganic and Organometallic Lab Packs.* The Agency proposed an alternate treatment standard of stabilization with Portland cement in a 20 percent binder-to-waste ratio (by weight) for lab packs containing certain EP toxic metals. As proposed, the alternate treatment standard was narrowly defined to include only barium, cadmium, trivalent chromium, lead, and silver; therefore, the alternate treatment stardards were applicable primarily to those EP toxic characteristic wastes. Several commenters suggested that the Agency allow disposal of all hazardous and unregulated organic waste amenable to stabilization in inorganic lab packs. Several commenters suggested that EPA establish an alternate treatment standard of incineration followed by stabilization for organometallic wastes (including F and K waste codes for which EPA has promulgated treatment standards for metal constituents). The commenters stated that the organic constituents in these wastes are effectively destroyed by incineration, and stabilization of the remaining ash effectively reduces metals' leachability. The Agency agrees with the commenters

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who stated that the alternate standard for inorganic hazardous waste disposed of in lab packs should be expanded, asnd that the treatment train proposed by the commenters may effectively treat certain organometallic wastes. The Agency believes that a more effective approach to managing inorganic and organometallic wastes would allow commingling of these wastes in an "organometallic" or "appendix IV lab pack." The alternate treatment standard of incineration followed by treatment to achieve the treatment standards for the EP toxic metals included in appendix IV will effectively destroy the organics and immobilize the metal constituents. The Agency, therefore, is not promulgating the alternate treatment standard for "inorganic lab packs" as proposed, but rather is promulgating an alternate standard for "organometallic" or "appendix IV lab packs."

The Agency is departing from its proposed approach for inorganic hazardous waste based on concern with specifying stabilization as a treatment standard for metallic waste streams with varying treatability with no requirement for verifying that stabilization of the hazardous constituents was effective. The Agency is also concerned that the proposed standard would create risks to worker health and safety due to the need for removal of inorganic waste from inner containers prior to stabilization with Portland cement. Several commenters claimed that such practices result in unnecessary exposure of treatment personnel, and increase the risk of accidents and resulting environmental exposure. The Agency was unaware of these safety and environmental concerns, and does not wish to increase the risks associated with treatment of these wastes.

Several commenters suggested that the Agency allow corrosive (D002) and reactive (D003) wastes in organic lab packs, while others requested that they be allowed in inorganic or organometallic lab packs. The commenters stated that industry experience with these wastes indicates that they can be effectively treated by incineration, and that recovery is not a cost-effective or practical method of treating these wastes. The Agency agrees in part with the commenters. Although Agency data show that some corrosive wastes can be incinerated effectively (54 FR 48422), many of these wastes contain metal constituents that may require further treatment. The Agency is concerned that incineration of metal-bearing wastes without verification may not be protective of human health and the environment. (Where the Agency specifies a technology as the treatment standard, treatment using the specified technology satisfies the land disposal restriction requirements, and analysis of the treatment residues is not required for purposes of complying with part 268.) The Agency, therefore, is prohibiting D002 corrosive and D003 reactive wastes from appendix V lab packs. Rather, the Agency believes that the alternate treatment standard for Appendix IV organometallic lab packs, which requires incinceration and treatment to meet certain EP toxic metal treatment standards, is more appropriate for D002 and D003 wastes because it requires incineration of organic constituents that may interfere with stabilization and verification that treatment of metals has occurred. The Agency, therefore, is including these waste codes in appendix IV to part 268. Generators may dispose of D002 and D003 wastes in an appendix IV (organometallic) lab pack along with other wastes identified in appendix IV, provided that the compatibility standards in §§ 264.316 and 265.316 are met.

The Agency wishes to clarify that where an appendix IV lab pack contains listed hazardous waste with waste code-specific treatment standards for inorganic constituents that are also EP toxic metals (§ 261.24) (within the same lab pack), the waste must be treated, at a minimum, to meet the EP toxic metal treatment standard. For example, an appendix IV lab pack may contain analytical samples of F006 waste (wastewater treatment sludges from electroplating operations) which has waste code-specific treatment standards for cadmium, chromium, lead and silver. These constituents are also EP toxic metals. In comparing the F006 treatment standards with the EP toxic metal treatment standards for these constituents, the F006 treatment standards for cadmium, lead, and silver are lower than their respective EP toxic metal treatment standards, while the F006 treatment standard for chromium is higher. The applicable alternate treatment standards for all of the metal constituents in this hypothetical analytic sample, at a minimum, would be the treatment standards for the EP toxic metals.

The Agency further wishes to clarify that where lab packs are combined with other non-lab pack hazardous wastes prior to or during treatment (e.g., prior to incineration), §§ 268.41 and 268.43(b) require that the entire mixture must be treated to meet the most stringent treatment standards applicable to the wastes included in the mixture. For example, ash residue resulting from the incineration of a lab pack containing an EP toxic characteristic lead waste together with non-lab pack K001 nonwastewaters (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol), would have overlapping treatment standards for lead: 0.51 mg/l for the K001 nonwastewater, and 5.0 mg/l for the characteristic waste. In this case, the more stringent treatment standard would apply, based on the mixture of the K001 waste with the lab pack containing an EP toxic metal constituent.

(2) *Unregulated (Nonhazardous) Waste.* In the proposed rule, the Agency stated its concern with the effect of unregulated inorganic wastes on treatment of lab pack wastes. Specific data on the type and quantity of unregulated inorganics destined for disposal in "organic" and "inorganic" lab packs were not available; therefore, the Agency was reluctant to allow disposal of these wastes in lab packs where analysis of the treatment residuals was not required.

The Agency received several comments stating that unregulated waste such as glassware is typically disposed of and incinerated with hazardous waste generated by laboratories. The commenters also stated that protective clothing and gear, such as goggles, gloves, aprons, respirator cartridges, and pesticide products are also disposed of in lab packs. The commenters argued that these unregulated wastes should also be allowed in lab packs because their presence does not affect the performance of incineration of hazardous waste.

The Agency also received comments indicating that the excessive cost of lab pack disposal discourages commingling of hazardous and unregulated wastes. Thus, in most cases, disposal of unregulated waste in lab packs is limited to small quantities. The Agency believes that these small quantities can be effectively treated under the alternate treatment standard, and is revising its proposed approach to allow generators to dispose of unregulated waste in appendix IV lab packs.

(3) *Organic Lab Packs.* The Agency proposed to limit the applicability of the alternate treatment standard to organic wastes that have a treatment standard based on the performance of incineration or thermal destruction, or

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where incineration only is specified as the treatment standard.

Some commenters stated that there is no sound basis for excluding waste codes that already meet the treatment standards from disposal in their respective lab packs. The Agency is not opposed to extending the alternate standards to such waste, but was unaware that generators disposed of treated waste (or waste that initially meets the treatment standard) in this manner. Numerous commenters have expressed a desire to continue this practice; therefore, the Agency is revising the language in 40 CFR 268.42(c)(1) so that prohibited waste that meets the applicable treatment standards is not precluded from disposal utilizing the alternate treatment standards, provided that each waste code(s) is listed in appendix IV or appendix V, and the waste is disposed of in the appropriate lab pack.

Several commenters stated that incineration (or deactivation by incineration) of small quantities of reactive U and P wastes in lab packs is proven to be safe and effective. The commenters further point to the fact that EPA proposed deactivation, incineration, or thermal treatment for several U and P waste codes that are potentially reactive wastes, but failed to include the applicable waste codes in appendix IV. The Agency agrees with the commenters that small quantities of reactive U and P waste codes as specified in the proposed rule (54 FR 48427–48428) can be safely packaged and incinerated in a lab pack provided that the requirements for incompatible waste in §§ 264.316 and 265.316 are met. The Agency is therefore amending appendices IV and V to include several additional U and P wastes codes. The Agency also is including California list PCBs and dioxin-containing waste (F020–F023, F026–F028) in the lab pack treatability group as proposed, but reiterates that treatment of these wastes requires more stringent performance standards than wastes included in part 268 appendices IV and V (i.e., dioxins must achieve a destruction and removal efficiency of 99.9999 percent and PCBs must meet the technical standard in 40 CFR 761.70). Where generators choose to commingle one or both of these wastes with organic lab pack wastes listed in appendices IV and V, the entire lab pack must be incinerated to meet the more stringent standard. The following examples are provided for clarification:

(a) A lab pack containing dioxin-containing waste, California list PCBs and appendix V 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).

(b) 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 V 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).

According to the provisions of today's final rule, generators may utilize the alternate treatment standards if their lab packs contain those wastes summarized below:

(a) "Appendix IV organometallic lab packs" may contain the following hazardous waste identified in appendix IV:

(1) Organometallic;
(2) Inorganic;
(3) Organic;
(4) D002 corrosives; and
(5) D003 reactives.

(b) "Appendix V organic lab packs" may contain only those organic hazardous wastes identified in appendix V.

Lab packs which contain any hazardous waste other than wastes listed in Appendix V are not appendix V organic lab packs, and may not use the alternate treatment standard.

d. Other Requirements

EPA proposed that generators or owners/operators who dispose of lab packs according to the alternate treatment standard must also meet the requirements for lab packs specified in 40 CFR 264.316 and 265.316. Several commenters expressed concern with the provision that requires metal outer containers (§ 264.316(b)) and § 265.316(b)), and pointed out that the original intent of these regulations was to ensure adequate containment for lab pack wastes that were being land disposed with or without prior treatment. The commenters further stated that lab packs destined for incineration are generally put in fiber packs that meet the Department of Transportation (DOT) requirements (49 CFR 173.12) and are suitable for incineration. The commenters requested that the Agency allow the continued use of fiber packs that meet applicable DOT requirements. The Agency does not wish to disrupt the use of fiber packs, and is amending §§ 264.316(b) and 265.316(b) to allow their continued use.

The Agency is promulgating its proposed approach with regard to generator notification requirements, and is requiring generators to list each EPA Hazardous Waste Code on a notification form and identify the applicable lab pack categories. Several commenters stated that the notification provision as proposed is burdensome. The Agency believes, however, that notification is necessary in order for owners/operators to verify that they are accepting for treatment only those waste codes covered under their permit. The Agency reiterates that the provisions promulgated in today's final rule do not supersede permit requirements under the RCRA hazardous waste program.

Generators or owners/operators who intend to utilize the applicable alternate treatment standard for hazardous waste codes listed in appendix IV and appendix V to part 268 must comply with the notification, certification, and recordkeeping requirements of 40 CFR 268.7(a) (7) and (8). They must also comply with the provisions in sections (a)(1), (a)(5), (a)(6), (b)(2) and (c). The Agency is requiring generators utilizing the alternate treatment standards to state whether the lab pack is an appendix IV or appendix V lab pack, and certify that hazardous wastes included therein are listed in the applicable appendix. The Agency emphasizes that lab packs containing hazardous wastes other than those listed in appendix IV and appendix V to part 268 are excluded from the alternate treatment standards for lab packs.

III.B Capacity Determinations

1. Determination of Alternative Capacity and Effective Dates for Surface-Disposed Wastes. Between May 8, 1990, when this rule was signed, and the date of its publication in the **Federal Register**, EPA discovered and corrected several discrepancies between the capacity variances discussed in the preamble and those included in the regulatory language. For details on those corrections, please contact those listed in the additional information section at the beginning of the preamble.

a. Total Quantity of Land-Disposed Wastes. The capacity analyses for wastes for which EPA is today finalizing 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 in 1986 (i.e., land disposal).

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Survey data are part of the record for this final rule.

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

For mixed RCRA/radioactive wastes, EPA used data supplied by the U.S. Department of Energy. Low-level radioactive waste survey data from individual states and State compacts 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 indicate about 5.7 billion gallons of the wastes for which standards are being finalized today were disposed of in or on the land. This estimate includes 77 million gallons that were stored in waste piles for short-term storage purposes. 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 waste piles have not been included in the volumes of wastes requiring alternative treatment.

EPA estimates that about 22 million gallons of treatment residuals from minimum technology impoundments or from impoundments that were replaced by a tank (e.g., standard cement, steel tanks) will require alternative treatment. EPA assumes that these wastes are now being sent off-site for treatment. Consequently, this amount is included as treatment capacity required in today's rule.

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

[millions of gallons/year]

Land disposal method	Volume
Storage:	
Waste piles	77
Surface impoundments	2
Treatment:	
Waste piles	30
Surface impoundments	22
Disposal:	
Landfills	349
Land treatment	81
Surface impoundments	52
Underground injected	5,086
Total	5,701

In addition, 30 million gallons of wastes were treated in waste piles, 52 million gallons were disposed of in surface impoundments, 430 million gallons were disposed of in land treatment units or landfills, and 5.1 billion gallons were injected underground. All of these wastes will require alternative treatment capacity.

EPA notes, however, that the TSDR Survey may overstate demand for treatment capcity for wastewaters that were treated or disposed of in surface impoundments at the time of the survey (1987 and early 1988). This overstatement is due to the requirement that impoundments receiving most hazardous wastes must now be retrofitted to meet minimum technology requirements, or taken out of service, as a result of RCRA section 3005(j). If an impoundment continues to operate after being retrofitted, it becomes a section 3005(j)(11) impoundment, provided that the wastewaters are treated and residues are removed annually. Wastewaters that are not treated or disposed of in surface disposal units, or that are treated in section 3005(j)(11) impoundments, do not create any demand for alternative commercial treatment capacity.

EPA solicited comments on those wastewaters currently disposed of in surface units that require alternative commercial treatment capacity. One commenter mentioned that EPA did not include volumes associated with surface impoundments awaiting closure. No commenter provided information on the volumes associated with these impoundments. Based on EPA's data, approximately ten percent of the surface impoundments that have submitted closure plans are awaiting closure plan approvals. EPA believes that most of these impoundments removed liquid hazardous wastes on or about November 8, 1988. EPA believes that the remaining volume of wastewaters in surface disposal units awaiting closure is small. Consequently, EPA did not include in the capacity analysis additional volumes associated with surface impoundments awaiting closure. (This discussion does not apply to wastewaters destined for deepwell disposal.)

EPA also requested comments on the quantity of RCRA P and U 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 by definition are 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 P and U wastes were mixed with large volumes of other wastes, but 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 P and U wastes deepwell-disposed as "very small," EPA has assumed for the analysis of alternative treatment capacity that the national volume of P and U wastes needing alternative capacity is less than 100,000 gallons. EPA also requested comments on the assumption that the volumes of P and U wastes being deepwell-disposed are less than 100,000 gallons.

EPA received several comments concerning deepwell-injected P and U wastes. One commenter submitted data indicating that their facility disposed of 20,456 gallons of U wastes by deepwell injection in 1989. However, this commenter has received a no-migration petition approval and no alternative capacity is needed. One commenter indicated that EPA's methodology for determining actual P and U volumes was flawed, resulting in artificially low estimates, and believed that the true volume of these wastes was large enough to warrant a national capacity variance (3.3 million gallons at the commenter's facility alone). EPA has reviewed these data and agrees that the P and U volume at the second commenter's facility is much larger than previously assigned under the P and U methodology of 100,000 gallons. However, this volume has been determined to belong to a stream that is not a hazardous waste under Section 261.3(a)(2)(iv). The large volume of the stream does not reflect the volume of P and U wastes in the stream—which resulted from *de minimis* losses—but rather the total wastewater volume. This volume, therefore, does not require alternative treatment capacity. Consequently, EPA is not changing its P and U waste methodology and is not granting a national capacity variance to these wastes.

The following sections provide a summary of the capacity analysis for the

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final 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-Disposed Wastes. EPA assessed the requirements resulting from today's final rule for alternative treatment capacity for surface-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 associated with applicable treatment technologies. The waste volumes 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 finalized today.

Based on this analysis, EPA estimates that today's rule could affect about 5.7 billion gallons of wastes that are land-disposed annually. This total includes 77 million gallons in short-term storage, and 79 million gallons that already meet treatment standards or that can be treated on-site. Consequently, only about 5.5 billion gallons will require treatment to meet standards EPA is promulgating in today's rule. Of this total, 515 million gallons were surface-disposed (i.e., excluding underground injection), and the remaining 5 billion 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 surface-disposed and deepwell-injected wastes will generate approximately 82 million gallons of residuals requiring treatment before land disposal.

The volumes of surface-disposed wastes by waste codes that require commercial treatment and/or recycling capacity to meet the standards that EPA is promulgating today are presented in Table III.B.1.(b). This table does not include waste volumes 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 finalizing 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 comparable technologies), 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.

The TSDR Survey contains data on specific treatment processes at facilities. The data enable EPA to identify specific BDAT treatment (and comparable treatment) 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.

In the proposed rule, EPA established criteria for differentiating between a liquid and a solid waste because of the variance for D001 sludges and solids. EPA requested comments on the proposed criteria, and during the public comment period received two comments requesting clarification of the sludge/solid definition. EPA also received several comments identifying additional sludge/solid incineration capacity. Commenters identified new units at existing facilities and increased capacity resulting from trial burns conducted after the 1986 survey. Based on an analysis of this information, EPA has determined that there is adequate capacity to incinerate D001 sludge/solid wastes. Consequently, EPA is not granting D001 sludge/solids a variance, and the criteria proposed for differentiating between a liquid and a solid are no longer necessary.

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	20.3
F019	12.6
K004	0.1
K017	<0.1
K021	<0.1
K031	0.6
K035	<0.1
K048	37.1
K049	31.7
K050	11.8
K051	78.1
K052	12.5
K073	<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
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
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

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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
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
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	19.6
D002	25.6
D003	9.2
D004	12.8
D005	16.4
D006	16.3
D007	118.4
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

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
D017	0.4
F039 [1]	46.6
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
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

[1] Multi-source leachate.

c. Capacity Currently Available and Effective Dates. Table III.B.1.(c) presents an estimate for each treatment technology of the volumes of wastes that will require alternative treatment before land disposal to comply with the standards finalized today. The amount of capacity that is available at commercial facilities in each case is also presented. Available capacity was calculated using the TSDR Survey and other capacity data. Available capacity is equal to the specific treatment system's maximum capacity minus the amount used in 1986. 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, acid leaching followed by chemical precipitation, thermal recovery, and vitrification.

For combustion of sludges and solids, there is inadequate capacity for sludges and solids derived from treating multi-source leachate, for K048 through K052 nonwastewaters (temporarily), and soil and debris. (See section III.B.3 for a more detailed discussion.) However, there is adequate capacity for all other wastes needing combustion of sludges and solids. For mercury retorting, there is inadequate capacity for high mercury D009, K106, and U151 nonwastewaters. However there is adequate capacity for other wastes needing this technology. For acid leaching and chemical precipitation, there is insufficient capacity to treat low-mercury D009, K106, P065, P092, and U151 nonwastewaters. For thermal recovery, EPA has determined that there is insufficient capacity for P087 wastewaters and nonwastewaters. For vitrification, there is inadequate capacity for arsenic nonwastewaters.

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 final rule. Table III.B.1.(d) summarizes all the surface-disposed wastes for which EPA is granting a two-year variance. The detailed basis for EPA's conclusions can be found in the capacity background document for this final rule.

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

[millions of gallons/yr. [1]

Technology	Available capacity	Required capacity	Variance
Acid leaching followed by chemical precipitation [2]	0	3	Yes
Alkaline chlorination	7	6	No
Alkaline chlorination followed by chemical precipitation	6	2	No
Biological treatment	47	<1	No
Biological treatment followed by chemical precipitation	14	<1	No
Chemical oxidation followed by chemical precipitation	28	7	No
Chemical oxidation followed by chromium reduction and chemical precipitation	2	2	No
Chemical precipitation	339	25	No
Chromium reduction followed by chemical precipitation	96	85	No
Combustion of liquids	237	16	No
Combustion of sludges/solids	41	[4] 213	Yes
Mercury retorting	<1	3	Yes
Neutralization	36	22	No
Secondary lead smelting	37	2	No
Stabilization	478	158	No
Thermal recovery [3]	0	<1	Yes
Thermal recovery of cadmium batteries	<1	<1	No
Vitrification	0	22	Yes

[1] This table does not include mixed radioactive wastes, which are receiving a national capacity variance for all applicable treatment technologies.
[2] EPA has insufficient data to differentiate between low and high mercury nonwastewaters. Consequently, EPA conducted a worst-case analysis and assigned all nonwastewater volumes to both the high concentration and low concentration technologies (i.e., mercury retorting and acid leaching followed by chemical precipitation, respectively). EPA had no data on commercial acid leaching and chemical precipitation capacity and believes there is insufficient capacity to treat these low mercury nonwastewaters.
[3] Excluding secondary smelting of lead wastes.
[4] For further clarification of this number, see the discussion on K048–K052.

TABLE III.B.1.(d)—SUMMARY OF NATIONAL CAPACITY VARIANCES FOR SURFACE-DISPOSED WASTES [1]

Required alternative treatment technology	Waste code/Physical form
Acid leaching and chemical precipitation.	D009 Low mercury nonwastewater.
	K106 Low mercury nonwastewater.
	P065 Low mercury nonwastewater.
	P092 Low mercury nonwastewater.
	U151 Low mercury nonwastewater.
Combustion of sludge/solids.	F039 [2] Nonwastewater.
	K048 [3] Nonwastewater.
	K049 [3] Nonwastewater.
	K050 [3] Nonwastewater.
	K051 [3] Nonwastewater.
	K052 [3] Nonwastewater.
Mercury retorting	D009 High mercury nonwastewater.
	K106 High mercury nonwastewater.
	P065 High mercury nonwastewater.
	P092 High mercury nonwastewater.
	U151 High mercury nonwastewater.
Secondary smelting storage area.	D008 Lead materials before secondary smelting.
Thermal recovery	P087 Nonwastewater/wastewater.
Vitrification	D004 Nonwastewater.
	K031 Nonwastewater.
	K084 Nonwastewater.
	K101 Nonwastewater.
	K102 Nonwastewater.
	P010 Nonwastewater.
	P011 Nonwastewater.
	P012 Nonwastewater.
	P036 Nonwastewater.
	P038 Nonwastewater.
	U136 Nonwastewater.

[1] EPA is granting these wastes a two-year national capacity variance, except for K048–K052 nonwastewaters. This table does not include mixed radioactive wastes, which are receiving a national capacity variance for all applicable treatment technologies.
[2] Multi-source leachate.
[3] For K048–K052 petroleum-refining nonwastewaters, EPA is granting only a 6 month variance.

(1) *Ignitable, Corrosive, Reactive, and EP Toxic Halogenated Pesticide Characteristic Wastes.* This group includes ignitable characteristic wastes (D001), corrosive characteristic wastes (D002), reactive characteristic wastes (D003), and EP toxic halogenated pesticides (D012, D013, D014, D015, D016, and D017).

(a) Ignitable Characteristic Wastes (D001). EPA has identified four subcategories for D001 wastes: ignitable liquids, ignitable reactives, oxidizers, and ignitable compressed gases. EPA has determined that the D001 ignitable liquids subcategory should be divided into three treatability groups: (1) D001 ignitable liquid nonwastewaters with a TOC content greater or equal to ten percent, (2) D001 ignitable liquid nonwastewaters with a TOC content greater than one percent but less than ten percent, and (3) D001 ignitable liquid wastewaters. EPA is promulgating deactivation as the method of treatment for ignitable liquids nonwastewaters with a TOC content less than ten percent. For ignitable liquids nonwastewaters with a TOC content greater than or equal to 10 percent, EPA is promulgating incineration, fuel substitution, or recovery as methods of treatment. EPA is promulgating deactivation as the method of treatment for D001 ignitable liquids wastewaters. For capacity analysis purposes, EPA assigned volumes of these wastes to incineration. Sufficient treatment capacity exists for the D001 ignitable liquids wastes destined for surface disposal; therefore, no capacity variance is being granted for them.

EPA requested comments on availability of capacity for incineration of D001 liquids mixed with sludges and solids. Several commenters stated that adequate capacity exists to treat D001 liquids mixed with sludges and solids, and therefore, that no capacity variance should be granted to these wastes. Based on the review of available sludges and solids treatment capacity

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data for incineration and cement kilns, EPA has determined that adequate capacity exists to treat surface-disposed D001 liquids wastes. Therefore, EPA is not granting a national capacity variance for these wastes.

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

For D001 ignitable compressed gases, EPA is promulgating deactivation as the method of treatment. EPA has determined that adequate capacity exists for these wastes; therefore, EPA is not granting a national capacity variance for them.

(b) Corrosive Characteristic Wastes (D002). EPA has identified three treatability groups for D002 wastes: acids, alkalines, and other corrosives. EPA is promulgating deactivation, which includes neutralization, as the method of treatment for the D002 acid and alkaline subcategories. In addition, recovery of acids or bases is included as an option for these standards. By definition, wastes in these subcategories are liquids; therefore based on the limited number of surface impoundments that meet minimum technology requirements and the ban on liquids in landfills, EPA believes that few, if any, of these wastes are surface-disposed. For the capacity analysis, EPA assigned all D002 wastes to neutralization. EPA has determined that sufficient neutralization capacity does exist for acid and alkaline D002 wastes that are surface-disposed; therefore, EPA is not granting a national capacity variance for them.

For the D002 other corrosives category, EPA is promulgating deactivation as the method of treatment. These wastes can be deactivated using chemical reagents or by other means. In addition, EPA believes that these wastes are generated in low volumes. Therefore, EPA is not granting 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 cyanides, EPA is promulgating concentration standards based on alkaline chlorination, wet-air oxidation, or electrolytic oxidation. Although reactive cyanides account for the majority of D003 generated wastes, EPA believes that most 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; therefore, EPA is not granting a national capacity variance for them.

For D003 reactive sulfides, EPA is promulgating deactivation as the method of treatment, which includes chemical oxidation. EPA believes sufficient capacity does exist for the volume of surface-disposed D003 sulfide wastes; therefore, EPA is not granting a national capacity variance for them.

For D003 explosive wastes, EPA is promulgating deactivation as the method of treatment. Because most of these wastes are already restricted from land disposal by existing regulations and are commonly burned and/or detonated, EPA is not granting a national capacity variance for them.

For D003 water-reactive wastes, EPA is promulgating deactivation as the method of treatment. EPA believes that these wastes are generated sporadically and in low volumes and are not typically land-disposed. Therefore, EPA is not granting a national capacity variance for them.

For other reactive D003 wastes, EPA promulgating deactivation as the method of treatment. EPA believes these wastes could be incinerated or detonated openly and that there is adequate capacity for treating the small volumes that are surface-disposed. Therefore, EPA is not granting a national capacity variance for them.

(d) EP Toxic Halogenated Pesticide Wastes.

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

For these EP toxic halogenated pesticide nonwastewaters, EPA is promulgating concentration standards based on incineration. For D012 and D015 wastewaters, EPA is promulgating incineration or biological treatment as methods of treatment; for D013 wastewaters, EPA has set incineration or carbon adsorption as methods of treatment; for D014 wastewaters, EPA is promulgating incineration or wet-air oxidation as methods of treatment; for D016 and D017 wastewaters, EPA has set incineration or chemical oxidation as methods of treatment. EPA has also set biodegradation as an alternate method of treatment for D016 nonwastewaters. EPA has determined that sufficient treatment capacity exists for these wastes; therefore, EPA is not granting EP toxic pesticide wastewaters and nonwastewaters a national capacity variance.

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

(a) Arsenic Wastes

D004—EP Toxic for arsenic
K031—By-product salts genrated 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 verterinary 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
U136—Cacodylic acid

For arsenic nonwastewaters, EPA is promulgating concentration standards based on vitrification. EPA has determined that for some arsenic nonwastewaters the standards can be met with chemical or thermal oxidation to the arsenate form followed by chemical precipitation with iron salts followed by arsenic stabilization of the precipitate. This technology may be inappropriate for all arsenic nonwastewaters because organics are known to interfere with the stabilization process. EPA believes vitrification will work for all forms of arsenic nonwastewaters, because high temperatures are expected to destroy the organo-metallic bonds, and therefore, its performance is not limited by the presence of organics. Thus, EPA has assigned arsenic nonwastewaters to vitrification for the capacity analysis. The TSDR Survey indicates that no commercial vitrification capacity exists. EPA requested information on commercial vitrification capacity, but received no comments demonstrating that this type of capacity exists. Therfore, EPA is granting a two-year capacity variance to the surface-disposed arsenic nonwastewaters listed above.

For arsenic wastewaters, EPA is promulgating concentration standards based on chemical precipitation. The TSDR Survey and other capacity data indicate that adequate chemical precipitation capacity exists: therefore,

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EPA is not granting arsenic wastewaters a capacity variance.

(b) Barium Wastes. For D005 and P013 wastewaters, EPA is promulgating concentration standards based on chemical precipitation; for D005 and P013 (except as indicated below) nonwastewaters, EPA is promulgating concentration standards based on stabilization.

For P013 nonwastewaters with high levels of organics, EPA is requiring that these wastes be incinerated prior to stabilization. Sufficient capacity exists to treat surface-disposed D005 and P013 wastes. Therefore, EPA is not granting a national capacity variance for them.

(c) Cadmium Wastes. For D006 wastes, EPA is promulgating treatment standards for three categories: wastewaters, nonwastewaters, and cadmium batteries.

For D006 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. For D006 nonwastewaters, EPA is promulgating concentration standards based on stabilization or metal recovery. EPA believes that sufficient capacity exists to treat surface-disposed cadmium nonwastewaters and wastewaters. Therefore, EPA is not granting a national capacity variance for them.

For D006 cadmium batteries, EPA is promulgating thermal recovery as the method of treatment. In the proposed rule, EPA proposed granting D006 cadmium batteries a national capacity variance due to a lack of identified recovery capacity. During the public comment period, two commenters identified available commercial cadmium battery recovery capacity (these comments were available for reply comments). EPA contacted these commenters to verify their capacity. Based on these contacts, EPA received additional information and determined that adequate capacity for treating surface-disposed cadmium batteries exists. Therefore, EPA is not granting D006 cadmium batteries a national capacity variance.

(d) Chromium Wastes. For D007 chromium and U032 (calcium chromate) wastewaters, EPA is promulgating concentration standards based on chromium reduction followed by chemical precipitation; for D007 and U032 nonwastewaters, EPA is promulgating concentration standards based on chromium reduction followed by stabilization. EPA believes sufficient treatment capacity exists for the volume of these wastes. Therefore, EPA is not granting 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
K069—Emission control dust/sludge from secondary lead smelting
K100—Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting

For D008 wastes, EPA is promulgating standards for three categories: nonwastewaters, wastewaters, and lead-acid batteries. For D008 nonwastewater lead wastes, EPA is promulgating concentration standards based on stabilization, except where the waste contains significant concentrations of organics. In this case, these wastes may need to be incinerated prior to stabilization. For D008 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. EPA believes sufficient capacity exists for surface-disposed D008 wastewaters and nonwastewaters. Therefore, EPA is not granting a national capacity variance for D008 wastewaters and nonwastewaters, with the exceptions noted below.

EPA is promulgating thermal recovery as the method of treatment for lead-acid batteries. Secondary lead smelters have stated that they store these wastes in piles prior to recovery. EPA has indicated in a previous rulemaking that the shells surrounding lead-acid batteries are considered to be storage containers (see 47 FR 12318 and 40 CFR 264.314(f)(3)). Therefore, to the extent that lead-acid battery storage meets all the requirements of the LDR storage prohibitions at 40 CFR 268.50, such storage is permissible.

In the proposed rule, EPA solicited comments on the management of other D008 lead material at secondary smelters. EPA also indicated that storage of lead materials in waste piles prior to smelting is a form of land disposal, and as such these staging areas are subject to the statutory prohibitions. During the public comment period, EPA received several comments from the secondary lead smelting industry regarding the storage of battery parts prior to smelting. Several commenters expressed concern that EPA's determination that staging piles are a form of land-disposal could force them to close or operate out of compliance while staging piles are replaced by tanks (assuming tank storage is viable). As a result of these comments, EPA contacted several secondary smelters to asses the potential capacity impact of required staging area reconstruction. Because of the large volume of batteries currently processed at smelting facilities whose continued storage operation remains in question, EPA is granting a two-year national capacity variance to allow storage of the batteries preceding smelting. EPA is also reconsidering whether certain forms of battery parts storage meet the meaning of "land disposal" under section 3004(k). In particular, if battery parts (or other wastes) are stored in 3-sided tank-like devices on concrete inside buildings (the present storage method of some secondary lead smelters) the Agency is not certain that the language and policies underlying section 3004(k) warrant designating such practice as "land disposal." Given the two-year national capacity variance in this rule, however, the Agency need not make a final decision on this point in this rulemaking.

For P110, U144, U145, and U146 wastes, EPA is promulgating concentration standards based on chemical oxidation followed by chemical precipitation for wastewaters, and stabilization for nonwastewaters. P110, U144, U145, and U146 nonwastewaters containing significant concentrations of organics may require incineration prior to stabilization. EPA believes sufficient capacity exists for the small volume of these wastes that are surface-disposed; therefore, EPA is not granting a national capacity variance for them.

EPA is revoking the no land disposal standard based on recycling standard promulgated in the First Third rule for the non-calcium sulfate subcategory for K069 nonwastewaters. For K069 calcium sulfate nonwastewaters, EPA is promulgating concentration standards based on stabilization. For K069 non-calcium sulfate nonwastewaters, EPA is promulgating recycling as the method of treatment. For K069 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. EPA believes adequate capacity exists to treat the volume of surface-disposed K069 wastewaters and nonwastewaters; therefore, EPA is not granting a capacity variance for them.

For K100 nonwastewaters, EPA is revoking the no land disposal standard based on the "no generation standards" promulgated in the First Third rule. Today, EPA is promulgating concentration standards based on stabilization for the nonwastewaters and chemical precipitation for the wastewaters. EPA believes adequate capacity exists to treat the volume of surface-disposed K100 wastes. Therefore, EPA is not granting a capacity variance for them.

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(f) Mercury Wastes.

D009—EP toxic for mercury
K071—Brine purification muds from the mercury cell process in chlorine production, where separately repurified brine is not used
K106—Wastewater treatment sludges from the mercury cell process in chlorine production
P065—Mercury fulminate
P092—Phenylmercuric acetate
U151—Mercury

For D009, K106, and U151 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. For P065 and P092 wastewaters, EPA is promulgating concentration standards based on chemical oxidation followed by chemical precipitation. K071 wastewater standards were promulgated in the First Third rule and remain unchanged. It should be noted that 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 mercury nonwastewaters, EPA is establishing low mercury and high mercury subcategories. For the high mercury subcategory (greater than or equal to 260 mg/kg), EPA is promulgating roasting or retorting as methods of treatment for D009, K106, and U151 nonwastewaters. For the high mercury subcategory of P065 and P092 nonwastewaters, EPA is promulgating incineration followed by roasting or retorting as the method of treatment. For the low mercury subcategory of D009, K106, P065, P092, and U151 nonwastewaters, EPA is promulgating concentration standards based on acid leaching and chemical precipitation.

Treatment standards for K071 nonwastewaters were originally promulgated in the First Third rule. In the proposed Third Third rule, EPA proposed to revise the standards for K071 nonwastewaters with a high mercury content. For this high mercury subcategory, EPA proposed roasting or retorting as methods of treatment. For the final rule, EPA is not adopting the proposed revisions to K071 wastes, and the promulgated First Third BDAT remains unchanged.

EPA believes sufficient capacity exists to treat the volume of all surface-disposed mercury wastewaters. Therefore, EPA is not granting a national capacity variance for them. Because current data do not provide sufficient information on the volume of nonwastewaters that contain high and low concentrations of mercury, EPA conducted a worst-case analysis and assigned all volumes of surface disposed mercury nonwastewaters to both mercury retorting and acid leaching followed by chemical precipitation. EPA has identified a small amount of commercial mercury retorting capacity (16,000 gallons). There is insufficient mercury retorting capacity for D009, K106, and U151 nonwastewaters. Due to the sporadic generation rate of P wastes from year to year and the small amount of available commercial mercury retorting capacity, EPA is granting all high mercury nonwastewaters a two-year national capacity variance. EPA has also determined that there is insufficient commercial capacity for acid leaching followed by chemical precipitation; therefore, EPA is granting low mercury D009, K106, P065, P092, and U151 nonwastewaters a national capacity variance.

(g) Selenium wastes.

D010—EP Toxic for selenium
P103—Selenourea
P114—Thallium selenite
U204—Selenious acid
U205—Selenium disulfide

For selenium nonwastewaters, EPA is promulgating concentration standards based on stabilization. EPA has also determined that vitrification or recovery may be used to reach the standards. The TSDR Survey and other capacity data indicate that adequate stabilization capacity exists. Therefore, EPA is not granting selenium nonwastewaters a national capacity variance.

For selenium wastewaters, EPA is promulgating concentration standards based on chemical precipitation. The TSDR Survey and other capacity data indicate that adequate chemical precipitation capacity exists; therefore, EPA is not granting selenium wastewaters a national capacity variance.

(h) Silver Wastes.

D011—EP toxic for silver
P099—Potassium silver cyanide
P104—Silver cyanide

Treatment standards for P099 and P104 nonwastewaters were promulgated in the Second Third final rule. For P099 and P104 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. For D011, EPA is promulgating concentration standards based on chemical precipitation for wastewaters, and recovery or stabilization for nonwastewaters. EPA believes adequate capacity exists to treat surface-disposed D011, P099, and P104 wastewaters and D011 nonwastewaters. Therefore, EPA is not granting a capacity variance for them.

(i) 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 P113, P115, U214, U215, U216, and U217, EPA is promulgating thermal recovery or stabilization as methods of treatment for nonwastewaters, and concentration standards based on chemical precipitation for wastewaters. For P114, EPA is promulgating concentration standards based on stabilization, vitrification, recovery for nonwastewaters, and chemical precipitation for wastewaters. Based on the TSDR Survey and other capacity data, adequate capacity exists for surface-disposed thallium wastewaters and nonwastewaters. Therefore, EPA is not granting a national capacity variance for them.

(j) Vanadium Wastes.

P119—Ammonium vanadate
P120—Vanadium pentoxide

For P119 and P120, EPA is promulgating stabilization as the method of treatment for nonwastewaters, and concentration standards based on chemical precipitation for wastewaters. Because adequate capacity exists for chemical precipitation and stabilization, EPA is not granting P119 and P120 wastewaters and nonwastewaters a national capacity variance.

(3) *Treatment Standards for Remaining F and K Wastes and U051.* These groups include certain F002 and F005 wastes; F006 wastewaters and F019; F024; F025; K001 and U051; wastes from pigment production (K002 through K008); K011, K013, K014; K015; K017 and K073; K021; K022; K025, K026, K035, and K083; K028, K029, K095, and K096; K032, K033, K034, K041, K097, and K098 wastes; K036 and K037; K042, K085, and K105 wastes; K044, K045, K046, K047; K048 through K052; K060; K061 wastewaters; and K086.

(a) 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 revising the treatment standards for F002 and F005 to account for four newly listed F002 and F005 constituents. Wastewater concentration standards for F002 containing 1,1,2-Trichloroethane and F005 containing benzene are based on: biological treatment, or steam stripping, or carbon adsorption, or liquid

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extraction. For nonwastewaters, concentration standards for these two solvents are based on incineration. For F005 containing 2-Ethoxyethanol, EPA is promulgating incineration as the method of treatment for nonwastewaters, and incineration or biodegradation as methods of treatment for wastewaters. For F005 wastewaters containing 2-nitropropane, EPA is promulgating incinceration, or wet-air oxidation followed by carbon adsorption, or chemical oxidation followed by carbon adsorption as methods of treatment. For F005 nonwastewaters containing 2-nitropropane, EPA is requiring incineration as the method of treatment. EPA believes that adequate treatment capacity exists for these wastes; therefore, EPA is not granting a national capacity variance for them.

(b) F006 and F019 Wastes. For F006 wastewaters, EPA is promulgating concentration standards based on alkaline chlorination for cyanides and chromium reduction followed by chemical precipitation for metals. EPA believes that adequate capacity exists for the volume of surface-disposed F006 wastewaters. Therefore, EPA is not granting a national capacity variance for them.

EPA is promulgating concentration standards for F019 wastewaters based on alkaline chlorination for cyanides and chromium reduction followed by chemical precipitation for chromium. In the proposed rule, EPA proposed treatment standards for amenable and total cyanide in F019 nonwastewaters based on wet-air oxidation. Due to insufficient wet-air oxidation capacity, EPA proposed a national capacity variance for these wastes. In the final rule, EPA is promulgating F019 nonwastewater concentration standards based on alkaline chlorination for cyanides and stabilization for chromium. Because sufficient treatment capacity exists to treat the F019 wastewaters and nonwastewaters, EPA is not granting a national capacity variance for them.

(c) F024 Wastes. EPA promulgated concentration standards for F024 wastewaters and nonwastewaters in the Second Third rule based on rotary kiln incineration for the organic constituents in nonwastewaters, and rotary kiln incineration for organic constituents followed by chemical precipitation for metal constituents in wastewaters. Today, EPA is revising certain of these standards and is promulgating concentration standards based on stabilization for metal constituents in F024 nonwastewaters. EPA is providing the option of incineration as a treatment method for this waste in order to remove obstacles to acceptance, previously created by the explicit standard for dioxins and furans. Several commenters responded to EPA's request for information, indicating that the treatment facilities were not accepting the wastes due to the dioxin and furan standard. Today's revisions to the treatment standards are expected to ensure that sufficient capacity is available to treat F024, and that all F024 wastes containing dioxins and furans will be incinerated, thereby ensuring effective treatment of these constituents. EPA has determined that adequate capacity exists to treat these wastewaters and nonwastewaters; therefore, EPA is not granting a national capacity variance for them.

(d) F025 Wastes. On December 11, 1989 (54 FR 50968), EPA amended the listing for F025 waste (condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatics). The listing becomes effective on June 11, 1990. Most generators already treat F025 as if it were hazardous, and some facilities commingle F024 and F025. Today, EPA is promulgating concentration standards for all categories of F025 wastewaters and nonwastewaters based on incineration. EPA has determined that no alternative treatment capacity is needed for F025 wastes. Therefore, EPA is not granting these wastes a national capacity variance, restricting land disposal on August 8, 1990.

(e) K001 and U051 Wastes. EPA is promulgating revisions to the concentration-based treatment standards for K001 organics due to a mathematical error that was made in the calculation of the original standards in the First Third rule. Since the treatment standards for U051 wastewaters and nonwastewaters are based on a transfer of the performance of K001, the concentration-based standards for U051 also reflect this change. For the organics in K001 and U051 wastewaters and nonwastewaters, EPA is promulgating concentration standards based on incineration. EPA is also finalizing concentration standards for lead in K001 and U051 based on stabilization for nonwastewaters and chemical precipitation for wastewaters. Sufficient capacity exists for treatment of both of these wastes; therefore, EPA is not granting a national capacity variance for them.

(f) Wastes from Inorganic Pigment Production (K002, K003, K004, K005, K006, K007, and K008). EPA is amending the no land disposal standard previously promulgated for K004, K005, K007, and K008 nonwastewaters. EPA is promulgating concentration standards based on chromium reduction followed by chemical precipitation for K002, K003, K004, K006, and K008 wastewaters, and alkaline chlorination followed by chromium reduction followed by chemical precipitation for K005 and K007 wastewaters. For nonwastewater forms of these wastes, EPA is promulgating concentration standards based on stabilization. EPA believes that sufficient capacity exists for surface-disposed K002, K003, K004, K005, K006, K007, and K008 wastewaters and nonwastewaters. Therefore, EPA is not granting a capacity variance for them.

(g) K011, K013, and K014 Wastes. Treatment standards for the surface disposal of nonwastewater forms of K011, K013, and K014 were promulgated in the Second Third final rule. For K011, K013, and K014 wastewaters, EPA is promulgating concentration standards based on wet-air oxidation. The TSDR Survey indicates that sufficient capacity exists for the volume of surface-disposed K011, K013, and K014 wastewaters. Therefore, EPA is not granting a national capacity variance for them.

(h) K015 Wastes. EPA is revoking 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 K015 nonwastewaters, EPA is promulgating concentration standards for five organic and two metal constituents based on incineration followed by stabilization. Sufficient capacity exists to treat this waste; therefore, EPA is not granting a national capacity variance for K015 nonwastewaters.

(i) K017 and K073 Wastes.

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

K073—Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production

In today's rule, EPA is promulgating final treatment standards for K017 and K073 wastewaters and nonwastewaters. Concentration standards for the wastewater and nonwastewater forms of these wastes are based on incineration. Sufficient capacity exists to treat these wastes. Therefore, EPA is not granting a national capacity variance for K017 and K073 wastes.

(j) K021 Wastes.

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K021—Aqueous spent antimony catalyst from fluoromethane production

Concentration standards are being promulgated today for wastewater and nonwastewater forms of K021 based on incineration. EPA is also promulgating concentration standards for antimony nonwastewaters based on stabilization and antimony wastewaters based on chemical precipitation. Sufficient capacity exists to treat these wastes. Therefore, EPA is not granting K021 wastes a national capacity variance.

(k) K022, K025, K026, K035, and K083 Wastes. EPA is promulgating treatment standards for K022 wastewaters and all forms of K025, K026, K035, and K083 wastes. Treatment standards being promulgated today for K025 and K083 would replace current treatment standards of "No Land Disposal Based on No Generation" that were promulgated in prior rules.

For organics contained in K022, K035, and K083 wastewaters, EPA is promulgating concentration standards based on: biological treatment, or steam stripping, or carbon adsorption, or liquid extraction. Concentration standards promulgated for metals in K022 and K083 wastewaters are based on chemical precipitation. For organics in K035 and K083 nonwastewaters, EPA is promulgating concentration standards based on incineration. For metals in K083 nonwastewaters, EPA is promulgating concentration standards based on stabilization of incinerator ashes.

For K025 and K026, EPA is promulgating incineration as the method of treatment for wastewaters and nonwastewaters. In addition, EPA is also promulgating liquid-liquid extraction followed by steam stripping followed by carbon adsorption as an alternative method of treatment for K025 wastewaters.

EPA has determined that adequate capacity exists for K022 wastewaters, and the wastewater and nonwastewater forms of K025, K026, K035, and K083. Therefore, EPA is not granting a national capacity variance for these wastes.

(l) K028, K029, K095, and K096 Wastes.

K028—Spent catalyst from hydrochlorinator reactor in the production of 1,1,1-trichloroethane
K029—Waste from the product steam stripper in the production of 1,1,1-trichloroethane
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-trichlorethane

Treatment standards based on incineration were promulgated for K028 wastewaters and nonwastewaters and the nonwastewaters forms of K029, K095, and K096 in the Second Third rule. Today, EPA is promulgating concentration standards for organics in K029, K095 and K096 wastewaters based on incineration. EPA is also promulgating concentration standards for metal constituents in K028 nonwastewaters based on stabilization. Sufficient capacity exists to treat these wastes. Therefore, EPA is not granting a national capacity variance for K028, K029, K095 and K096.

(m) K032, K033, K034, K041, K097, and K098 Wastes.

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
K097—Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane
K098—Untreated process wastewater from the production of toxaphene

For K032, K033, K034, K041, K097, and K098 wastewaters and nonwastewaters, EPA is promulgating concentration standards based on incineration. Sufficient capacity exists for treatment of these wastes; therefore, EPA is not granting a national capacity variance for them.

(n) 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 concentration standards based on incineration for K037 wastewaters and nonwastewaters in the First Third rule. Today, EPA is revising these 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). Today, EPA is promulgating concentration standards for K036 nonwastewaters based on incineration. EPA believes that adequate capacity exists for these surface-disposed K036 nonwastewaters. Therefore, EPA is not granting a national capacity variance for them.

For K037 wastewaters, EPA is revising the 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 granting a national capacity variance for them.

(o) K042, K085, and K105 Wastes.

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
K105—Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes

For K042, K085, and K105 wastewaters and nonwastewaters, EPA is promulgating concentration standards based on incineration. Sufficient capacity exists for treatment of these wastes; therefore, EPA is not granting a national capacity variance for them.

(p) K044, K045, K046, K047 Wastes. For K044, K045, and K047, EPA is revoking the "no land disposal" standard promulgated in the First Third rule. EPA is promulgating deactivation as the method of treatment for wastewaters and nonwastewaters. EPA has determined adequate capacity exists to treat these wastes; therefore, EPA is not granting a national capacity variance for them.

Today, EPA is promulgating concentration standards for K046 reactive nonwastewaters based on deactivation followed by stabilization. For K046 reactive wastewaters, EPA is promulgating concentration standards based on deactivation and chemical precipitation. Deactivation includes chemical reduction or detonation. In the First Third rule, EPA promulgated treatment standards based on stabilization for K046 nonreactive nonwastewaters. For K046 nonreactive wastewaters, EPA is promulgating concentration standards based on deactivation followed by chemical precipitation. EPA has determined that adequate capacity exists for these wastes. Therefore, EPA is not granting them a national capacity variance.

(q) Petroleum Refining Wastes (K048–K052). EPA is promulgating treatment standards for organic constituents and cyanides in K048–K052 based on data from incineration, solvent extraction. For the metals in K048–K052, EPA is promulgating treatment standards based on stabilization and chemical precipitation. EPA is not revising the promulgated BDAT treatment standards for organic or metal constituents in K048–K052 wastewaters, nor for cyanide in nonwastewaters. In addition, today's rule deletes the treatment standards proposed for arsenic and selenium in nonwastewater forms of K048–K052 based on stabilization. Today's rule also promulgates revised treatment

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standards for nickel and total chromium in nonwastewater forms of K048–K052 based on stabilization.

The TSDR Survey indicates that 642,000 tons of K048–K052 will require treatment capacity (i.e., will be displaced from land disposal and will require treatment). EPA recognizes, however, that this information is dated, and to this end undertook to obtain as current an assessment of demand for treatment capacity as possible.

Based on informal contact with the petroleum industry trade association, it appears that the industry may be able to manage approximately three quarters of these wastes on-site after August 1990, in ways not involving land disposal (primarily in-house incineration, use as fuel, or use in coking). (This figure is based on an informal survey of 93 API member companies and assumes that none of the pending no migration petitions for land treatment units will be granted. However, this estimate does not account for the uncertainty and timing of constructing and obtaining permits for on-site disposal/treatment facilities.) Therefore, assuming best case (i.e., on-site capacity is available), this results in approximately 161,000 tons per year of wastes that will require alternative treatment capacity.

EPA estimated that 100,000 tons of capacity for treatment of K048–K052 wastes existed in the form of solids incineration capacity and fuel substitution capacity (these wastes are suitable for use as alternative fuels in industrial furnaces provided that they are dewatered first). There is very little commercial solvent extraction capacity presently on-line. (EPA knows of some small volume mobile solvent extraction units being utilized in California, but these units provide limited volumetric treatment capacity.) Thus, based on these data, there would be a capacity shortfall of approximately 60,000 tons as of May 8.[5]

However, EPA is aware of one large commercial incinerator which could come on line after May 8 that could provide additional substantial volumes of capacity (60,000 tons of new annual capacity in addition to the 100,000 tons of existing capacity) for K048–K052 wastes. This facility is presently seeking a no-migration variance from EPA regarding disposal of scrubber water into a deep injection well. If the petition is granted, this facility would provide sufficient capacity to accommodate treatment demand posed by petroleum wastes. A final decision on the no-migration petition is expected within the next six weeks. (There could still be short-term logistic difficulties associated with getting wastes to the facility and the facility coming on-line that could prevent immediate utilization of this capacity, however.)

EPA also recently became aware (within the last two weeks) of additional solids incineration capacity which is presently available that would provide significant additional treatment capacity for petroleum wastes. This technology, however, requires that wastes undergo a specialized dewatering pretreatment step. The treatment company presently has two mobile dewatering pretreatment units and (according to its estimates) can add two additional dewatering units every three months. This limited amount of pretreatment equipment (there are approximately 190 petroleum facilities to be serviced) could create a temporary treatment bottleneck to use the incineration capacity. (This information appears to have been presented to the petroleum industry by the treatment company late in 1989, so that EPA does not see notice and comment problems vis-a-vis the petroleum industry in relying on the information in this rulemaking.)

Based on this information, EPA has decided to grant a six-month national capacity variance for these wastes, lasting until November 7, 1990. (This effectively extends the industry's prohibition compliance date three months from the date established in the first third rulemaking). EPA believes that by this date, there will be adequate pretreatment capacity as well as incineration and fuel substitution capacity to satisfy demand. There also may be solvent extraction capacity available by that date, although there are sharply conflicting estimates in the record of how quickly solvent extraction capacity can be brought on-line. EPA would be unjustified, however, in extending the national capacity variance until solvent extraction capacity is available. See S. Rep. No. 284, 98th Cong. 1st Sess. 19 ("It is not intended that a generating industry * * * could be allowed to continue to have its wastes disposed of in an otherwise prohibited manner solely by binding itself to using a facility which has not been constructed. Thus, when an 'alternate technology' facility is operating at less than maximum capacity, the Administrator should determine that alternative capacity is available * * *"). Thus, EPA's decision today is based on its best estimates of when treatment capacity of any type will be available to accommodate these wastes.

EPA recognizes that these data are not the most precise, in some cases. In addition, EPA is concerned with using data that it obtains at the very end of the rulemaking in making such decisions (albeit these data tend to corroborate other existing information regarding amounts of solids combustion capacity coming on-line). Therefore, based on further information provided to EPA, EPA may amend the capacity extension in today's rule (through use of appropriate rulemaking procedures).

(r) K060 Wastes. Today EPA is revoking the "no land disposal" based on a no generation standard promulgated for K060 nonwastewaters in the First Third rule. Instead, for K060 nonwastewaters, EPA is also promulgating concentration standards based on incineration. EPA is establishing concentration standards for K060 wastewaters based on biological treatment. EPA believes that adequate capacity exists for the volume of surface-disposed K060 wastewaters and nonwastewaters requiring treatment. Therefore, EPA is not granting a national capacity variance for them.

(s) K061 Wastes. Today, EPA is promulgating concentration standards based on chemical reduction followed by chemical precipitation for K061 wastewaters. EPA believes adequate capacity exists for the volume of surface-disposed K061 wastewaters. Therefore, EPA is not granting a variance for them.

(t) Revisions to K086 Wastes. EPA promulgated concentration standards for K086 solvent washes in the First Third rule based on incineration and stabilization of ash for nonwastewaters, and incineration and chromium reduction followed by chemical precipitation for wastewaters. EPA is promulgating revised concentration standards for all K086 wastewater forms of these wastes based on biological treatment or wet-air oxidation followed by carbon adsorption or chemical oxidation followed by carbon adsorption for organics, chromium reduction followed by chemical precipitation for metals, and alkaline chlorination for cyanides. For nonwastewaters, EPA is promulgating concentration standards based on incineration for organics, followed by stabilization for metals. As a "worst-

[5] It was on the basis of this analysis that EPA senior management tentatively concluded that a one-year national capacity extension might be warranted, which draft determination was communicated to all interested parties by letter late in April, a copy of which is available in the docket. This was not a final EPA decision, however, and EPA continued to monitor the situation. The determianton in the final rule reflects more information than was available to EPA at the time of its tentative determination.

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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 rule, and no capacity variance is being granted for K086 wastes.

(4) *Treatment Standards for U and P Wastes.* Today's rule promulgates treatment standards and capacity determinations for wastewater and nonwastewater forms of U and P wastes (as defined in 40 CFR 261.33 (e) and (f)). Treatment standards and capacity determinations for other U and P wastes that are listed specifically as metal salts or organo-metallics are discussed in previous sections of today's rule. This section also includes a discussion of U and P wastes that have been identified as potentially reactive, primarily as gases, or as cyanogens.

In the proposed rule, EPA grouped all of the U and P wastes into various treatability groups based on (1) similarities in elemental composition (e.g., carbon, halogens, and metals); and (2) the presence of key functional groups (e.g., phenolics, esters, and amines) within the structure of the individual chemical represented. EPA has also accounted for physical and chemical factors that are known to affect the selection of treatment alternatives and to affect the performance of the treatment, such as volatility and solubility, when developing these treatability groups.

While EPA presented the proposed treatment standards and capacity determinations for U and P wastes according to these treatability groups, the promulgated treatment standards and capacity determinations are presented as follows: (a) Concentration-based standards for wastewaters; (b) concentration-based standards for nonwastewaters; (c) technology-based standards for wastewaters; and (d) technology-based standards for nonwastewaters.

(a) Concentration-Based Standards for Specific Organic U and P Wastewaters. EPA is promulgating concentration-based standards for those specific constituents for which the U or P waste is listed. For various reasons, EPA is regulating additional constituents for several U and P wastes.

U and P Wastewaters with Concentration Standards Based on Biological Treatment or Wet-Air Oxidation Followed by Carbon Adsorption

P004, P020, P022, P024, P037, P047 (4,6-Dinitrocresol), P048, P050, P051, P059, P060, P077, P082, P101, P123, U002, U003, U004, U005, U009, U012, U018, U019, U022, U024, U025, U027, U029, U030, U031, U036, U037, U038, U039, U043, U044, U045, U047, U048, U050, U051, U052, U057, U060, U061, U063, U066, U067, U068, U070, U071, U072, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U101, U105, U106, U108, U111, U112, U117, U118, U120, U121, U127, U128, U129, U131, U137, U138, U140, U141, U142, U152, U155, U157, U158, U159, U161, U162, U165, U168, U169, U170, U172, U174, U179, U180, U181, U183, U185, U187, U188, U192, U196, U203, U207, U208, U209, U210, U211, U220, U225, U226, U227, U228, U229, U240, (2,4-D acetic acid), U243, and U247

For these U and P wastewaters, EPA is promulgating concentration standards based on biological treatment, or wet air oxidation followed by carbon adsorption. EPA has identified sufficient capacity for treatment of these wastewaters; therefore, EPA is not granting a national capacity variance for them.

(b) Concentration-Based Standards for Specific Organic U and P Nonwastewaters. EPA is promulgating nonwastewater concentration-based standards for the following U and P wastes, as proposed.

U and P Nonwastewaters with Concentration Standards Based on Incineration

P004, P020, P024, P037, P047, P048, P050, P051, P059, P060, P077, P101, P123, U002, U004, U005, U009, U012, U018, U019, U022, U024, U025, U027, U029, U030, U031, U036, U037, U039, U043, U044, U045, U047, U048, U050, U051, U052, U060, U061, U063, U066, U067, U068, U070, U071, U072, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U101, U105, U106, U108, U111, U112, U117, U118, U120, U121, U127, U128, U129, U131, U137, U138, U140, U141, U142, U152, U155, U157, U158, U159, U161, U162, U165, U169, U170, U172, U174, U179, U180, U181, U183, U185, U187, U188, U192, U196, U203, U207, U208, U209, U210, U211, U220, U225, U226, U227, U228, U239, U240 (2,4-D acetic acid), U243, and U247

For all of these specific organic U and P nonwastewaters, EPA has identified sufficient incineration capacity to treat these nonwastewaters; therefore, EPA is not granting a national capacity variance for them.

(c) Technology-Based Standards for Specific Organic U and P Wastewaters. EPA is promulgating technology-based treatment standards (i.e., methods of treatment) rather than concentration-based constituent specific standards for these wastes. EPA is promulgating wet-air oxidation followed by carbon adsorption or chemical oxidation followed by carbon adsorption or incineration as methods of treatment. Organic U and P wastes technology-based standards are indicated below:

U and P Wastewaters With (Wet-Air Oxidation, or Chemical Oxidation), Followed By Carbon Adsorption; or Incineration as Methods of Treatment

P001, P002, P003, P005, P007, P008, P014, P016, P017, P018, P023, P026, P027, P028, P034, P042, P045, P046, P047 (4,6-dinitrocresol salts), P049, P054, P057, P058, P064, P066 P067, P069, P070, P072, P075, P084, P088, P093, P095, P102, P108, P116, P118, U001, U006, U007, U008, U010, U011, U014, U015, U016, U017, U020, U021, U026, U033, U034, U035, U041, U042, U046, U049, U053, U055, U056, U059, U062, U064, U073, U074, U085, U089, U090, U091, U092, U093, U094, U095, U097, U110, U113, U114, U116, U119, U122, U123, U124, U125, U126, U130, U132, U143, U147, U148, U149, U150, U153, U154, U156, U163, U164, U166, U167, U171, U173, U176, U177, U178, U182, U184, U186, U191, U193, U194, U197, U200, U201, U202, U206, U213, U218, U219, U222, U234, U236, U237, U238, U240 (2,4-D salts and esters), U244, and U248.

EPA has identified sufficient capacity for these organic U and P wastewaters. Therefore, EPA is not granting a national capacity variance for them.

(d) Technology-Based Standards for Specific Organic U and P Nonwastewaters. EPA is promulgating the proposed technology-based standards for the following organic U and P wastes.

U and P Nonwastewaters With Incineration as the Method of Treatment

P002, P007, P008, P014, P016, P017, P018, P022, P023, P026, P027, P028, P034, P042, P045, P046, P047 (4,6-dinitrocresol salts), P049, P054, P057, P058, P064, P066, P067, P069, P070, P072, P075, P082, P084, P093, P095, P108, P116, P118, U003, U006, U007, U010, U011, U014, U015, U017, U020, U021, U026, U033, U034, U035, U038, U041, U042, U046, U049, U057, U059, U062, U073, U074, U091, U092, U093, U095, U097, U110, U114, U116, U119, U130, U132, U143, U148, U149, U150, U153, U156, U163, U164, U167, U168, U171, U173, U176, U177, U178, U184, U191, U193, U194, U200, U202, U206, U218, U219, U222, U234, U236, U237, U238, U240 (Salts and esters), U244

Incineration or Fuel Substitution as Methods of Treatment

P001, P003, P005, P088, P102, U001, U008, U016, U053, U055, U056, U064, U085, U089, U090, U094, U113, U122, U123, U124, U125, U126, U147, U154, U166, U182, U186, U197, U201, U213, U248

EPA has identified sufficient capacity for all of these U and P nonwastewaters. Therefore, EPA is not granting a national capacity variance for them.

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

P006—Aluminum phosphide
P009—Ammonium picrate

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P015—Beryllium dust
P056—Fluorine
P068—Methyl hydrazine
P073—Nickel carbonyl
P081—Nitroglycerin
P087—Osmium tetroxide
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
U134—Hydrofluoric acid
U135—Hydrogen sulfide
U160—Methyl ethyl ketone peroxide
U189—Phosphorus sulfide
U249—Zinc phosphide (<10%)

These wastes either are highly reactive or explosive or are polymers that also tend to be highly reactive. For the purpose of BDAT determinations, EPA has identified four subcategories: incinerable reactive organics and hydrazine derivatives (P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, and U160); incinerable inorganics (P006, P096, P122, U135, U189, and U249); fluorine compounds (P056 and U134); and recoverable metallic compounds (P015, P073, and P087). For incinerable reactive organics and hydrazine derivatives, EPA is promulgating incineration, fuel substitution, chemical oxidation, or chemical reduction as methods of treatment for nonwastewaters, and incineration, chemical oxidation, chemical reduction, carbon adsorption, or biodegradation as methods of treatment for wastewaters. Because EPA has determined that sufficient treatment capacity exists for the small volume of surface-disposed incinerable reactive organic hydrazine derivates (P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, U160, and U186), EPA is not granting a national capacity variance for them.

For all incinerable inorganic nonwastewaters, EPA is promulgating incineration, chemical oxidation, or chemical reduction as methods of treatment. For wastewaters, EPA is promulgating incineration, chemical oxidation, or chemical reduction as methods of treatment. EPA has determined that sufficient treatment capacity exists for the small volume of surface-disposed incinerable inorganic wastes; therefore, EPA is not granting a national capacity variance for them.

For fluorine compounds nonwastewaters, EPA is promulgating adsorption followed by neutralization as the method of treatment for P056 nonwastewaters, and neutralization or adsorption, followed by neutralization as methods of treatment for U134 nonwastewaters. For P056 and U134 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. EPA believes that adequate treatment capacity exists for these wastes; therefore, EPA is not granting a capacity variance for them.

In the proposed rule, EPA proposed recovery as the method of treatment for P015 wastes. During the comment period, EPA received one comment concerning P015 beryllium recovery, and EPA verified that beryllium recovery capacity does exist. Because EPA has determined that sufficient capacity exists for P015 wastes, EPA is not granting a variance for these wastes. For P073 wastewaters, EPA is promulgating concentration standards based on incineration or chemical oxidation; for P073 nonwastewaters, EPA is promulgating concentration standards based on stabilization. EPA has determined that there is enough capacity available to treat P073 wastewaters and nonwastewaters; therefore, EPA is not granting a capacity variance for them. For P087 wastewaters and nonwastewaters, EPA is promulgating recovery as the method of treatment. EPA has determined that there is not sufficient treatment capacity for P087 wastewaters and nonwastewaters, and is granting these wastes a national capacity variance.

(6) *Gases.* This treatability group includes the following groups: P076 (Nitric oxide), P078 (Nitrogen dioxide), and U115 (Ethylene oxide). For P076 and P078 wastewaters and nonwastewaters, EPA is promulgating venting into a reducing medium as the method of treatment. For U115, EPA is promulgating thermal or chemical oxidation as methods of treatment for nonwastewaters, and incineration, or chemical oxidation followed by carbon adsorption, or wet-air oxidation followed by carbon adsorption as methods of treatment for wastewaters. Because no volumes of P076, P078, and U115 were reported as surface disposed in the TSDR survey, EPA is not granting a national capacity variance for them.

(7) *U and P Cyanogens.* For the U and P wastes containing cyanide, P031 (Cyanogen), P033 (Cyanogen chloride), and U246 (Cyanogen bromide), EPA is promulgating incineration, chemical oxidation, or wet-air oxidation as methods of treatment for both wastewaters and nonwastewaters. EPA has determined that sufficient capacity exists to treat these wastes; therefore, EPA is not granting a national capacity variance for them.

(8) *Capacity Determination for Multi-Source Leachate.* (a) 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 final rule, such leachate will be restricted from land disposal. Residues from treating such leachate, as well as residues such as soil and groundwater that are contaminated by such leachate, are also restricted from land disposal under this rule. Leachate derived 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.

(b) *Previous Treatment Standards.* EPA imposed land disposal prohibitions on multi-source leachate in the Solvents and Dioxins, California list, and First Third rulemakings. In the First Third rule, 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 rule in order to fully study the most appropriate section 3004(m) treatment standards for multi-source leachate and to reevaluate the issue of available treatment capacity (see 54 FR 8264 (January 27, 1989)).

(c) Final Treatment Standards. In today's rule, EPA is promulgating one set of wastewater and one set of nonwastewater treatment standards for multi-source leachate; these standards would 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 promulgating concentration standards primarily based on biological treatment followed by chemical precipitation, or wet-air oxidation followed by carbon adsorption followed by chemical precipitation for organic and inorganic constituents. For nonwastewaters, EPA is promulgating concentration standards based on incineration for organic constituents and on stabilization for metals.

(d) Volumes Requiring Alternative Treatment or Recovery Capacity. EPA relied on data from the TSDR Survey, the Generator Survey, and other capacity data to determine whether sufficient alternative treatment or

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recovery capacity is available for multi-source leachate.

Multi-source leachate is primarily generated in landfills. However, EPA recognizes that multi-source leachate can also be generated at closed facilities. Because only sparse data exist on such leachate, EPA requested comments on the characterization of multi-source leachate at closed facilities and on the volume of treated leachate that is presently land-disposed in surface disposal units. EPA also requested 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.

Several commenters suggested that EPA has underestimated required capacity for multi-source leachate because leachate from closed landfills and ground water from corrective actions and CERCLA cleanups were not considered. EPA did not obtain adequate data to quantify the volumes of such leachates and leachate treatment residuals that might be surface disposed. These surface-disposed volumes, however, are not expected to affect the national capacity variance determination.

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. EPA evaluated this information to estimate the volume of multi-source leachate requiring alternative treatment.

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

Most multi-source leachate is managed in wastewater treatment systems and discharged via an NPDES permit and/or to a POTW. EPA estimates that over 41 million gallons of multi-source leachate nonwastewater residues are surface disposed.

Given the low volumes of surface-disposed multi-source leachate wastewaters and the adequate capacity to treat these wastes, EPA proposed and has decided not to grant a national capacity variance for surface-disposed multi-source leachate wastewaters. For multi-source leachate nonwastewaters, EPA is finalizing its proposal to grant a two-year national capacity variance for these wastes, because there is insufficient incineration capacity.

Most commenters agreed with the proposed variance for surface-disposed multi-source leachate nonwastewaters. However, a few commenters requested a national capacity variance for surface-disposed multi-source leachate wastewaters. However, commenters did not provide evidence of surface-disposed volumes of multi-source leachate wastewaters. EPA did not revise the estimates of wastewater volumes because no data were provided showing volumes of multi-source leachate wastewaters that are surface-disposed. Also, as noted above, this surface disposal must involve retrofitted surface impoundments, under RCRA section 3005(j), which ordinarily are section 3005(j)(11) impoundments. Therefore, there should be little additional demand for capacity for displaced leachate wastewaters. Commenters did not dispute this analysis.

(9) *Capacity Determination for Mixed Radioactive Wastes.* (a) 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 the 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 rule addresses radioactive wastes that contain First Third, Second Third, and Third Third wastes.

(b) 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. This data set is based on a recent DOE survey and 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 available information on non-DOE mixed RCRA/radioactive wastes.

(c) Determining National Variances for Mixed RCRA/Radioactive Wastes. After investigating the data sources noted above, EPA estimated that approximately 393 million gallons of radioactive waste mixed with First, Second, and Third Third wastes will require treatment. Contaminated soil and debris accounts for 193 million gallons of this total, which also includes wastes generated annually as well as untreated wastes in storage. Although DOE is in the process of increasing its capacity to treat mixed RCAR/radioactive wastes, data supplied by DOE indicate a current capacity shortfall for the treatment of First, Second, and Third Third mixed RCRA/radioactive wastes. DOE indicated a stabilization capacity of approximately 2.8 million gallons and a neutralization capacity of approximately 400,000 gallons. The data, however, showed significant alternative treatment capacity shortfalls for all treatment technologies, including stabilization and neutralization. EPA's investigation of non-DOE data sources showed a significant lack of commercial treatment capacity as well. Although one facility was identified that manages a specific type of mixed RCRA/radioactive waste, data sources indicate a lack of sufficient treatment capacity for all treatment technologies. Thus, EPA has determined that sufficient alternative treatment capacity is not available and is granting a two-year national capacity variance for mixed RCRA/radioactive waste wastewaters and nonwastwaters.

One commenter indicated that the proposed two-year national capacity variance is unlawfully and unnecessarily broad, and that EPA should grant variances only for specific waste streams. EPA disagrees with this statement. The capacity analysis was based on detailed, stream-specific data supplied by DOE as well as the best available non-DOE data sources. Although sufficient treatment capacity may exist at certain facilities for certain mixed RCRA/radioactive wastes, EPA's capacity analysis methodology is designed to assess available treatment capacity at the national level. (See RCRA section 3004(h)(2).) EPA believes the capacity analysis performed demonstrates a mixed RCRA/radioactive waste capacity shortfall for

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all alternative treatment technologies at the national level.

The same commenter indicated that EPA must determine that available treatment capacity existing for non-radioactive RCRA hazardous waste is inappropriate for mixed RCRA/radioactive wastes. EPA believes that the lack of commercial mixed RCRA/radioactive waste treatment capacity was sufficiently demonstrated in the proposed rule. Not only does the TSDR Survey show a lack of permitted treatment facilities accepting mixed RCRA/radioactive wastes, the most recent data made available by States and State low-level waste compacts support the same conclusion. For the reasons iterated here, EPA believes that the national capacity variance for mixed RCRA/radioactive wastes is both necessary and justified. All other commenters addressing the national capacity variance were in support of EPA's proposal.

One commenter raised the question of whether naturally-occurring radioactive materials (NORM) containing RCRA listed or characteristic hazardous wastes fall under the definition of mixed RCRA/radioactive wastes. The question was also raised whether the national capacity variance extends to these materials. EPA believes that because NORM are not regulated by the Atomic Energy Act, these materials do not fall under the definition of mixed RCRA/radioactive wastes. EPA recognizes, however, that insufficient alternative treatment capacity exists to handle these materials. Therefore, EPA is granting a two-year national capacity variance to hazardous wastes mixed with NORM.

EPA recognized that its information for the proposed rule on mixed RCRA/radioactive wastes generated and managed by non-DOE facilities might have been incomplete. Consequently, EPA requested comments by interested parties on the current generation of mixed RCRA/radioactive wastes. Of particular interest to EPA was information on mixtures of radioactive wastes and First, Second, or Third Third waste streams. Although several commenters addressed problems associated with the storage and disposal of mixed RCRA/radioactive wastes, only one commenter indicated that additional data were available. The data confirm the lack of available treatment capacity and the commenter supports the proposed national capacity variance.

2. Determination of Alternative Capacity and Effective Dates for Underground Injected Waste.

Today, EPA is prohibiting 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. In the proposed rule, EPA solicited comments 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.

EPA received several responses to this request. One commenter submitted data on the volume of U wastes (20,456 gallons) deepwell injected at its facility in 1989. However, this facility has subsequently received approval of its no-migration petition. Another stated that 3.3 million gallons of P and U wastes are underground injected at its facility. The facility has proved, however, that this stream qualified for the mixture rule exception under RCRA section 261.3(a)(2)(iv), and is therefore not considered a hazardous waste. One commenter indicated it was injecting 7,200 tons of D004 waste at one of its facilities. Further, one commenter stated that it was injecting a wastewater containing U115. Additionally, one commenter submitted an underground injection well survey. EPA acknowledges these comments and has incorporated them appropriately into the capacity analysis.

EPA also received comments pertaining to the form of certain wastes. Several commenters indicated that the nonwastewater forms of D002, D003 (reactive cyanide), D007, and K014 were injected and needed to be included in the capacity analysis. EPA agrees that nonwastewaters were not discussed for many deepwell injected wastes and has evaluated these waste forms for the final rulemaking.

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

Consistent with the policy established in previous land disposal restrictions, EPA is restricting on August 8, 1990, the underground injection of all wastes, with treatment standards 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 land 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 by facilities with appropriate on-site alternative treatment technologies for treating the waste.

EPA is establishing 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. If there is inadequate available alternative treatment capacity for the injected volume in a single treatability group, then EPA is allocating 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 that this is most consistent with Congressional intent, which favors both treatment over disposal and minimal use of capacity variances. EPA specifically solicited comments on this approach; however no comments were received during the public comment period.

EPA recognizes that the effective prohibition date of the Third Third rule will critically affect the management of large volumes of wastes disposed of on-site in injection wells at a number of facilities. On-site injection wells are characterized by direct piping of wastes from plant operations to the injection facility. In contrast, off-site injection facilities receive manifested wastes from other plant operations which are transported directly to the injection facility.

The injection wells at on-site facilities are directly connected to the plant operations and, all totaled, handle at least five billion gallons of hazardous waste per year. In order to realistically meet the treatment requirements for the Third Third rule, the plant managers will need time to make considerable logistical adjustments such as repiping, retooling, and development of transportation networks at the plant operation facility. Therefore, EPA does not believe that treatment capacity is available if there is no feasible way for generators to transport their wastes to the treatment facilities. EPA can legitimately consider the time necessary to do this in determining whether to grant a national capacity variance.

EPA has relied on such logistic factors in prior rulemakings to determine when

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capacity is realistically available. EPA notes that these same logistic factors do not appear necessary to warrant any extension for waste sent to off-site commercial injection facilities as those for on-site injection facilities. EPA believes that facilities disposing of wastes through off-site deepwell injection already have these plant adaptations and transportation networks in place, and therefore do not require any extension of the effective date. Consequently, EPA is using its authority under section 3004[h] of RCRA to provide a six-month extension beyond the May 8, 1990 statutory prohibition date for all Third Third wastes disposed of at on-site injection facilities directly connected to plant operations.

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 groups, and which treatability groups require capacity variances. More information on EPA's procedure for apportioning treatment capacity in these treatability groups can be found in the Third Third Background Document for the treatability groups.

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

Presented below are the treatment technologies EPA used in the capacity analysis for all deepwell-injected wastes. EPA selected these technologies based on the BDATs used for establishing the concentration and technology based standards being promulgated today. For the capacity analysis, EPA assigned volumes of wastes mixed with other wastes to the appropriate treatment such that the treatment standards for all wastes will be met. Consequently, some of the technologies listed below are treatment trains that include the BDAT used to determine the standard plus another technology. Table III.B.2.(d) summarizes the wastes for which EPA is granting a two-year national capacity variance for underground injected wastes.

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

[Prohibited from Underground Injection on August 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 nonwastewaters and all wastewaters), K073, K084, K085, K101 (nonwastewaters), K102 (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, U124, U129, U130, U137, U155, U158, U171, U177, U180, U209, U237, U238, U248, U249.
Second Third Codes
K025 (Wastewaters), K028 (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, P104, P107, 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, U246, 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
U115	8.0
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	0.2
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	1745.7
D004	10.0
D005	1.3
D006	1.6

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Waste code	Capacity required for underground injected wastes
D007	201.2
D008	3.8
D009	1.2
D010	95.2
D011	0.3
D012	2.3
D013	2.3
D014	2.4
D015	2.3
D016	2.3
D017	2.3
F039 [1]	15.1
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

[1] Multi-source leachate.

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

[millions of gallons/yr.]

Technology	Available capacity	Required capacity	Variance
Acid leaching followed by chemical precipitation	0	<1	Yes.
Alkaline chlorination	1	48	Yes.
Alkaline chlorination followed by chemical precipitation	4	<1	No.
Biological treatment	47	2	No.
Biological treatment followed by chemical precipitation	13	15	Yes.
Chemical oxidation followed by chemical precipitation	21	1,684	Yes.
Chemical oxidation followed by chromium reduction and chemical precipitation	<1	195	Yes.
Chemical precipitation	314	119	No.
Chromium reduction followed by chemical precipitation	9	239	Yes.
Combustion of liquids	219	54	No.
Mercury retorting	<.01	<.02	Yes.
Neutralization	14	1,638	Yes.
Stabilization	305	4	No.
Wet-air oxidation	<1	1,027	Yes.
Wet-air oxidation followed by carbon adsorption	<1	<1	No.

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

Required alternative treatment technology	Waste code	Physical form
Acid leaching followed by chemical precipitation	D009	Low mercury nonwastewater
Alkaline chlorination	D003 [1]	Wastewater/nonwastewater
Chemical oxidation followed by chemical precipitation	D003 [2]	Wastewater/nonwastewater
Chemcial oxidation followed by chromium reduction and Chemical precipitation	D003 [3]	Wastewater/nonwastewater
Chromium reduction followed by chemical precipitation	D007	Wastewater/nonwastewater
Mercury Retorting	D009	High mercury nonwastewaters
Neutralization	D002 [4]	Wastewater/nonwastewater
Wet-air oxidation	K011	Wastewater
	K013	Wastewater
	K014	Wastewater/nonwastewater
Wet-Air oxidation followed by carbon carbon adsorption followed by checmical precipitation; biological treatment followed by chemical precipitation.	F039 [5]	Wastewater

[1] D003 (Cyanides)
[2] D003 (Sulfides)
[3] D003 (Explosives, water reactives, and other reactives)
[4] Deepwell injected D002 liquids with a pH less than 2.0 must meet the California list treatment standards on August 8, 1990.
[5] Multi-source Leachate

(1) *Acid Leaching followed by Chemical Precipitation.* EPA is promulgating concentration standards for low mercury D009 nonwastewaters based on acid leaching followed by chemical precipitation. EPA's data does not differentiate between low and high mercury concentration nonwastewaters. Consequently, for the capacity analysis EPA conducted a worst-case analysis and assigned the volume of deepwell-injected D009 nonwastewaters to both acid leaching followed by chemical precipitation and mercury retorting (the BDAT for the high concentration mercury subcategory).

There is no commercial acid leaching followed by chemical precipitation capacity, therefore, EPA is granting D009 low concentration mercury nonwastewaters a two-year national capacity variance, restricting this waste from underground injection on May 8, 1992.

(2) *Alkaline Chlorination.* Treatment standards based on alkaline chlorination are being promulgated today for D003 (reactive cyanide). (EPA also determined that the standards may be met using wet-air oxidation or electrolytic oxidation.) As shown in table III.B.2.(c), the less than 1 million gallons per year of available capacity are inadequate to address the quantity of hazardous waste annually deepwell-injected requiring this type of treatment.

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Therefore, EPA is granting a two-year national capacity variance to D003 (reactive cyanide) wastewaters and nonwastewaters. This waste will be restricted from injection on May 8, 1992.

(3) *Alkaline Chlorination followed by Chemical Precipitation.* Treatment standards based on alkaline chlorination and chemical precipitation are today being promulgated for F006 cyanide wastewaters and F019 wastewaters. As shown in Table III.B.2.(c), the available capacity of 6 million gallons is adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. EPA is prohibiting these wastes from underground injection on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section).

(4) *Biological Treatment.* For P020, P048, U002, U009, U019, U031, U112, U140, U159, U170, U188, U220, and U239, EPA is promulgating concentration standards based on biological treatment for wastewaters. (EPA also determined that the standards may be met using wet-air oxidation followed by carbon adsorption). Because there is adequate biological treatment capacity for these deepwell injected wastes, EPA is not granting a national capacity variance for them. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section.)

(5) *Chemical Oxidation followed by Chemical Precipitation.* EPA is promulgating concentration standards for P122 wastewaters based on chemical oxidation. For the capacity analysis, EPA assigned P122 wastewaters to chemical oxidation followed by chemical precipitation. EPA has determined that adequate capacity exists to treat P122 wastewaters; therefore, EPA is not granting P122 wastewaters a national capacity variance.

EPA is promulgating deactivation as the method of treatment for D003 (sulfides), which includes chemical oxidation. For the capacity analysis, EPA assigned this waste to chemical oxidation followed by chemical precipitation. As indicated in Appendix VI, EPA has identified other technologies for treating these wastes. The aggregate capacity of the additional technologies is still insufficient for treating these D003 wastes. Therefore, EPA is granting a two-year national capacity variance to D003 (sulfide) wastewaters and nonwastewaters. This waste will be restricted from injection on May 8, 1992.

(6) *Chemical Oxidation followed by Chromium Reduction and Chemical Precipitation.* For D003 (explosives, water reactives, and other reactives), EPA is promulgating standards based on deactivation. EPA did not have data in sufficient detail to differentiate between explosives, water reactives and other reactives. Consequently, for the capacity analysis, EPA has grouped these wastes into one group. For the capacity analysis, EPA assigned all volumes to chemical oxidation, chromium reduction, and chemical precipitation. As indicated in Appendix VI, EPA has identified other technologies for treating these wastes. The aggregate capacity of the additional technologies is still insufficient for treating these D003 wastes. Therefore, EPA is granting a two-year national capacity variance to these wastes, restricting D003 (explosives/reactives) wastewaters and nonwastewaters from underground injection on May 8, 1992.

(7) *Chemical Precipitation:* Wastewater forms of D004, D005, D006, D008 (lead-non-battery), D009, D010, D011, F006, K031, P011, P056, U134, and U151 represent those wastes best treated by chemical precipitation. As shown in table III.B.2.(c), the 331 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. EPA is prohibiting these wastes from underground injection on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section).

(8) *Chromium Reduction followed by Chemical Precipitation.* Treatment standards based on chromium reduction and chemical precipitation are today being promulgated for wastewater forms of D007, F006, K002, P011, and UO32. As shown in Table III.B.2.(c), the 32 million gallons per year capacity of available chromium reduction and chemical precipitation is 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. Therefore, EPA is granting a two-year national capacity variance to D007 wastewaters and nonwastewaters, prohibiting this waste from underground injection on May 8, 1992. For the remaining wastes, no national capacity variance is being granted.

(9) *Combustion of Liquids.* Combustion of liquids is the standard of treatment for deepwell injected D001 (ignitable liquids), D011, D012, D013, D014, D015, D016, D017, K032, K083, K086, K097, P005, P050, P051, P057, P059, P069, P075, P102, U001, U007, U008, U012, U019, U034, U037, U044, U045, U055, U056, U070, U074, U080, U103, U105, U106, U112, U113, U115, U118, U122, U133, U138, U147, U154, U157, U159, U160, U162, U165, U169, U185, 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 219 million gallons per year of available capacity are adequate to treat the quantity of hazardous waste annually deepwell-injected requiring this type of treatment. Therefore, these wastes will be restricted from underground injection on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section).

(10) *Mercury Retorting.* Treatment standards based on mercury retorting are being promulgated for nonwastewaters 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. EPA is granting a two-year national capacity variance to the nonwastewater forms of D009, restricting this waste from underground injection on May 8, 1992.

(11) *Neutralization.* EPA is promulgating deactivation as the method of treatment for D002 wastewaters and nonwastewaters. For the capacity analysis, EPA assigned all D002 acids and alkalines to neutralization. As indicated in appendix VI, EPA has identified other technologies for treating these wastes. The aggregate capacity of the additional technologies is still insufficient for treating D002 wastewaters and nonwastewaters. Therefore, EPA is granting a two-year national capacity variance for the D002 wastewaters and nonwastewaters, restricting this waste from underground injection on May 8, 1992. Deepwell injected D002 liquids with a pH less than 2.0, which received a two-year national variance in the California list rulemaking, are required

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to meet the California list treatment standards on August 8, 1990.

(12) *Stabilization.* For residuals containing D005, D006, D007, D008 (lead-non-battery), D011, K002, K083, K086, and U032, stabilization is part of the treatment train. As shown in Table III.B.2.(c), the 265 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 prohibited from land disposal on August 8, 1990. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section.)

(13) *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 and nonwastewaters annually deepwell-injected requiring this type of treatment. Therefore, EPA is granting a two-year national capacity variance to the wastewater forms of K011, K013, and K014, and the nonwastewater form of K014, prohibiting these wastes from underground injection on May 8, 1992.

(14) *Wet-Air Oxidation followed by Carbon Adsorption.* For P058 wastewaters, treatment standards based on wet-air oxidation and carbon adsorption are being finalized 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 required this type of treatment; therefore, EPA is not granting a national capacity variance for this waste. (For facilities with injection wells directly connected to plant production operations, the effective date is November 8, 1990, as discussed at the beginning of this section.)

(15) *Biological Treatment followed by Chemical Precipitation or Wet Air Oxidation followed by Carbon Adsorption followed by Chemical Precipitation.* For F039 (multi-source leachate) wastewaters, EPA is promulgating concentration standards based primarily on biological treatment followed by chemical precipitation or wet air oxidation followed by carbon adsorption followed by chemical precipitation. As shown in table III.B.2.(c), the approximately 14 million gallons of available capacity is insufficient to handle the 15 million gallons of required capacity. EPA notes that the 14 million gallons of available capacity is the maximum available, as a portion of this volume is contributed by a facility that was scheduled to come on-line in 1988. EPA was unable to determine whether this facility is currently operating. Because of the lack of available capacity, EPA is granting a national capacity for this waste.

b. Response to 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 national capacity variance was granted due to the lack of alternative incineration capacity (54 FR 26642). Action on K014 nonwastewaters was deferred so that EPA could evaluate information on the composition, characteristics, and volumes associated with this waste. EPA has received information indicating that, by definition, K014 nonwastewaters are being underground injected. Because inadequate wet-air oxidation capacity exists to treat K014 nonwastewaters, EPA is granting a two-year national capacity variance for the underground injection of these wastes, restricting K014 nonwastewaters from underground injection on May 8, 1992.

c. Deepwell Injected Multi-Source Leachate.

Commenters supported the proposed capacity variance for underground injected multi-source leachate. One commenter provided data or additional volumes of multi-source leachate that are underground injected. Consequently, EPA is updating its estimate of the volume of underground injected multi-source leachate by 1.5 million gallons. EPA estimates that at least 15 million gallons of multi-source leachate wastewaters are currently deep-well injected and will require alternative treatment capacity. EPA believes that most multi-source leachate currently underground injected contains both organic and inorganic constituents. EPA is promulgating concentration standards for wastewaters primarily based on biological treatment followed by chemical precipitation, or wet-air oxidation followed by carbon adsorption followed by chemical precipitation for organic and inorganic constituents. Because there is insufficient capacity to treat wastewaters based on these treatment technologies, EPA is granting a two-year national capacity variance for multi-source leachate that is underground injected. This waste will be prohibited from underground injection on May 8, 1992.

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. EPA requested comments on mixed radioactive wastes that are being underground injected. EPA received no information indicating that mixed radioactive wastes were being underground injected; thus, EPA is not granting a national capacity variance for them. These wastes will be prohibited from underground injection on August 8, 1990.

3. Capacity Variances for Contaminated Soil and Debris

Today, EPA is granting an extension of the effective date for certain First, Second, and Third Third contaminated soil and debris for which the treatment standards are based on incineration, vitrification, or mercury retorting; EPA is also granting a national capacity variance for inorganic solids debris contaminated with D004 through D011 wastes. 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, 1990), 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

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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 capacity extension will 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 generally 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 9.5-mm sieve size that are greater than 10 percent by weight, or that are at a total level that, based on engineering judgment, will affect the 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.

In addition, EPA has established a specific treatability group for inorganic solids debris contaminated with D004 through D011 wastes. Wastes in this treatability group are defined as follows: nonfriable inorganic solids that are incapable of passing through a 9.5-mm standard sieve that require crushing, grinding, or cutting in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: (1) Metal slags (either dross or scoria); (2) glassified slag; (3) glass; (4) concrete (excluding cementitious or pozzolanic stabilized hazardous wastes); (5) masonry and refractory bricks; (6) metal cans, containers, drums, or tanks; (7) metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment; and (8) "scrap metal" (as defined in 40 CFR 261.1(c)(6)). EPA has determined that there is inadequate treatment capacity for all debris in this treatability group. Therefore, EPA is granting inorganic solids debris a national capacity variance.

Analysis of the TSDR Survey data indicated that a volume of approximately 17 million gallons of soil and debris contaminated with wastes subject to this rule 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 has determined that capacity is not adequate for incineration, vitrification, and mercury retorting of Third Third contaminated soil and debris. In addition, EPA has determined that there is insufficient treatment for inorganic solids debris. Therefore, EPA is granting a two-year national capacity variance for Third Third contaminated soil and debris for which BDAT is incineration, vitrification, or mercury retorting, and all inorganic solids debris.

EPA is also granting 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 (or other technologies for which EPA determines there is insufficient capacity) and also with other prohibited wastes whose treatment standard is based on an available 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 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. Ninety Day Capacity Variance for Third Third Wastes

EPA is delaying the effective date of the treatment standards in today's rule for three months, or until August 8, 1990 (except for those portions of the rule delayed because of long-term national capacity variances). EPA is taking this step because the Third Third rule is of unusual breadth (approximately 350 waste codes affected, plus all characteristic wastes, multi-source leachate, and mixed wastes), complexity, and difficulty. Persons having to comply must not only determine what the treatment standards are for their wastes, but must also grapple with the interplay between standards for listed and characteristic wastes, certain new interpretations regarding permissible and impermissible dilution, and certain new tracking requirements for characteristic wastes. Although the Agency has made all efforts legally available to communicate its resolution of some of these matters in advance of the May 8, 1990, prohibition date, most members of the regulated community are just receiving notice of the requirements with which they must comply. It takes some reasonable amount of time to determine what compliance entails, as well as time to redesign tracking documents, possibly adjust facility operations, and possibly segregate wastestreams which heretofore had been centrally treated. EPA believes that these legitimate delays are encompassable within the concept of a short-term national capacity variance because part of the notion of available capacity is the ability to get wastes to the treatment capacity in a lawful manner. Accordingly, the Agency is granting a short-term national capacity variance for three months.

The Agency emphasizes that during this variance, all Third Third wastes that remain hazardous and that are being disposed of in landfills or surface impoundments may only be disposed of in landfill or impoundment units that meet the minimum technology standards set out in § 268.5(h)(2). (See also section III.D of today's preamble explaining that a different principle holds for prohibited wastes that are now nonhazardous.) In addition, the recordkeeping requirements of existing 40 CFR 268.7 (a)(4) and (b)(6) will apply during this period. These provisions require a certification that a restricted waste is not subject to a prohibition for enumerated reasons, such as existence of a national capacity variance. EPA does not intend, however, that

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recordkeeping requirements apply to characteristic wastes that have been treated to meet the treatment standard during this three-month period. The new recordkeeping requirements applicable to these situations in fact do not take effect for three months based on the Agency's determination that it will take that long to understand how to use them. Thus, tracking documents would only be required for restricted wastes that are hazardous wastes when sent off-site. In addition, all existing treatment requirements (e.g., California list requirements applicable during the period of a capacity extension) are applicable from May 8, 1990 to August 8, 1990.

D. Applicability of Land Disposal Restrictions

1. Introduction

Under RCRA, wastes can be designated as "hazardous" in one of two ways: (1) they may be specifically listed based on EPA's evaluation of factors set out in 40 CFR 261 subpart B ("listed wastes"), or (2) they may be considered hazardous because they exhibit certain indicator characteristics set out in 40 CFR part 261 subpart C ("characteristic wastes").

A central issue in this rulemaking concerns EPA statutory authority to require full treatment for characteristic wastes. Some industry commenters argue that EPA lacks jurisdiction over characteristic wastes if the indicator characteristic is removed before land disposal. Environmentalists and the treatment industry, on the other hand, argue that EPA must, in all cases, require treatment of characteristic wastes in the same manner it would for listed wastes. EPA disagrees with both positions. Rather, EPA believes that the statute provides EPA ample authority to determine whether additional treatment beyond removal of the characteristic is necessary for particular types of wastes to achieve the goals of the statute.

In some cases, EPA is requiring additional treatment beyond removing the characteristic; in others, EPA deems removal of the characteristic itself to be sufficient especially where no toxic contaminants are specifically identified; finally, in several cases, EPA has determined that there is only sufficient information in the record to justify treatment requirements to the characteristic levels at this time. For these respective wastes, data in the administrative record is not adequate to determine whether treatment below characteristic levels is feasible to minimize threats to human health and the environment for the wide range of differing waste matrices encompassed by a single characteristic waste code. In these respective cases, EPA is establishing a treatment level based on its best judgment on the information currently available, and will review its decision in light of new information in the future.

Another critical issue is whether or not to prohibit dilution of characteristic wastes as part of the LDR program. As discussed below, in some circumstances a dilution prohibition is important to ensure actual treatment of the waste. EPA is applying a dilution prohibition to wastes which exhibit a characteristic at the point of generation, with two exceptions. The first exception to the dilution prohibition is for characteristic wastes treated for purposes of CWA requirements. CWA requirements, including CWA dilution rules, serve goals similar to the LDR dilution rules. Relying on the CWA dilution rules will generally accomplish the goals of the LDR program without creating potential inconsistencies or duplication in EPA's regulations. A second general exception to the LDR prohibitions is for characteristic wastes that are subsequently diluted and disposed in injection wells authorized under the SDWA. This exclusion is based, in part, on EPA's evaluation that the disposal of dilute, nonhazardous wastes into appropriately confined injection zones would not constitute a threat to human health and the environment. EPA's decision also is based on the unnecessary regulatory burden that would ensue from application of the LDR prohibitions on the SDWA program regulating nonhazardous well disposal. A more detailed discussion of EPA's rationale and decision rules follow.

2. Legal Authority over Characteristic Wastes

a. *Introduction.* One of the most fundamental issues in this rulemaking is whether the prohibition on the land disposal of untreated characteristic wastes applies at the point of generation or at the point of land disposal. The choice of approach will affect EPA's ability to establish methods of treatment (rather than allowing dilution to meet a level), to apply a dilution prohibition, to require treatment of constituents other than those specifically addressed by the characteristic, and to establish treatment levels below characteristic levels.

This issue arises from current regulatory distinctions between characteristic hazardous wastes and listed hazardous wastes. Listed wastes, and wastes derived from the storage, treatment and disposal of listed wastes, remain hazardous for all regulatory purposes unless that waste is specifically delisted by Agency approval of a delisting petition under 40 CFR 260.22. Thus, a listed hazardous waste remains hazardous from the point of generation through the point of land disposal unless specifically delisted.

In contrast, a characteristic hazardous waste is no longer deemed hazardous when it ceases to exhibit a hazardous waste characteristic. 40 CFR 261.3(d)(1). However, as discussed below, the characteristic level is only one indicator of hazard and, thus, removal of the specific characteristic is not the same as assuring that the waste is safe. Until today, a hazardous waste characteristic could be removed by treatment; however, it could also be removed by simple mixing or dilution. Thus, if LDR requirements were applied only to wastes which exhibit a characteristic at the point of land disposal, EPA would be unable to require full treatment or, in some cases, any legitimate treatment of wastes which exhibit a characteristic at the point of generation.

EPA's proposed approach for both treatment standards and applying a dilution prohibition for characteristic wastes received many comments. Most commenters expressed concern about the regulatory impact of these rules on land disposal facilities regulated under RCRA subtitle D. There was particular concern over the impact of the proposed rules on existing wastewater treatment trains regulated under the Pretreatment and National Pollutant Discharge Elimination System (NPDES) programs, pursuant to sections 307(b) and 402 of the CWA, which use surface impoundments not regulated under RCRA subtitle C. In addition, there were many comments concerning the impact of the proposed rules on the SDWA program for nonhazardous injection wells.

As discussed below, Congress has given apparently conflicting guidance on how the Agency should address land disposal prohibitions for characteristic wates. EPA believes it has authority to reconcile these potential conflicts and to harmonize statutory provisions to forge a coherent regulatory system. (See RCRA Section 1006(b)—"The Administrator shall integrate all provisions of (RCRA) for the purposes of administration and enforcement and shall avoid duplication to the maximum extent practicable, with the appropriate provisions of the (CWA and SDWA)".) Within this authority EPA seeks to further the policy of section 3004(m) to treat hazardous waste prior to land disposal. However, EPA may also take

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steps to address problems that could arise from integration of LDR prohibitions in the context of the RCRA Subtitle D, CWA and SDWA programs. A more detailed discussion of the legal authority for this approach is provided below.

b. *General Standard for Agency Construction of Statutes.* Chevron U.S.A. Inc. v. NRDC, 467 U.S. 837 (1984) sets forth a two-step process for determining whether to sustain an agency's statutory interpretations. First, a court determines whether Congress has spoken directly to the precise question at issue. If the intent of Congress is clear, then the agency construction must be consistent with the Congressional directive. If, however, the statute is silent or ambiguous with respect to the specific issue, the agency choice must be based on a permissible construction of the statute. The construction may reflect a reasonable accommodation of policies that are committed to the agency by statute.

For the reasons stated below, EPA believes that Congress has not spoken to the precise question of the point at which LDR prohibitions apply and, thus, the Agency may develop a reasonable interpretation of the statute considering the goals and objectives of the LDR program and RCRA in general.

c. *Scope of Agency Authority for Treatment Requirements.* Several industry commenters argue that EPA must determine the applicability of LDR requirements at the point of land disposal based on the language of RCRA section 3004(g), which authorizes EPA to prohibit "the land disposal of hazardous waste." Commenters argue that this language indicates a Congressional decision to apply LDR requirements only to waste which is listed or exhibits a characteristic at the point of land disposal.

The Agency agrees that this is one permissible construction of the language in section 3004(g). Clearly a waste must be "hazardous" to fall under the mandate of 3004(g). EPA could assess whether or not a waste is hazardous at the point of land disposal to determine whether the prohibition in 3004(g) applies. The Agency, however, does not believe this is the only permissible construction. Although section 3004(g) clearly authorizes EPA to prohibit the land disposal of characteristic waste, it does not specify that the status of the waste for purposes of the prohibition can only be evaluated at the point of land disposal. Rather, the evaluation of whether a hazardous waste is subject to the prohibitions can apply at the point of generation or at the point of disposal (and possibly at some other point or combination of the two). Indeed, section 3004(g)(5) requires EPA to consider "* * * the goal of managing hazardous waste in an appropriate manner *in the first instance*," (emphasis added) when determining the scope of the land disposal prohibitions. See reference to section 3004(d)(1)(B) in section 3004(g)(5). This language can be read to refer to a point of generation approach. Moreover, the statutory structure provides for treatment of hazardous waste under section 3004(m) treatment standards *before* land disposal and not necessarily at the physical point of land disposal. Commenters further argue that the Congressional policy is to limit the scope of the LDR provisions to facilities currently regulated under subtitle C of RCRA.

As discussed below, the Agency has concluded that applying LDR requirements at the point of generation is not only a permissible construction of the statute, but one which may better serve the goals and objectives of the LDR program.[6] Specifically, EPA believes that applying LDR requirements at the point of generation may, in some cases, be necessary to effectuate the requirement that the Agency set treatment standards or methods for characteristic wastes under section 3004(m). As the Agency noted in the proposal at 54 FR 48490, the point of disposal approach could undermine the Congressional goals of the land disposal restrictions in critical ways when applied to characteristic wastes.

First, the Agency would not effectively be able to set a particular method of treatment or limit dilution for a characteristic waste. A point of disposal approach might permit dilution of characteristic wastes, since waste diluted below a characteristic level prior to land disposal would not be regulated by LDR provisions. Such dilution could be in lieu of treatment or a specified method and would not fulfill the goals of section 3004(m). In many cases, dilution simply increases the volume of a waste without reducing or immobilizing the mass of hazardous constitutents in the waste.

Second, the point of disposal approach could be construed to limit treatment standards both in terms of treatment levels and the range of hazardous constituents affected by the treatment standard. For characteristic wastes, a point of disposal approach would, in effect, preclude a requirement to treat below the characteristic level. In some cases, characteristic levels are not levels below which there may be no significant risks to human health and the environment. Rather, the EP (and TC) limits are levels at which wastes clearly are hazardous. 45 FR 33084 (May 19, 1980); 51 FR 21648 (June 13, 1986); 55 FR 11798 (March 29, 1990).[7]

Characteristic wastes also may exhibit both a specific characteristic and contain significant concentrations of other hazardous constituents. (This is true, for example, of the high TOC ignitable wastes and reactive cyanide wastes regulated under today's rule.) Simply treating the one specific characteristic which is an indicator that the waste is a hazardous waste would not necessarily fulfill the goal of section 3004(m), *i.e.*, to "substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of *hazardous constituents* from the waste so that short-term and long-term threats to human health and the environment are minimized" (emphasis added). The statutory focus on hazardous constituents beyond the specific characteristic constituent is also enunciated in sections 3004(d)–(g) of RCRA. These provisions authorize EPA to take into account "* * * the persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous wastes *and their hazardous constituents*" in establishing hazardous

[6] The Agency has previously adopted the point of generation approach with respect to identification of waste subject to the California list prohibitions set out in RCRA section 3004(d)(1) and (2). 52 FR 25760 (July 8, 1987). Like characteristic wastes, California list wastes must contain constituents or exhibit a property above a certain level. Moreover, as a general matter, to ensure the proper management of waste in the first instance, EPA has required application of several 40 CFR part 268 requirements at the point of generation. See § 268.30(a)(3) and 52 FR 21012 (June 4, 1987) (initial generator must determine whether solvent wastes are prohibited); 53 FR 31146–47 (August 17, 1988) and 54 FR 26605 (June 23, 1989) (waste code carry-through principle applies at the point of generation and determines both the prohibition and the treatment standard for listed wastes). All land disposal restriction tracking requirements likewise attach at the point of generation. (268.7(a) and 54 FR 36968 (Sept. 6, 1989).

[7] In *Hazardous Waste Treatment Council* v. *EPA* (HWTC III), 886 F.2d 355 (D.C. Cir. 1989) the court noted that it would be inappropriate under section 3004(m) to require treatment below levels which there are no longer threats to human health and the environment. *Id.* at 363. However, the court noted that the inquiry under section 3004(m) concerning the extent of treatment is different than levels established for other regulatory purposes, and specifically noted that EPA need not construe characteristic levels as levels below which no further minimization of threats can occur. *Id.* at 362. The Agency has recently discussed its rationale for a technology-based approach to treatment standards under section 3004(m) which does not cap the treatment requirements at delistings levels. (See 55 FR 6640, (February 26, 1990). EPA recognizes that *HWTC III* is not dispositive on the issue we address today whether characteristic levels at the point of disposal serve as a jurisdictional bar to application of section 3004(m) treatment standards.

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waste prohibitions. Section 3004(d)(1)(C) (emphasis added). Thus, EPA believes it has statutory authority to take into account all aspects of a waste stream in determining appropriate treatment and is not limited to considering merely one specific "characteristic" that indicates that the waste is hazardous in the first instance.

EPA also has general authority under RCRA section 3004 (a)(3) to establish different criteria for determining when wastes will enter and exit the hazardous waste management system—*i.e.*, when they will initially be designated as hazardous waste and when they no longer require RCRA subtitle C management controls. For example, the clean-closure standards for regulated units that hold characteristic wastes require removal of hazardous constitutents even if the waste no longer exhibits a hazardous characteristic. See 53 FR 8705 (March 19, 1987). EPA also has previously promulgated regulations requiring that incinerators treating hazardous waste be operated to a certain efficiency even if a characteristic waste in the waste feed ceases to exhibit a characteristic somewhere in the combustion process.

EPA believes that under the first test in *Chevron*, Congress has neither mandated nor precluded a point of generation approach. In this case the "meaning or reach of a statute involve[s] reconciling conflicting policies." *Chevron*, 467 U.S. at 846 (citation omitted). Moreover, "a full understanding of the force of the statutory policy in the given situation has depended upon more than ordinary knowledge respecting the subject matters subjected to agency regulations." *Id.* Accordingly, EPA should make choices which represent "a reasonable accommodation of conflicting policies that were committed to the agency's care by statute." *Id.*

In this regard, section 1006(b) of RCRA provides EPA authority to integrate provisions of RCRA and other acts it administers, including the CWA and SDWA, for purposes of administration and enforcement. Such integration must be consistent with the goals and policies of these acts. Under this framework, EPA can analyze potential overlaps between regulatory programs in its decision-making. Where the goals are consistent, and uniform administration or enforcement is preferable, EPA may rely on one regulatory framework instead of applying potentially duplicative or inconsistent regulations. Accordingly, the Agency believes that it can harmonize potentially conflicting policies by considering both the benefits of a given approach and any regulatory problems (including regulatory overlap) that would be engendered by the approach. The balancing may thus result in different application of LDR requirements for certain classes of facilities.

d. *Agency Framework for Addressing Treatment Standards for Characteristic Wastes and Integrating them With Other Regulatory Programs.* The Agency believes that it has authority to apply LDR requirements at the point of waste generation for characteristic wastes and that such an approach will generally better achieve the goals of the LDR program. Specifically, EPA believes it has the authority to set treatment levels below the characteristic levels, to specify methods of treatment, and to prohibit dilution for characteristic wastes where necessary and appropriate to further the goals of the statute. EPA recognizes, however, that there are many far-reaching policy considerations respecting the actual implementation of this approach. For example, a point of generation approach could apply to management of waste prior to RCRA subtitle D land disposal.[8]

LDR standards which require waste to be treated to below characteristic levels would apply to wastes currently destined for RCRA subtitle D facilities. Application of the LDR provisions would be a very significant change in the regulatory scheme for these facilities, and could cause major administration and enforcement problems for both EPA and these facilities. For example, EPA currently has no authority to enforce subtitle D criteria against subtitle D facilities, and, hence has no enforcement program for these facilities. In order to ensure that these facilities met the subtitle C requirements, the Agency would have to implement an enforcement scheme that addressed thousands of subtitle D facilities. In addition, owners and operators of subtitle D facilities would need to meet complex LDR tracking requirements. Many may decide not to accept partially treated characteristic wastes rather than comply, thus, diverting potentially large volumes of non-hazardous waste to subtitle C facilities and potentially aggravating capacity problems at subtitle C facilities.[9] As noted in the proposal at 54 FR 48491, some of these problems may be addressed by future regulatory revisions. EPA will continue to evaluate this issue as it addresses standards for the wastes identified by the new Toxicity Characteristic (TC).

In addition, many of these potentially affected subtitle D units contain wastes that are regulated, in part, under the National Pollutant Discharge Elimination System (NPDES) and pretreatment programs under sections 301, 304, 307, and 402 of the CWA, and the Underground Injection Control (UIC) program under the SDWA. Requiring treatment below characteristic levels or imposing a dilution prohibition would require significant changes to the operations of these facilities and create problems of regulatory integration.

This is not to say that the section 3004(m) objectives carry little weight with respect to characteristic wastes. On the contrary, particularly with respect to toxic wastes, these policies are of critical importance. Moreover, many of these potential implementational problems may be addressed by future rulemakings.

Section 1006(b) of RCRA requires the Agency to integrate "for the purposes of administration and enforcement" RCRA subtitle C with the goals and policies of other portions of RCRA, as well as other statutes administered by EPA. In light of this requirement and the absence of any clear Congressional directive to apply LDR requirements directly to subtitle D facilities, the Agency must ask itself whether the benefits of treating below characteristic levels warrant the serious implementation problems such as those discussed above. This is particularly true where the administrative record contains inadequate data to set levels below the characteristic level for the many waste matrices represented by a single characteristic waste code. However, where the data is adequate, EPA believes it can successfully implement treatment requirements beyond removal of the characteristic, on a case-by-case basis, without significant disruptions to other regulatory programs to further the goals of section 3004(m) by requiring treatment beyond removal of the characteristic. EPA is prepared to reevaluate these issues in future rulemakings based on further information and experience with implementing the LDR program.

The extent to which the treatment goals of section 3004(m) are furthered by

[8] Waste disposed into such units would need to meet the treatment requirements unless disposal is (1) into a "no migration" unit approved under 40 CFR part 148 or 268, or (2) into a surface impoundment which meets the requirements of RCRA section 3005(j)(11).

[9] As noted below, EPA has provided a regulatory structure to enforce dilution rules which does not impact subtitle D facilities.

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treatment beyond removal of the specific characteristic and by application of LDR dilution rules is discussed below for certain classes of wastes and certain classes of waste management practices. EPA also will consider section 3004(g) and the Congressional directive under section 1000(b) of RCRA to integrate regulatory programs. Accordingly, EPA's approach is to balance both the extent of additional treatment provided from treatment beyond removal of a characteristic and regulatory integration concerns for LDR standards relating to characteristic wastes.[10]

Below, EPA addresses three separate LDR requirements: treatment levels, methods of treatment, and dilution prohibitions. In addition, EPA discusses exclusions for some of these requirements for certain practices regulated under the CWA and SDWA.

3. Treatment Levels

a. *Environmental Considerations.* Section 3004(m) states that treatment standards should substantially diminish the toxicity or mobility and minimize short-term and long-term threats. The legislative history of this provision also states that regulation under RCRA should complement and reciprocally re-enforce regulations under the CWA. S. Rept. at 16. EPA's framework for developing best demonstrated available technologies helps to ensure that toxicity and mobility are minimized. Additionally, the methods or levels derived through the BDAT process also minimize short and long-term threats to human health and the environment. Thus, in establishing BDAT, EPA seeks to achieve substantial reductions in toxicity and mobility, not merely incidental or small reductions. Available data and objectives of the land disposal restrictions program are both relevant for determining the appropriate level of minimization in individual cases. Treatment to a characteristic level will result in a substantial reduction in the toxicity or mobility of the characteristic waste matrices EPA has evaluated in this rulemaking. For example, EPA's stabilization data for arsenic demonstrated untreated EP toxicity from 41 to 6450 mg/l. Treatment of these wastes to the characteristic level of 5 mg/l results in a reduction of 88 to 99.9%. The Agency also believes that further treatment may, in some cases, continue to minimize threats to human health and the environment. However, for other waste treatability groups addressed in this rulemaking, EPA believes it only has sufficient data, at this time, to establish treatment levels at the characteristic level. See section III A above.

This section sets forth EPA's approach for developing treatment standards for each category of characteristic wastes. The Agency based its decisions on the data available at the time of this rulemaking. See RCRA section 3004(d)(1). EPA plans to re-examine these standards as new information becomes available. In addition, EPA will develop additional standards for the newly-identified wastes in the toxicity characteristic rule.

Today's rule reflects a decision to take limited, but nonetheless significant, steps within the point of generation framework. As a general matter, the Agency believes that the goals of section 3004(m) may require application of standards which go beyond the characteristic level (subject to harmonization with section 3004(g) policies) in some future cases. EPA intends in the rulemaking for TC wastes to evaluate more stringent treatment levels for more treatability groups. This would potentially require lower levels for characteristic constituents and treatment of other hazardous constituents in a given characteristic waste matrix. The phased approach in today's rule is consistent with the principle that an agency is entitled to the highest deference in deciding the sequence and grouping in which it addresses issues. *Hazardous Waste Treatment Council* v. *EPA* , 861 F.2d 277, 287 (D.C. Cir. 1988) (upholding EPA's construction of HSWA statutory provisions in a way that allowed the Agency to take one step at a time in implementing the provisions under HSWA); *Associated Gas Distributors* v. *FERC,* 824 F. 2d 981, 1039 (D.C. Cir. 1987).

(1) *Toxic Wastewaters.* EP toxic inorganic wastewaters are primarily destined for NPDES wastewater treatment systems, pretreatment systems and UIC injection wells. Given current data EPA could set treatment levels about an order of magnitude below the characteristic levels for some of the EP toxic metal wastewaters. Imposing treatment standards below the characteristic level, however, could have the effect of invalidating legitimate methods of treatment involving surface impoundments that are part of CWA wastewater treatment trains (equalization basins used to equalize flows to centralized chemical precipitation and sedimentation treatment, for example). A treatment standard below characteristic levels would need to be met prior to placement in a subtitle D treatment impoundment. This would be so even though the impoundment might treat the waste for purposes of CWA requirements. In effect, this could move BAT/PSES standards from end-of-pipe to in-process, requiring facilities to change their existing wastewater treatment systems or comply with internal waste stream requirements that would overlap with CWA requirements. Imposing such standards on Class I non-hazardous UIC disposal could interfere with protective disposal practices with no corresponding environmental benefit (see discussion on dilution below).

As a result, EPA is not imposing treatment standards below characteristic levels for such wastewaters. Based on the information in the rulemaking record virtually all wastewaters are managed in the context of CWA treatment impoundments or UIC wells.[11]

(2) *Toxic nonwastewaters.* With respect to nonwastewaters exhibiting the EP characteristic for metals, EPA determined that BDAT is based on vitrification of stabilization. These technologies are matrix-dependent types of treatment. When considering characteristic wastes, the amount of diversity within a single waste code is typically extensive. This is because, unlike listed wastes, the characteristics do not identify wastes from single processes, single industries, or single chemical species, but rather can come from virtually any process or industry.

[10] In determining that some balancing of competing section 3004(m) and 1006(b)/3004(g) interests is necessary in establishing prohibitions for characteristic wastes, the Agency is further determining that the framework outlined in the court's opinion in *HWTC III,* 886 F. 2d 355 (D.C. Cir. 1989) and the Agency's response to that opinion (55 FR 6640 (Feb. 26, 1990)) is not dispositive in the differing context of characteristic wastes. Both the opinion and the Agency's response dealt with situations where listed hazardous wastes were being disposed so there were no competing interests to balance against the Section 3004(m) mandate. Consequently, the Agency determined that until it could develop *de minimis* concentration levels which establish when threats from prohibited wastes are minimized, it would opt for the certainty of technology-based treatment standards to remove as much of the uncertainty associated with land disposal of hazardous wastes. 55 FR at 6642. Characteristic wastes present a different situation, however, due to the potential disruption of other programs, see supra, and possible minimal benefits to treatment below the characteristic levels in some cases.

[11] If EPA should receive information in the future indicating that significant volumes of wastewater is land disposed in another context EPA will reevaluate the issue of setting treatment levels lower than the characteristic level for EP toxic metals. Again EPA is utilizing its considerable discretion to address issues one at a time. See *HWTCIII,* supra, 861 F. 2d at 287.

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Using available data, it is not possible in this rulemaking, due to lack of time and data on this diverse universe, to subcategorize each characteristic waste into treatability groups designed specifically for certain industries or processes. Thus, in considering what treatment standards are achievable for EP toxic metal nonwastewaters, the Agency had to develop uniform standards based on BDAT technology that constitute all or most of the wastes identified by the characteristic.

As discussed in section IIIA. of the preamble, the Agency is confident that these wastes can be treated at least to characteristic levels. However, the Agency is unable to treatment standards below the characteristic level are achievable for all of such wastes. Certainly, as shown by data submitted by the waste treatment industry and other commenters, some samples in these waste categories can be treated to levels below the characteristic, and some to levels well below (an order of magnitude or more, in some cases). The Agency does not believe that these data are sufficiently representative, however, to warrant extrapolation to all waste matrices under a given waste code.[12] See discussion in section IIIA.

In reviewing the additional data submitted by commenters, the Agency was struck by the amount of diversity often present in the treatment data for a particular characteristic, not only confirming the matrix-dependent nature of the technology, but the difficulty of finding a single numerical standard that would be generally achievable for all wastes in that particular metal waste code. Another problem confirmed by data is that many wastes exhibit characteristics for more than one metal, and optimized treatment for one metal can preclude optimized treatment for another. Yet virtually all of the metal treatability data in this record is for treating only one metal.

Even if the Agency had enough data to require treatment below the characteristic levels for these wastes, it would likely have to establish specific treatability groups within the individual codes (as done today to a limited extent). Many of the difficulties in assessing data noted briefly above, and discussed in detail in the sections on each characteristic metal, appear to be industry or process specific. It should be noted that the Agency expects that treatment will result in levels slightly below the characteristic levels in any case. This is because most treatment technologies cannot easily be "turned off" at precisely the characteristic level and, thus, EPA believes the requirement to treat to the characteristic level will often result in further treatment.

For EP toxic pesticide nonwastewaters, treatment is based on a non-matrix dependent technology that can reduce hazardous constituent levels to orders of magnitude below the characteristic level. Thus, the types of difficulties posed for EP metals—assessing treatment achievability for a wide variety of wastes treated by a matrix-dependent technology—are not presented for pesticide wastes. Moreover, the pesticide wastes are potent carcinogens, so that removing the uncertainties of the threats they pose when land disposed is highly desirable. The Agency, thus, is establishing treatment standards for these wastes based on performance of optimized destruction technology. EPA does not believe the general regulatory difficulties in implementing this requirement to treat below characteristic levels are significant in the context of subtitle D facilities as there is a limited amount of this waste in existence and the destruction of the toxic constituents is a clear benefit over other treatment approaches.

(3) *Other Characteristic wastes.* As discussed in section IIIA., for most corrosive, reactive, and ignitable characteristic wastes, the Agency has determined that the appropriate treatment for these wastes is to remove the characteristic. The environmental concerns from the properties of ignitability, corrosivity, and reactivity are different from the environmental concern from EP toxic wastes. Toxic constituents can pose a cumulative impact on land disposal even where waste is below the characteristic level. Where wastes pose an ascertainable toxicity concern, as with high TOC ignitable wastes, and cyanide-bearing and sulfide-bearing reactive wastes, the Agency has developed treatment standards that address the toxicity concern and (in effect) require treatment below the characteristic level. As discussed in section IIIA., this approach is important to address toxic constituents in this waste. EPA does not believe the regulatory problems in implementing standards for this limited number of streams will be significant. Otherwise, treatment that removes the properties of ignitability, corrosivity, and reactivity, fully addresses the environmental concern from the properties themselves. Further discussion is contained in the preamble dealing with each specific characteristic.

b. *Regulatory Problems.* In reaching the approach set forth in today's rule, EPA has considered the advantages of additional treatment, with the difficulties in (1) implementing a requirement to treat below characteristic levels and (2) the effect of such a rule on overlapping federal environmental programs.

The characteristic level evaluated at the point of disposal serves to distinguish certain disposal practices and facilities from other permitting and regulatory requirements under Subtitle C of RCRA. Many commenters argued that there are significant advantages to providing a clear regulatory boundary which serves, in most cases, to separate the jurisdiction of different environmental programs. As discussed above, LDR provisions that apply to require treatment beyond removal of the characteristic might require complicated tracking and enforcement provisions that would apply at many subtitle D disposal facilities which are currently not subject to any subtitle C requirements. The most complicated of such requirements would involve enforcing levels below the characteristic levels. To enforce and implement such requirements, EPA would potentially need to expand the universe of disposal facilities covered by the LDR provisions to perhaps thousands of facilities.

Requiring levels of treatment below the characteristic level would also have specific disruptive impact on practices regulated, in part, under the CWA. In effect, a treatment standard below characteristic levels would need to be met prior to placement in a surface impoundment used in the treatment process. EPA estimates that up to 2000 nonhazardous treatment impoundments could be affected by a requirement for treatment below characteristic levels. There are other difficulties in applying treatment standards below characteristic levels to injection wells regulated under the SDWA which are described in detail below.

EPA does not believe that the current technical data in the record justifies treatment levels below characteristic levels for the nonwastewater EP toxic metals. Thus, EPA has not engaged in an extensive balancing of regulatory integration problems for the wastes in this rule. For the EP toxic pesticides, EPA believes treatment to the levels provided for in the BDAT incineration technology is important to destroy these particularly dangerous pesticides. Because there is a limited amount of these pesticides, EPA believes the

[12] The treatment industry data, for example, was often deficient in such information as to whether and how concentrated characteristic wastes are mixed and back calculations for dilution effects resulting from pretreatment mixing. See section IIIA.

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environmental considerations outweigh any difficulties in implementing the LDR requirement to treat below the characteristic level. For wastewaters, EPA believes the regulatory difficulties in integrating the CWA and SDWA programs outweigh the limited benefit from additional treatment based on the current information. Finally, EPA has set requirements to remove certain toxic constituents from certain ignitable and reactive wastes. Some of these treatment requirements are in the form of methods which are discussed below. Again, EPA believes the environmental benefit in terms of treatment outweights the regulatory problems in providing such standards for these wastes because of the limited circumstances involving such wastes.

4. Methods of treatment

a. *Environmental Considerations.* EPA has express authority to specify methods of treatment as the treatment standard. As discussed above, this necessarily entails a point of generation approach. Imposition of these treatment methods normally results in more than the removal of the characteristic and further minimizes threats to human health and the environment.

EPA proposed methods of treatment for certain classes of characteristic wastes. There are several advantages to specifying a method of treatment. First, EPA may not have enough data to set a level of treatment. In such cases, a method can still fulfill the purposes of 3004(m) by providing for treatment. Second, analytic methods may not exist to measure key constituents in a prohibited waste, in which case designation of a method is the only way to ensure treatment. Third, a method may treat other constituents beyond those addressed by the specific characteristic. Finally, specifying a method may preclude other treatment alternatives which the Agency believes create other risks to the environment. For example, some wastewater treatment systems remove volatile organics from the wastestreams simply by venting these volatiles to the atmosphere. However, there are two disadvantages to specifying methods of treatment: (1) It may preclude the use of alternative methods or development of alternatives that are cost-effective and consistent with Agency objectives; and (2) it establish a national requirement that may not be appropriate for a variety of case-specific applications. For these reasons, EPA must consider carefully a decision to rely on methods of treatment.

In today's rulemaking, EPA is specifying incineration or fuel substitution for ignitable characteristic wastes with high levels of total organic carbon (TOC). The TOC content of these wastes serves as an indicator of high concentrations of hazardous constituents which incineration will destroy. See, e.g., Senator Chaffee's floor statement introducing the amendment that became section 3004(m): "for wastes with a high organic content, incineration should be required in lieu of land disposal." 130 Cong. Rec. S9179 (July 25, 1984).

b. *Regulatory Problems.* To have any practical effect, methods of treatment must generally attach at the point of generation. EPA does not believe, however, that this requirement will be difficult to implement in this rule because a limited number of characteristic wastes are affected. EPA is also somewhat limiting the circumstances under which the methods would apply to avoid certain regulatory integration problems with the SDWA program regulating underground injection wells. However, as discussed below, the requirement to incinerate these wastes is entirely consistent with and promoting of the objectives of the CWA. Accordingly, EPA believes the benefits of incineration of certain categories of characteristic waste outweigh any limited regulatory problems under the CWA.

5. General Dilution Prohibition

a. *Environmental Considerations.* Dilution rules are intended to prohibit dilution in lieu of treatment and to ensure that wastes are treated in appropriate ways. As discussed in the preamble sections on treatment of characteristic wastes, EPA believes the mixing of waste streams to eliminate certain characteristic is appropriate treatment for most wastes which are purely corrosive, or in some cases, reactive or ignitable. As a general matter, these are properties which can effectively be removed by mixing. On the other hand, simple dilution is not effective treatment for toxic constituents. Dilution does not itself remove or treat any toxic constituent from the waste. Accordingly, EPA believes that a dilution prohibition for characteristic wastes is important for purposes of the treatment requirements and carries a significant benefit.

The dilution rules will help minimize hazardous constituents that are currently disposed under both the RCRA subtitle C and D programs. Although few data on specific health and environmental impacts resulting from subtitle D facilities are available, the large volume of waste and number of facilities involved present concerns about actual and potential threats. Based on a 1984 study, EPA estimated that there were 7.6 billion tons of industrial nonhazardous waste disposed in approximately 28,000 industrial solid waste and disposal facilities. More than half of these facilities were surface impoundments, which create concerns because of the mobility and physical driving force of liquids in impoundments and the current limited use of design controls. Study results indicated only sporadic use of design and operating controls at industrial solid waste landfills and surface impoundments, with only 12 percent and 22 percent, respectively, employing any type of liner system. (53 FR 33320, August 30, 1988). Study findings also reveal that few of these facilities have monitoring systems, and only 35 percent were inspected by States in 1984, the latest year for which data are available. The present inspection status is unknown. Limited data on violations of State requirements, coupled with these statistics on design and operating controls, suggest that releases may be occurring (53 FR 33320, August 30, 1988). As discussed below, EPA believes this is an area where the environmental benefits imposing a prohibition on characteristic wastes at the point of generation outweigh the problems in integrating other regulatory programs.

b. *Regulatory Problems.* As discussed below, the LDS dilution prohibition could have a significant disruptive effect on practices regulated, in part, by programs under the CWA and SDWA. EPA generally agrees with the many comments regarding impacts on these programs. In harmonizing or reconciling the general need for a dilution prohibition with the need to avoid these disruptive impacts, EPA believes it is appropriate to exempt certain practices from the dilution prohibition. These practices and the rationale for the exemptions are described in the sections that follow.

EPA does not believe these same regulatory problems apply to the program for disposal of other waste under subtitle D of RCRA. Subtitle D establishes a framework for Federal, State, and local government cooperation in controlling the management of nonhazardous solid waste. The Federal role in this arrangement is to establish the overall regulatory direction, to provide minimum standards for protecting human health and the environment, and to provide technical assistance to States for planning and developing environmentally sound waste management practices. The actual planning and direct implementation of

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solid waste programs under subtitle D, however, remain State and local functions. Most States impose some set of overall facility performance standards; however, among the States, specific design and operating standards vary greatly.

Under the authority of sections 1008(a)(3) and 4004(a) of RCRA, EPA promulgated the "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR part 257), and subsequently issued minor modifications to these Criteria. These Subtitle D Criteria establish minimum national performance standards necessary to ensure that "no reasonable probability of adverse effects on health or the environment" will result from solid waste disposal facilities or practices. The existing Part 257 Criteria include general environmental performance standards addressing eight major topics: floodplains, endangered species, surface water, ground water, land application, disease, air, and safety. Currently, EPA does not have the authority to enforce these criteria directly.

EPA does not believe this regulatory framework is at all similar to those under the CWA and SDWA which, as discussed below, the Agency is excluding from the LDR dilution rules. Specifically, there are limited federal regulatory, implementation or enforcement provisions that would require integration. (This is not the case, incidentially if treatment standards are established below characteristic levels.) In that case, the subtitle D facility would necessarily be involved in the implementation and enforcement of the prohibitions. Accordingly, EPA is codifying the general dilution prohibition for characteristic wastes with certain exceptions.

6. Exemption to Dilution Prohibition for Characteristic Wastes Treated for Purposes of Certain CWA Programs

a. *Introduction.* For listed wastes, there are generally no overlapping CWA and RCRA treatment requirements for wastewater ultimately discharged to a water of the United States or POTW.[13] (Of course, sludges or other residues from NPDES treatment trains which are subsequently land disposed are subject to the land disposal restriction provisions.) Some of these facilities, however, generate waste which exhibits a hazardous characteristic but after mixing with other waste streams ceases to exhibit that characteristic prior to placement in a subtitle D surface impoundment which is part of the wastewater treatment train. These surface impoundments are land disposal units for purposes of LDR prohibitions. The practice of mixing could thus trigger LDR dilution rules. EPA received many comments that the proposed RCRA dilution prohibition for wastewater going into these impoundments could undermine the ability of these operators to use nonhazardous waste surface impoundments as part of their NPDES treatment train.[14] This impact would occur despite the fact that further treatment would occur in the impoundment to remove constituents from the wastewater prior to discharge to waters of the United States or to a POTW. These commenters further argued that application of such RCRA rules to wastewaters already required to be treated under CWA requirements would be unduly confusing and duplicative.

b. *Environmental Considerations.* As discussed below, the NPDES program has a series of technology-based requirements for the treatment of wastewater prior to discharge to waters of the United States. See 33 U.S.C. 1314 and 40 CFR Parts 400–471. These requirements provide for treatment of wastewaters prior to discharge. Indeed, many of the LDR treatment standards are based on data used to set the CWA standards. Thus, EPA believes the overlap of an LDR dilution prohibition where an NPDES treatment train includes a nonhazardous treatment impoundment would not substantially further the treatment goals of the land disposal restrictions.

c. *Regulatory Problems.* The regulatory overlap of similar but not identical dilution rules would create significant regulatory disruption. Section 1006(b) of RCRA provides EPA the authority to consider these integration problems and set requirements that are consistent with the goals and policies of the CWA and RCRA. Many of the effluent limitations guidelines and standards, including all of those reflecting mass-based limits and standards, have factored in controls on dilution. In addition, NPDES permit writers can set requirements which reflect the nature of the treatment process, including best management practices, mass limitations in lieu of concentration based limitations, adjustments to reflect pollutants in intake water, and conditions on internal waste streams. 40 CFR 122.44(k); 122.45 (f), (g) and (h). Indirect dischargers are also subject to specific CWA dilution rules in both the general pretreatment rules and the Combined Wastestream Formula (as well as though many the categorical standards). 40 CFR 403.6 (d) and (e).

In this case, the general treatment requirements and associated dilution rules under the CWA are generally consistent with the similar requirements under RCRA. Relying on the existing CWA provisions is, thus, consistent with the goals of both Acts and avoids unnecessary duplication and potentially conflicting requirements.

EPA also believes, however, that where the Agency has established a method of treatment, and where application of that method is consistent with and promotes the objectives of the CWA program, then the dilution prohibition should apply to make it impermissible to dilute these wastes to avoid treating them by the designated treatment method. This group includes the ignitable nonwastewaters containing greater than 10% total organic carbon (TOC). The treatment methods for these wastes is incineration or, in the case of the ignitable waste, fuel substitution. Prohibiting dilution to require the specified method is entirely consistent with the regulatory framework for the CWA programs. The high TOC ignitable wastes, in particular, are inappropriate for wastewater treatment systems as the high TOC levels would overwhelm the capacity for most biological treatment systems. In addition, EPA believes there are few remaining pesticide wastes designated as D012–17. Thus, this requirement should have minimum impact on CWA systems. Accordingly, the exemption from the dilution prohibition for CWA systems is not an exemption for the requirement to follow specific methods of treatment.

[13] Wastewater which contains a listed hazardous waste and is ultimately discharged to waters of the United States under an NPDES permit pursuant to section 402 of the CWA or to a Publicly Owned Treatment Works (POTW) pursuant to section 307 of the CWA is not ordinarily subject to the land disposal prohibitions for several reasons. First, in many situations, the wastewater is managed in tanks prior to discharge and, thus, there is no placement in a land disposal unit. Second, even where a surface impoundment is used to treat hazardous waste prior to discharge such surface impoundments may satisfy the requirements of section 3005(j)(11) of RCRA in lieu of meeting section 3004(m) treatment standards. See § 268.4. Section 3005(j)(11) requires an impoundment to meet certain design requirements set out in section 3004(o)(1) of RCRA and be dredged annually to remove residues.

[14] As noted above, applying LDR requirements at a point of generation would require a facility either to (1) treat the waste prior to placement in the surface impoundment (2) obtain a "no migration variance, (3) comply with section 3005(j)(11); or (4) install tank treatment instead of using surface impoundments.

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7. Exemption from LDR Prohibitions for Characteristic Wastes Disposed Below Characteristic Levels in Wells Regulated under the SDWA

a. *Introduction.* EPA has set out a regulatory program under sections 1421, 1422, and 1425 of the SDWA which contains "minimum requirements for effective programs to prevent underground injection which endangers drinking water sources." 42 U.S.C. 300h(b)(1). Class I deep wells inject below the lowermost geologic formation containing an underground source of drinking water (USDW). 40 CFR 144.6(a).[15] These wells are subject to location, construction, and operating requirements set out at 40 CFR parts 144 and 146. In addition, EPA may authorize states to administer the UIC program. 40 CFR parts 145 and 147. There are approximately 400 such wells currently injecting only nonhazardous waste.

The large facilities that have these wells often mix waste streams and through this mixing remove the characteristic prior to disposal. A dilution prohibition would require restructuring of these facilities. Alternatively, the facilities could apply for a "no migration" variance under 40 CFR part 148.

b. *Environmental Considerations.* LDR dilution rules for wastes currently disposed of below the characteristic levels in UIC wells would be limited to toxic wastes. As discussed below, EPA is generally providing that treatment of ignitable, corrosive or reactive wastewater may be accomplished simply by removing the characteristic. This could be accomplished by mixing. (There are a few exceptions discussed in the specific discussion on treatment standards.) These general standards are based on EPA's technical evaluation of appropriate treatment for purposes of 3004(m) regardless of the disposal scenario. Thus, for these particular characteristic wastes, the application of the part 268 dilution prohibition to operators of nonhazardous waste injection wells would not require any additional treatment beyond what is already occurring. Moreover, there is a very limited amount of the pesticide wastes D012–17, and EPA is unaware of deepwell injection practices for these wastes. Thus, the characteristic wastes of concern for UIC wells in this rule are those that exhibit the characteristic of EP toxicity for metals at the point of generation.

EPA believes that the application of dilution rules to these wastes would not further minimize threats to human health and the environment. Specifically, EPA believes that disposal of these metals by underground injection at the characteristic level is as sound as the treatment option. Native formation fluids in injection zones already contain substantial concentrations of these metals. The addition of more metal-bearing fluid below characteristic levels would not appreciably alter these concentrations. Moreover, the propensity of such metals to adhere to and, thereby, generally stay contained in the injection zones makes the practice of deep well disposal of such constituents an environmentally sound one. The example of immobilizing heavy metals in a unit is also noted in the legislative history.[16] In addition, as discussed below, there is a significant body of information that EPA has received from the petition process under 40 CFR part 148 concerning the containment properties of injection zones for dilute levels of the wider range of toxic constituents. This data supports the containment properties of these injection zones.

c. Regulatory Problems. There would be significant regulatory problems from application of a dilution prohibition to this category of facilities. If such a prohibition were to apply, many well operators would seek a "no migration" variance for their wells. EPA considers such wells likely candidates to be granted variances. Currently, however, EPA is processing variances for hazardous waste injection wells and is not processing variances for nonhazardous wells.

Hazardous waste injection is specifically subject to RCRA's land disposal restrictions. RCRA section 3004 (f), (g) and (k). Approximately 65 of these facilities have submitted petitions to obtain "no migration" variances from the LDR treatment requirements as provided for in 40 CFR part 148. EPA has proposed to grant 15 such variances, has granted 12, and anticipates that many other petitions will be both proposed and granted for underground injection. Thus, as a general matter, EPA believes the practice of deep well injection can be a protective practice within the framework of the land disposal restrictions rule. The petition process, however, has been very time consuming and resource intensive. In addition, the process has involved a high degree of coordination with states that are authorized to administer the UIC permit program.

EPA experience with the "no migration" petition process indicates that many nonhazardous deep wells could probably qualify for a "no migration" variance under 40 CFR part 148. However, operators of nonhazardous waste wells have not had reason to believe that their operations would be subject to the land disposal restrictions and have not submitted variance petitions. Moreover, EPA is not convinced that the Part 148 regulations would be appropriate for nonhazardous waste wells. The goal of the SDWA regulations for deep well injection is containment of the wastes in an injection zone. This goal is consistent with the protectiveness goals behind the "no migration" variance under RCRA. There are no documented problems with the effectiveness of the UIC regulations.

Moreover, even where the practice involved disposal of hazardous waste, Congress fashioned statutory provisions in RCRA which reflect the view that there is more certainty concerning the safety of the deep well disposal practice than surface disposal practices. For example, RCRA sections 3004(c) and 3019(b) ban both landfilling of liquid hazardous waste and underground injection of hazardous waste into or above USDWs. RCRA provisions regarding deep well injection of hazardous waste, however, provided for further EPA review of this method of land disposal and allow for variances from the statutory prohibition. RCRA section 3004 (f) and (g). The legislative history of the 1984 Amendments also state that "underground injection of hazardous waste can be safe environmental technology," Statement of Senator Bentsen, 129 Cong. Rec. S9153 (daily ed. July 25, 1983), and envisioned that compliance with the then-existing underground injection control regulations could be sufficient to justify continued operation. *Id.* Through the Part 148 petitions, EPA has gained further knowledge concerning the critical issues determining the safety of the practice. In general, where the SDWA regulations are followed, injection of dilute amounts of toxic constituents is safe. Where injection is of waste below the characteristic level the injection zone will appropriately contain these hazardous constituents in a properly operating injection well.

Accordingly, if EPA were to apply a dilution prohibition to nonhazardous wells at this time, there would be

[15] A USDW is defined to include aquifers containing waters with up to 10,000 milligrams per liter ("mg/l") of total dissolved solids ("TDS"). 40 CFR 144.3.

[16] "Another example of a potentially acceptable land treatment situation involves wastes containing heavy metals. Although land treatment does not render the waste nonhazardous, a prohibition would not be necessary if there is long-term certainty that the hazardous constituents would be immobilized" H. Rep. No. 198 at 34.

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considerable disruption at facilities that EPA generally considers safe. On balance, EPA believes it is appropriate to exempt from the LDR prohibitions characteristic waste disposed below the characteristic level in these wells.

E. Implementation of Requirements for Characteristic Wastes

In today's final rule, the Agency is promulgating several new provisions concerning implementation of the land disposal restrictions for characteristic wastes. Specifically, the Agency is amending 40 CFR 268.7 and adding 40 CFR 268.9 to incorporate recordkeeping requirements and special rules for characteristic wastes, and is revising the current regulations in parts 261 and 262 regarding the identification and management of wastes that exhibit a characteristic. In addition, the Agency is clarifying which requirements apply during the period of a national capacity variance both to wastes that are prohibited on the basis of exhibiting a characteristic only, and to wastes that have applicable treatment standards as both listed and characteristic wastes. Finally, the Agency is clarifying whether to apply the TCLP or EP analytical methods to verify compliance with the treatment standards.

1. Overlap of Treatment Standards for Listed Wastes that also Exhibit a Characteristic

The Agency is today promulgating its proposed approach with respect to determining applicable treatment standards for wastes that carry more than one waste code.

(1) For wastes that carry more than one characteristic waste code, the waste must be treated to meet the treatment standard for each characteristic.

(2) If a listed waste also exhibits one or more hazardous characteristics, the waste must be treated to meet the treatment standard for each of the waste codes 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 characteristic(s).

One commenter suggested that EPA should require treatment in compliance with the most stringent treatment standard rather than the most waste-specific treatment standard. The Agency disagrees, and EPA is following the general principle set out in previous rulemakings that the more specific treatment standard takes precedence. This is the principle EPA adopted with respect to California list wastes that are covered by another treatment standard, an analogous situation. See 52 FR 25773 and 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 is necessary for that characteristic to be treated to meet the characteristic treatment standard.

The Agency received several comments indicating that subjecting listed wastes to treatment standards for characteristics is a major shift in the current regulatory program. As stated in the proposed rule, the Agency believes that 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 requiring treatment. As with the California list wastes, EPA is applying this principle at the point of generation, since otherwise the treatment standard for the characteristic constituent could be ignored by removing the characteristic. EPA is consequently promulgating new requirements in § 268.9 (b) and (c) as proposed.

EPA is further promulgating provisions specifying that disposal of a waste which at the point of disposal exhibits a characteristic is prohibited unless the treatment standard for that characteristic component is above the characteristic level. This approach is again essentially the same as that which EPA adopted for the analogous situation involving California list wastes (see 52 FR 25767), and is needed to ensure that the statutory prohibition against disposal of characteristic hazardous wastes is not violated.

2. Revisions to Waste Identification Requirements

A consequence of the Agency's interpretation that the prohibition for characteristic wastes can apply concurrently to wastes that also are listed is a change in the initial determination that a generator must make pursuant to § 262.11. That section presently sets out an either/or scheme where if the generator determines that a waste is listed, the generator does not need to determine whether the waste exhibits a characteristic (40 CFR 262.11 (b) and (c)). For purposes of compliance with part 268, however, the generator would need to know if the waste exhibits a characteristic, even if the waste is listed, because further treatment of the waste is required if the treatment standard for the listed waste does not address the characteristic property. Consequently, EPA is amending section 262.11 to indicate that generators must determine whether listed wastes also exhibit characteristics of hazardous waste for purposes of compliance with part 268.

In addition, §§ 261.21—261.24 indicate that wastes that exhibit the respective characteristics and are not listed have the designations D001–D017. However, as discussed above, generators (and other handlers) will need to know both the listed waste code and the characteristic waste code in the event a listed waste also exhibits a characteristic which is not addressed by the treatment standard for the listed waste. EPA is consequently amending the language in these sections to indicate that wastes that carry characteristic waste codes may also be listed wastes.

3. Wastes Subject to a Capacity Variance

RCRA section 3004(h)(4) states that during periods of national capacity variances and case-by-case extensions, hazardous wastes subject to those extensions that are disposed in landfills and surface impoundments may only be disposed of if the landfill or surface impoundment is in compliance with the minimum technological requirements of section 3004(o). EPA has interpreted this language to mean that the landfill or impoundment unit receiving such wastes must be in compliance with the minimum technological requirements, § 268.5(h)(2), and this interpretation was sustained in Mobil Oil v. EPA, 871 F. 2d 149 (D.C. Cir. 1989).

Under the present rule, it is possible for prohibited characteristic wastes subject to a national capacity variance to become nonhazardous. For example, certain D009 mercury wastes are subject to a two-year national capacity variance. If, during the period of the variance, such a waste was treated to be nonhazardous by a means other than retorting and was disposed of in a landfill or surface impoundment, arguably the landfill or impoundment unit would have to meet the minimum technological requirements.

EPA does not read the statute or the rules this way. Rather, section 3004(h)(4) only requires compliance "with the requirements of subsection (o)." Section 3004(o), in turn, only applies to units subject to Subtitle C. See also § 268.5(h)(2), which likewise imposes minimum technological requirements only on landfill and impoundment units that are permitted or that have interim status. Consequently, EPA does not

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interpret these provisions as requiring subtitle D landfill and surface impoundment units receiving prohibited wastes during a national capacity variance to have to satisfy the minimum technological requirements.

Finally, for wastes that are subject to more than one treatment standard, the Agency is clarifying that during the period of a national capacity variance for one of the wastes, the treatment standards for any other waste codes that have not received such a variance must be met. For example, if a K048 nonwastewater also exhibits the characteristic for chromium, the waste has a six-month capacity extension as a K048 listed waste, but no capacity extension as a D007 characteristic waste. Therefore, at a minimum, the waste must be treated to meet the treatment standard for D007 (and any other applicable characteristic treatment standard) prior to land disposal. This requirement is consistent with the Agency's approach in previous rulemakings in which it stated that in setting the treatment standard, the Agency is making a more waste-specific determination; however, this determination is not effective until the capacity variance ends. Because capacity exists to treat the characteristic waste, the characteristic treatment standards still apply, and the K048 waste must meet the prohibitions for characteristic wastes. The K048 treatment standard would then become applicable when the national capacity variance expires. See 53 FR 31188. Furthermore, if such listed/characteristic wastes have been treated so that they no longer exhibit any characteristic and are to be disposed of on a surface impoundment or landfill, the unit must meet the minimum technology requirements set out in section 3004(o), as required for listed wastes during the period of a national capacity variance.

4. Use of TCLP v. EP Analytical Methods for Compliance

The Agency proposed two alternatives in the proposed rule, that treatment standards for characteristic wastes either be a numerical standard (typically lower then the characteristic level) or be established at "the characteristic level." See, e.g., 54 FR 48430/3. If the latter alternative were adopted, the Agency did not specify whether the characteristic level would be measured by the EP test or by the TCLP. The Agency did indicate in a somewhat different context, however, that it strongly prefers to use the TCLP to measure compliance wherever possible Id. at 48432/3.

As stated in section III.D of today's preamble, EPA is establishing treatment standards for most characteristic wastes at the characteristic level. The Agency has determined that this level should be measured by the TCLP. This is the protocol that large quantity generators will use to assess the toxicity of their wastes starting on September 25, 1990 and small quantity generators will begin using on March 29, 1991. It is also the protocol used to measure the efficacy of stabilization or other immobilization treatment in most of the BDAT standards. Most of the data submitted in response to the Agency's proposal were based on the TCLP to measure treatment performance, and these data indicate (with a few exceptions) that treatment to the characteristic level, as measured by the TCLP, is achievable. (These data, incidentally, were available for reply comments, and the Agency received dozens of reply comments on the data.)

Furthermore, if EPA were to establish the EP as the protocol to measure compliance with metal standards, then regulated entities would have to subject many wastes to both the EP (for purposes of land disposal restriction compliance) and the TCLP (for waste identification purposes). The Agency prefers not to impose this type of duplicative burden. Accordingly, the Agency is adopting the TCLP as the means of measuring compliance with the metal standards for toxic characteristic Third Third wastes in this rule, with two exceptions. For lead characteristic nonwastewaters and all nonwastewaters containing arsenic as the primary hazardous constituent (*i.e.*, D004, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136), the Agency is specifying that if a waste does not achieve the nonwastewater standard based on analysis of a TCLP extract but does achieve the standard based on analysis of an EP extract, the waste is in compliance with the standard. The Agency is taking this action because the performance data used to develop the treatment standards for these wastes were based on EP toxicity leachate data. A more detailed discussion is provided in section III.A of today's preamble.

5. Newly Identified TC Wastes

There is one final interpretive point dealing with the interplay of the EP and the new TCLP. EPA interprets the statute such that wastes that exhibit the toxicity characteristic by the TCLP but not the EP are not presently prohibited, even if the constituent causing the waste to exhibit the TCLP is also a constituent controlled by the EP. This is because such wastes are newly identified pursuant to RCRA section 3004(g)(4); they were identified as hazardous after November 7, 1984.

6. Further Principles Governing Applicability

a. *Other Statutory Exemptions or Exclusions.* The issues in this rulemaking concerning when hazardous wastes become prohibited from land disposal does not change the status of other regulatory or statutory inclusions or exclusions to the definition of solid or hazardous waste found at 40 CFR 261.2–.6. These provisions can override the LDR point of generation evaluation to keep wastes from being prohibited and subject to a dilution prohibition or treatment standard. This result is consistent with EPA's existing regulation at 40 CFR 268.1.

EPA believes that different legal and policy considerations under exclusions from the statutory and regulatory definitions of solid waste and hazardous waste require an evaluation of the status of the waste at the point of disposal. Generally, these exclusions address the status of the waste without regard to a particular constituent concentration, and thus do not involve issues of treatment levels or dilution. EPA has not fully analyzed these exclusions and, in the absence of specific justification, will continue to provide exclusions from the land disposal restrictions for waste excluded from the definition of hazardous or solid waste under 40 CFR 261.2–.6.

For example, solid waste does not include solid or dissolved material in domestic sewage. RCRA section 1004(27). EPA regulations further provide that any mixture of domestic sewage and other waste that passes through a sewer system to a Publicly Owned Treatment Works (POTW) for treatment is not solid waste. 40 CFR 261.4(a)(1). Thus, even if a waste is hazardous at the point of generation, the domestic sewage exclusion would allow land disposal of the solid waste at the POTW without meeting treatment standards under section 3004(m) (assuming that there is no land disposal of the waste before it becomes subject to the domestic sewage exclusion).

b. *Restricted Wastes Versus Prohibited Wastes.* Consistent with the cradle-to-grave mandate of RCRA's land disposal restrictions, those who manage hazardous waste will need to assess what LDR prohibitions apply at different points in the waste management process. First, generators of restricted wastes must assess whether the waste is prohibited under the LDR. Restricted waste is defined by several conditions.

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See 51 FR at 40619—40632 (November 7, 1986); 54 FR 36967, 36968 (Sept. 6, 1989).

As discussed above, however, certain statutory exemptions that would be evaluated at the point of land disposal may apply to restricted wastes. Moreover, during either a national capacity variance under section 3004(h)(2) or a case-by-case variance under section 3004(h)(3), disposal of certain restricted wastes into certain units would not be prohibited. Also, placement of waste in a "no migration" unit is not prohibited land disposal, nor is placement in an impoundment in compliance with 40 CFR 268.4. In addition, there are situations where waste in managed in a way which results in no land disposal. EPA outlined which LDR prohibitions attach to wastes managed under each one of the above scenarios in 54 FR 36967, 36968 (September 6, 1989).

c. *Changes in Treatability Groups.* The question of whether a given waste is going to prohibited land disposal is complicated by the fact that wastes may change form or treatability groups after undergoing treatment. For example, treatment of a wastewater often generates a nonwastewater sludge as well as a treated wastewater. Also, incineration of a nonwastewater can generate a nonwastewater (ash) as well as a wastewater (scrubber water). (A treatability group is defined both in terms of the applicable waste code and the form the waste is in.) The specific problem addressed here, which occurs most often with respect to characteristic wastes, is the effect that changes in treatability groups have on the initial status of a waste as prohibited or non-prohibited.

First, by way of background, the part 148 and 268 regulations generally divide the universe of wastes potentially subject to land disposal prohibitions into two broad categories: wastewaters and nonwastewaters. For purposes of the LDR program, "wastewaters" are generally defined to have less than 1% total organic carbon (TOC) and less than 1% total suspended solids. Any other waste stream is deemed a nonwastewater. (There are certain enumerated exceptions from certain wastes such as F001–F005 solvents, and K011, K013, and K014 acrylonitrile wastes. See generally § 268.2 in today's rule, incorporating the various regulatory definitions.) Part 268 provides for different treatment standards for these two broad categories of waste. The standards may also have different effective dates because of national capacity variances. Treatment standards for listed wastes apply to the waste as generated as well as to all of the residual wastes that are generated in treating the original prohibited waste. *See* 53 FR 31138, 31145 (August 17, 1988). However, when EPA specifies a treatment method as the treatment standard, residues resulting from the required treatment method are no longer prohibited from land disposal (unless EPA should specify other requirements). 54 FR 26594, 26624, 26630 (June 23, 1989).[17]

A change in treatability group during the waste management process can affect whether the waste prior to the change in treatability groups is subject to certain LDR requirements. The following rules are important to understand this point. First, if a treatability group, and treatment residues in the same treatability group, is not going to prohibited land disposal, then neither the original waste nor the residue is subject to the treatment standards or to the dilution prohibition. As a corollary, waste *is* prohibited if the treatability group, or residues from the same treatability group is land disposed. This interpretation provides a clear line of demarcation, avoids the enormous difficulties of determining new points of generation every time a hazardous waste is altered in some respect, and avoids having an initial waste's status as prohibited determined in all cases by some later management of a residue derived from the initial waste.

d. *Examples.* Several examples will be useful to help clarify this point.

Example 1. Listed wastewater A is treated in a tank that yields two residue streams: nonwastewater residue B and wastewater residue C. The nonwastewater residue is land disposed and the wastewater residue is discharged pursuant to an NPDES permit without being land disposed.

Only nonwastewater residue B is going to prohibited land disposal. Moreover, residue B is a newly generated hazardous waste belonging to a different treatability group than the original waste. *See* 53 FR 31209; 52 FR 25667 col. 1 (July 8, 1987). The original hazardous wastewater A is a restricted waste, but not prohibited, and so is not subject to the dilution prohibition in 40 CFR 268.3 or any treatment standard under part 268. Wastewater residue C also is a restricted waste (due to the "derived from rule" it carries the same hazardous waste code under 40 CFR part 261 as the original waste A), but it is not a prohibited waste because the wastewater treatability group is not going to prohibited land disposal.

Example 2. Listed nonwastewater D is treated to yield two nonwastewater residues E and F (which carry the same waste code as D based on the derived from rule). Residue E is incinerated and the ash is land disposed; residue F is directly reused as a substitute for a commercial chemical product. In this case, nonwastewaters D and E are subject to treatment standards and the dilution prohibition. EPA does not want impermissible dilution of nonwastewater D to be the reason that the nonwastewater residue E meets the BDAT level. Thus, since there is no change in treatability group between the original point of generation and land disposal for one residue of the original waste D the part 268 prohibitions apply. However, residue F is not a prohibited waste because the definition of solid waste excludes secondary materials that are directly reused as substitutes for commercial chemical products.

As illustrated by the above examples, a unit treatment operation can be a point of generation for certain treatability groups. To assess what prohibitions apply, one must first determine whether any residues of the listed waste go to prohibited land disposal. If no residues are land disposed then part 268 treatment requirements do not apply. If one or more residues are placed in prohibited land disposal, the dilution prohibition applies between the point of land disposal and the point that a given treatability group first exists. In example 1, that point is immediately after the tank treatment operation. In example 2, that point is the original point of generation for nonwastewater D.

The rules regarding treatability groups apply similarly to characteristic wastes. The fact that a waste loses its hazardous characteristic at some point prior to land disposal does not constitute a change in treatability group. The fact that the derived from rule does not apply to characteristic wastes is irrelevant because the derived from rule only affects hazardous waste status, not treatability group determination (which is a function of physical form). To determine if a characteristic waste is prohibited, the decision is still made based on whether the waste or any residue in the same treatability group is destined for land disposal. This approach is necessary to assure that this

[17] 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. *See* 52 FR 21012 (June 4, 1987); but see 52 FR 25767 (June 8, 1987) noting special circumstances when California list wastes are involved. Dewatering technologies (such as filtration and centrifugation) that are designed to separate wastewater from nonwastewater are not prohibited.

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level was met by treatment and not by dilution. The following example helps illustrate this decision rule.

Example 3. Wastewater J is EP toxic for lead. It is treated in a tank and generates a sludge K, that is non-hazardous. The treated wastewater L, which no longer exhibits a characteristic, is then sent to a surface impoundment for further treatment, after which it is discharged under an NPDES permit. The sludge is sent to a landfill.

The sludge K is not a restricted hazardous waste, notwithstanding that it derives from treatment of a characteristic hazardous waste. This is because it is a new treatability group which is not hazardous at point of generation. The status of wastewaters J and L is determined by the special rules for characteristic wastes managed in CWA systems; therefore, they are prohibited wastes but are not subject to a dilution prohibition. Since wastewater L meets the treatment standard when it is land disposed, the disposal is legal.

Example 4. Electroplating wastewater M which exhibits a hazardous characteristic, is treated in a tank to yield a treated wastewater N and a nonwastewater sludge O. The treated wastewater N, which no longer exhibits a hazardous characteristic, is discharged into a Class I injection well and the sludge is sent to a landfill.

In this example, neither wastewater M nor N is a prohibited waste due to the special rules for wastes managed in Class I injection wells subject to the SDWA. Sludge O is a newly generated waste that meets the listing description for EPA Hazardous Waste No. F006. Sludge O is a prohibited waste because this nonwastewater is destined for placement in a land disposal unit.

Example 5. An EP toxic wastewater slude P is dewatered to yield a nonwastewater sludge Q which is EP toxic and now exceeds the California list level for lead. Also, a wastewater R is generated which exhibits a hazardous characteristic. The sludge Q is sent to a landfill and the wastewater R is mixed with domestic sewage and sent through a sewer system to a POTW.

Both sludges P and Q are prohibited wastes because Q is sent to land disposal and P is in the same treatability group as Q. Note that during a (hypothetical) national capacity variance for the lead characteristic treatment standard, Q must comply with the California list standard for lead. Wastewater R is a restricted waste, but not a prohibited waste because it is covered by a § 261.4 exclusion from the definition of solid waste.

In conclusion, it should be noted that the previous discussion applies in determining when prohibitions attach. The issue of what administrative requirements apply by virtue of a waste being restricted is discussed elsewhere in this preamble.

F. Amended Tracking System for Characteristic Prohibited Wastes

EPA's decisions concerning characteristic wastes necessitate certain modifications of the tracking provisions contained in § 268.7. See 54 FR 48491 and 48492 (requesting comment on this point). This section of the preamble outlines the modifications the Agency is making to the existing rules; and clarifies certain points regarding the rules' applicability to listed wastes as well as to characteristic wastes. The Agency is also amending one of the certification provisions that presently fails to mention compliance with the prohibition on impermissible dilution.

A. Applicability of Tracking Requirements

1. Clarification of and Changes to Generally Applicable Recordkeeping Requirements. Section 268.7 applies to generators, treaters, storers, and disposers of restricted wastes. Most of the provisions contemplate that restricted wastes are being shipped off-site for treatment or disposal (see § 268.7 (a)(2) and (a)(3), and § 268.7 (b)(4) and (b)(5)). The first point the Agency wishes to address is the existing requirements that apply when restricted wastes are managed on-site. At a minimum, certain recordkeeping requirements are triggered. Section 268.7(a) states that generators must first determine whether their waste is restricted. Section 268.7(a)(6) indicates that generators must retain a copy of all demonstrations and other waste analysis or documentation for all wastes sent to either on-site or off-site treatment, storage, or disposal. The Agency interprets these two provisions to mean that ordinarily generators managing hazardous wastes on-site must determine if the waste is restricted, and keep some documentation of that determination plus some documentation of where the restricted waste was treated, stored or disposed—whether treatment, storage, or disposal occurs on-site or off-site. These recordkeeping requirements for on-site management are needed to implement the various prohibitions or to account for those restricted wastes that for some reason are not also prohibited. The Agency notes briefly that certain wastes are not subject to recordkeeping requirements at all by virtue of the exemptions from all of part 268 that are contained in sections 268.1 (b) and (e). (See 54 FR 38968 (September 6, 1989), discussing what a "restricted" waste is.)

The Agency is applying the existing § 268.7 (a) and (a)(6) requirements to characteristic wastes that are restricted under today's final rule. These requirements apply even when the hazardous characteristic is removed prior to disposal, or when the waste is excluded from the definition of hazardous or solid waste under § 261.2–.6 *subsequent to the point of generation.* For example, if a characteristic waste is not prohibited because it is discharged pursuant to a NPDES permit without land disposal, some record must still be kept indicating why the waste is not prohibited. (For example, a statement that there is no land disposal in the system prior to the § 261.4 exclusion should be kept in the facility's operating record.) The rationale for this is that the § 261.4(a)(1) exclusion for domestic sewage does not attach until the mixture passes through the sewer system to a POTW; in the interim, the waste is restricted. (See also section III.E.6 of today's final rule.) Finally, this information should already exist in any case, to justify the absence of subtitle C regulation.

B. Tracking (i.e. Notification/Certification) Provisions Applicable to Generators Shipping Wastes Off-Site

Under existing § 268.7(a), generators managing restricted wastes must determine whether the wastes meet applicable treatment standards on the point of generation, or are otherwise exempt from those standards. Separate tracking provisions apply to each of these situations. Section 268.7(a) (1), (2), and (3). In all cases, however, the generator must prepare a notice for each off-site shipment setting out the hazardous waste identification number, applicable treatment standard or prohibition level, manifest number, and available waste analysis data. If a generator's waste meets the treatment standard, the generator must prepare a certification to this effect. (EPA is thus using the terms "tracking document" and "notification and certification" synonymously in the discussion that follows.)

If a generator's characteristic waste has been treated to meet the treatment standard before it is sent off-site, EPA believes that the existing tracking scheme requires some modification. There are two principal reasons to make changes. Characteristic wastes that meet treatment standards will be sent (almost invariably) to subtitle D facilities. EPA is concerned that sending part 268 notifications and certifications

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to subtitle D facilities could be counterproductive. These facilities are not familiar with subtitle C paperwork and could easily mistake the tracking forms (i.e. the notifications and certifications) for manifests and refuse to accept the shipment. Even if the forms are not mistaken for manifests, the subtitle D facilities could view the forms as describing hazardous wastes and refuse to accept the wastes. This could result in a situation where scarce subtitle C management capacity is used for non-hazardous wastes because subtitle D facilities are refusing the non-hazardous wastes.

These potential misunderstandings are probably solvable as subtitle D operators become more sophisticated and as EPA further implements its land disposal restriction training and guidance efforts. The Agnecy believes further, however, that under today's rule no important interest would be vindicated by requiring notifications and certifications to be sent to subtitle D facilities. When listed wastes are involved, the tracking document tells disposal facilities what standard the waste must meet before it can be land disposed. Treatment standards for most characteristic wastes are established at characteristic levels, however. Thus, these wastes can be land disposed in a subtitle D facility when they no longer exhibit a characteristic. Having a generator certify to an off-site subtitle D facility that the waste no longer exhibits a characteristic adds little or nothing to the information the disposal facility needs to know to dispose of the waste. That is, the disposal facility already must determine that the waste no longer exhibits a characteristic. Since under the present rule, sending the tracking forms to subtitle D facilities could normally have only the counterproductive effects discussed in the previous paragraph, EPA has determined that the tracking forms should not accompany shipments from generators to subtitle D facilities. (As noted below, the Agency is adopting the same approach for any shipments to subtitle D facilities, so that a treatment facility that has treated a characteristic waste to meet a treatment standard also would not send tracking documents to a subtitle D disposal facility.) EPA realizes that some of the treatment standards in today's rule, notably those for reactive cyanides and pesticides, and the standards for characteristic wastes that are treatment methods, would generally result in treatment below characteristic levels. In these cases, the tracking documents would add information useful to a subtitle D facility. EPA is concerned enough about potential confusion and disruption of subtitle D disposal practices, however, that at this time the Agency believes it the better decision not to require tracking documents for this set of wastes to go to subtitle D facilities.

By deciding that tracking documents for prohibited characteristic wastes that no longer exhibit a characteristic should not go to subtitle D facilities, the Agency is not deciding that notifications and certifications should not be prepared for such wastes. The Agency's concern is where those notifications and certifications are sent. EPA believes, and is requiring, that the notifications and certifications be sent to the appropriate EPA Regional Administrator or his delegated representative, or to a state authorized to implement the land disposal restrictions. The person preparing the notification and certification must also include the identity and address of the facility where the treated waste is sent, including the address. This is the approach the Agency adopted in an analogous circumstance where sending notifications and certifications to the ultimate disposer would be counterproductive or otherwise be ill-advised. See § 268.7(b)(8) and 53 FR 31198 (Aug. 17, 1988) (notifications and certifications of persons treating hazardous wastes to produce hazardous waste-derived products that are to be used in a manner constituting disposal are to send the notifications and certifications to EPA or to an authorized state, not to the ultimate user of the hazardous waste-derived product). By requiring notifications and certifications to be prepared, EPA is also assuring that a record is kept that the characteristic waste has been treated to meet the standard and not impermissibly diluted. Generators (or treatment facilities, see below) would also have to certify that these requirements were satisfied. Thus, the key objectives of the notification and certification provisions are satisfied.

EPA is making some slight modifications in the notification form that would be sent to EPA (or to an authorized state). This is because the existing notification form refers to the waste's ID number and manifest number when shipped. Since wastes no longer exhibiting a characteristic have neither an ID number nor a manifest number, some small modifications are necessary. While the notification form would not contain hazardous waste codes, it must contain a complete and accurate description of the waste, including its former hazardous waste classification. In addition, although a manifest number would not be included, the notifications must clearly identify the facility receiving the waste.

EPA is not amending the tracking requirements for those characteristic wastes that still exhibit a characteristic when they are sent off-site. All of the normal § 268.7(a)(1) notice requirements fit this situation (i.e. the waste has an ID number; it does have to have a manifest, etc.) and do not require any change. The tracking document also would be going to a subtitle C facility so that none of the counterproductive effects discussed above with respect to subtitle D facilities would occur. Thus, no changes to existing rules are required.

The following examples illustrate how the revised tracking requirements would apply to generators of characteristic wastes:

1. Generator A generates a D008 nonwastewater that is sent off-site to a treatment facility.

The generator would prepare a § 268.7(a)(1) notice which would set out the EPA hazardous waste number, treatment standards, manifest number, and any waste analysis data. Because the waste is still hazardous, no revised notice is necessary.

2. Generator B generates a D008 nonwastewater that is not a spent lead acid battery. The generator treats the waste on-site to meet the treatment standard and then sends it off-site for disposal in a subtitle D landfill.

Generator B would have to prepare a notice and certification to document that the waste has met the treatment standard and has not been diluted impermissibly. Rather than send the notification and certification to a subtitle D facility, the generator would send it instead to the EPA Regional Office or to an authorized state. Included on the notification would be the identity and location of the subtitle D facility where the waste has been sent.

C. Tracking Provisions Applicable to Treaters

EPA is adopting the same approach for treaters of characteristic wastes as it is for generators. Thus, tracking documents for shipments of characteristic wastes that meet a treatment standard, and therefore no longer exhibit a characteristic of hazardous waste, would be sent to EPA or an authorized state (along with information documenting the receiving facility's location), not to a subtitle D facility. The reasons are the same as those for generators discussed above. EPA is also making the same slight

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adjustments in the notification requirement.

The following examples illustrate how the amended rules would apply to treaters:

1. Treater A receives a D007 nonwastewater that it treats to meet the treatment standard and sends to a subtitle D landfill. The treater also generates a wastewater in the course of treatment that does not exhibit a characteristic.

The treater must prepare a notice and certification which it would send to the EPA Regional Office or to an authorized state. The wastewater generated during treatment is not a prohibited waste because it is a new treatability group whose status as a non-prohibited waste is determined when it (i.e. the new treatability group) is generated. Therefore, parf 268 does not apply to the wastewater.

2. Treater B receives a high TOC ignitable waste that it incinerates. The ash, which no longer exhibits a characteristic, is sent to a Subtitle D. landfill.

The treater would prepare a notification and certification and send them to EPA or to an authorized state, as in the previous example. At least at this time, the Agency is not requiring that tracking documents be sent to subtitle D facilities, even when the treatment standard is a designated method.

D. Land Disposal Facilities

Under existing rules, subtitle C disposal facilities receiving prohibited wastes must keep copies of the notice and certification prepared by the generator and/or the treater, must test wastes (or waste extracts) at a frequency specified in their waste analysis plan (as modified in today's rule), and must dispose of certain types of wastes in minimum technology units. Section 268.7(c) (1), (2), and (3). These requirements do not fit well for the characteristic wastes prohibited in today's rule. The requirement of disposal in minimum technology units does not have any applicability at all. Moreover, if a land disposal facility is a subtitle D facility receiving non-hazardous waste, EPA does not believe that testing requirements are appropriate to implement today's rule. These facilities are already barred from accepting hazardous waste and so must ascertain if the wastes they are receiving exhibit a characteristic. Thus, since few of the treatment standards adopted today require treatment to levels below the characteristic, the Agency believes that existing controls to ensure against receipt of hazardous waste will constitute sufficient corroborative testing by a disposal facility. The Agency is thus indicating that the requirements of § 268.7(c) do not apply to Subtitle D disposal facilities receiving wastes that no longer exhibit a characteristic.

E. Changes in Certification to Reflect Dilution Prohibition

EPA is also amending the certifications of compliance required of treaters and generators to state that the treatment standard was not achieved by a form of impermissible dilution. This requirement, of course, is already contained in § 268.3 and today's amendment simply includes a reference to this requirement in the certification. (The existing certification for treatment facilities in fact refers to the dilution prohibition, but does so in an overbroad manner by referring to all dilution, rather than only impermissible dilution. EPA is thus modifying this reference in today's rule.)

G. The Dilution Prohibition as it Applies to Centralized Treatment

1. Background

EPA discussed the issue of permissible and impermissible dilution of prohibited wastes at length in previous rulemakings. EPA's existing rules state that prohibited wastes cannot be diluted in order to circumvent a statutory or regulatory prohibition or effective date. 40 CFR 268.3.[18] The rules also generally discourage aggregation of wastes not amenable to cotreatment by providing that when wastes with different standards for a common constituent are combined for purposes of treatment, the treatment residue must meet the lowest applicable treatment standard. 40 CFR 268.41(b).

In interpretive preamble discussions, the Agency explained that these rules are not intended to discourage legitimate centralized treatment, and that aggregation of wastes preceding legitimate centralized treatment is not considered to be impermissible dilution. See *e.g.*, 52 FR 25766 (July 8, 1987) and other notices there cited. However, the Agency noted that centralized treatment of incompatible wastestreams was not legitimate treatment and constitutes impermissible dilution. *Id.* For example, it is impermissible dilution to aggregate a heavily concentrated organic solvent for which incineration is the appropriate treatment technology with less concentrated solvent streams for which biological treatment is appropriate.[19]

In this rulemaking, EPA believes that it is a necessary and responsible action on the Agency's part to indicate how these existing rules apply when prohibited characteristic wastes are involved. Contrary to the views of some of the commenters, this is not a new issue unrelated to the general substance of the Third Third rulemaking. Absent discussion, the existing rules would still apply to prohibited characteristic wastes, but the regulated community would be unaware of how the Agency interpreted their application and would be potentially unable to determine how to conduct their operations in order to comply with the dilution prohibition. EPA also believes that further clarification of the dilution rules with respect to prohibited listed wastes is warranted.

2. Summary of Proposal

EPA's proposal dealt with two particular issues. The first was the question of what constitutes legitimate treatment as opposed to impermissible dilution. The Agency indicated that any dilution that failed to meet the section 3004(m) standard of substantially reducing the prohibited waste's toxicity or mobility would be impermissible, and further proposed to quantify this statutory standard by indicating that there must be some actual reduction in the prohibited waste's toxicity or mobility as a result of treatment. 54 FR 48494. To satisfy this test, the Agency indicated at a minimum that there would need to be actual reduction through treatment of at least one BDAT constituent for each prohibited waste that is treated. *Id.* EPA further proposed that any dilution of a prohibited waste to render it non-hazardous, in lieu of treating, would be considered impermissible. *Id.* at 48495. The Agency solicited comment, however, on whether dilution could be considered a legitimate form of treatment for certain prohibited characteristic wastes. *Id.* at 48496.

These proposals were the focus of many of the comments, most dealing with the implications for wastewater

[18] Although section 268.3 is written in terms of "restricted" hazardous wastes, it applies equally to the narrower class of prohibited hazardous wastes. See 54 FR 36968 (Sept. 6, 1989) explaining the applicability of the dilution prohibition.

[19] EPA notes that its authority to promulgate a dilution prohibition rests not only on the land disposal restriction statutory provisions and Congressional directives (see in particular section 3004(m) and related statutory requirements for EPA to establish pretreatment standards as a condition to land disposal; see also H. Rep. No. 198, 98th Cong. 1st Sess. 38 (1983) and S. Rep. No. 284, 98th Cong. 1st Sess. 17), but in addition, the more general authority in section 3004(a)(3) to establish treatment standards "as may be satisfactory to the Administrator" and "as may be necessary to protect human health and the environment".

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treatment systems that include land-based treatment (often biological treatment ponds) or storage (for example, holding ponds for corrosive wastes that have been neutralized by dilution). Commenters also correctly viewed this issue as being intertwined (at proposal) with the implications of requiring treatment of characteristic wastes below the characteristic levels. More broadly still, the issue presents another aspect of the question of whether to determine if wastes are prohibited at the point of generation or at the point of disposal.

3. Today's Action

The existing rules on dilution and EPA's interpretive statements regarding those rules indicate that the dilution prohibition has a two-fold objective: (1) To ensure that prohibited wastes are actually treated; and (2) to ensure that prohibited wastes are treated by methods that are appropriate for that type of waste. EPA has acknowledged that prohibited wastes which are aggregated are not diluted impermissibly if they are treated legitimately in centralized treatment systems, irrespective of the dilution inherent in such a system. Thus, if "dilution" is a legitimate type of treatment, or a necessary pretreatment step in a legitimate treatment system, such dilution is permissible. Conversely, prohibited wastes that are "treated" by inappropriate methods, or sent to treatment systems that do not treat the wastes, are diluted impermissibly.

In applying these principles to characteristic wastes, EPA encountered two major difficulties: first, the interface with regulatory systems established pursuant to the Clean Water Act and Safe Drinking Water Act, and second, difficulties in being able to quantify the proposal in a meaningful way. In section III.D above, we have already discussed the potential difficulties of integrating a full-scale dilution prohibition with the Clean Water Act's NPDES and pretreatment regulations, and the Safe Drinking Water Act's UIC program. We explain below the attempts EPA made to quantify the proposed standard, and the obstacles the Agency encountered.

The Agency's proposal to require reduction of a BDAT constituent as a means of evaluating if impermissible dilution has occurred did not indicate how much reduction would be deemed adequate, and thus without further elaboration not only fails to provide clear guidance but also potentially fails to achieve the objective of assuring that wastes are treated by an appropriate treatment method. More importantly, quantifying the extent of removal necessary to be considered legitimate treatment leads to a very complicated system given the number of prohibited wastes, treatability groups, treatment methods and treatment train configurations.

Given these problems and complications, EPA has decided that the most constructive course is to provide additional interpretive guidance on the existing dilution prohibition contained in § 268.3, and to explain more fully how those rules would apply in specific situations. We also explain again how we have determined to deal with the interface between RCRA and other wastewater regulatory programs.

a. *The existing dilution prohibition ordinarily would not apply to prohibited characteristic wastes generated and managed in treatment systems regulated by the CWA or SDWA.* As explained in a previous section, EPA has determined in most cases not to apply a dilution prohibition to characteristic wastes that are generated and managed in treatment systems regulated under the CWA or SDWA. EPA believes, however, that where the Agency has established a method as the treatment standard for a characteristic waste, and that where application of that method is consistent with and promoting of the objectives of the Clean Water Act or the Safe Drinking Water Act programs, then the method of treatment attaches to the waste at the point of generation, and dilution to change the treatability group to avoid application of the method is impermissible. For example, in this rule, this is true of the ignitible nonwastewaters containing greater than 10% TOC and the EP toxic pesticide wastewaters (D012–17) if these wastes are managed in wastewater treatment systems regulated under the Clean Water Act. The treatment method for these wastes is incineration, fuel substitution, or some type of wastewater treatment technology that destroys organics. Not only are these wastes amenable to conbustion treatment (or other treatment that destroys organics), but they typically contain high concentrations of toxic organic constituents whose destruction furthers the RCRA goal of decreasing waste toxicity and minimizing threats from land disposal.

Prohibiting dilution of these wastes (*i.e.*, requiring application of a specified treatment method) is entirely consistent with the existing regulatory framework of CWA's NPDES/pretreatment programs. For example, the 10% TOC ignitible wastes are inappropriate for wastewater treatment as they would overwhelm the capacity of most biological treatment systems. (As noted in the preamble section describing the D001 treatment standards, EPA in fact developed the 10% TOC cutoff for ignitible wastes based on the outer limit of design capacity for biological treatment systems.) The Clean Water Act effluent limitations guidelines and the standards addressing these types of wastes already contemplate that these wastes will not be diluted, but rather will be treated in the appropriate manner.

The logic that forces this decision for these wastes in a NPDES/pretreatment Clean Water Act system is not equally persuasive in the case of wastes disposed of by injection. As noted in section III.D, Class I deep wells inject below the lowermost geological formation containing an underground source of drinking water. Deep wells are not currently injecting wastes that contain any of the pesticide constituents found in D012–17 characteristic wastes. Additionally, there is not a design concern of overwhelming the biological treatment system in the deep well scenario. In this instance, it is illogical to force deep wells to utilize a specified method as there is little concomitment environmental or technical benefit through its utilization. Therefore, in today's final rule, the Agency is exempting deep wells from specified methods and the dilution prohibition as long as the characteristic is removed before disposal.

b. *Dilution is considered to be an acceptable method of treatment for non-toxic characteristic wastes.* Although EPA proposed that the dilution prohibition would cover all characteristic wastes, the Agency specifically noted that dilution might be an acceptable type of treatment for non-toxic characteristic wastes and solicited comment on the issue. 54 FR 48496. After considering the comments, the Agency has determined that for non-toxic hazardous characteristic wastes (*i.e.*, wastes that exhibit a hazardous physical or chemical property), it should not matter how the non-toxic characteristic property is removed so long as it is removed. Thus, dilution is an acceptable treatment method for such wastes. (This issue is discussed in more detail in the sections on each particular characteristic waste.). The Agency realizes that this approach does not fully address the potential problem of toxic constituents that may be present in such wastes, nor encourages minimization or recovery of non-toxic characteristic hazardous wastes. EPA has determined that these potential problems should be addressed, if at all,

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in other rulemakings (or potentially in a reauthorized statute) and are too difficult to resolve in this proceeding, given the extraordinary pressures and limited review time imposed by the May 8 statutory deadline.

EPA also notes that it considers high TOC ignitable nonwastewaters, reactive cyanide wastes, and reactive sulfide wastes to be toxic characteristic wastes. As noted above, the high TOC ignitables have been shown to frequently contain high concentrations of organic toxicants. Reactive cyanide and sulfide wastes obviously contain toxic constituents. Thus, dilution would not be an appropriate method of treatment for any of these.

c. *Determining when types of treatment (including centralized treatment) involving dilution are permissible.* The Agency is able to provide limited additional guidance today on the issue of when treatment methods involving dilution are permissible. The issue frequently arises when prohibited wastes are aggregated for purposes of treatment. First, if the wastes are all legitimately amenable to the same type of treatment, and this method of treatment is utilized for the aggregated wastes, the aggregation step is not impermissible dilution. Thus, it is permissible (and normally desirable) for prohibited organic-containing wastes that are suitable for combustion to be aggregated before combustion even though the concentration of organics in some of the wastes decreases. (See, for example, the discussion for wastes K048–52.) On the other hand, as noted above, aggregation of high TOC ignitable wastes with ignitable wastewaters for centralized biological treatment is not permissible. Biological treatment is inappropriate for the high TOC ignitable wastes, and the aggregation step merely dilutes the high TOC stream.

As noted above, EPA is unable to quantify across-the-board what types of treatment are appropriate for particular prohibited hazardous wastes (both listed and characteristic). Clearly, as stated at proposal, units would have to be doing some treatment (*i.e.*, removing toxicity or mobility of BDAT constituents). In addition, treatment units would have to be treating wastes that are amenable to treatment in that type of unit or by that type of treatment, or, in the case of centralized treatment units treating aggregated wastes, appropriately combining wastes for common treatment. An example of type of treatment that is inappropriate for treatment of certain prohibited wastes would be biological treatment systems used to treat prohibited wastes having treatment standards for metals. In these systems, metal removal is incidental and nowhere as efficient as systems designed to treat metals; biological treatment systems are designed solely for organic treatment. (EPA notes, however, that since it is not applying dilution rules for most characteristic wastewaters, the above example would only apply in cases when a listed prohibited metal-bearing wastewater—a wastewater with treatment standards for metals—was being treated in a biological treatment unit. If this hypothetical biological treatment were a surface impoundment, EPA would not view it as satisfying the requirement of section 3005(j)(11) and § 268.4 that it be conducting "treatment." See discussion at 52 FR 25778–79 (July 8, 1987) where EPA determined in an analogous circumstance that impoundments which primarily evaporate hazardous constituents do not qualify as section 268.4 impoundments which may receive wastes that have not met the treatment standard.) The clearest objective indication that proper treatment for a prohibited waste is being conducted is if the treatment is the same type as that on which the treatment standard is based. Thus, any aggregation before such treatment would ordinarily not be considered to be impermissible dilution. However, other forms of treatment may also be appropriate. Such determinations will be made on a case-by-case basis.

d. Dilution to remove a characteristic. EPA proposed that prohibited hazardous wastes could not be diluted by impermissible means to render them non-hazardous, even though the waste resulting from dilution would not have to be managed in a subtitle C unit. 54 FR 48495. Although this possibility exists for all prohibited wastes—both those that are listed (i.e., dilution to achieve delisting levels) and those that exhibit characteristics—the issue arises most often with respect to characteristic prohibited wastes.

EPA is finalizing this approach in the final rule, modified, however, by a number of principles discussed above. Thus, since it is permissible to dilute prohibited non-toxic ignitable, reactive, and corrosive wastes, it is permissible to remove the characteristic from such wastes by this means. Second, dilution of prohibited characteristic wastewaters is normally permissible because the Agency does not wish to disrupt existing regulatory programs developed under other statutes for such wastewaters. These two modifications address the concerns raised by many of the commenters.

For other situations, however, dilution to remove a prohibited waste's characteristic (or to render it delistable) is used "as a substitute for adequate treatment to achieve compliance with [a treatment standard]", and so falls within the express terms of the § 268.3 dilution prohibition. Furthermore, as the Agency explained in detail in the proposal, if the dilution prohibition were not to apply in such circumstances, the authority Congress granted the Agency to establish treatment standards for characteristic wastes would be essentially meaningless. Thus, EPA adheres to the position that the act of impermissibly diluting a prohibited waste so that it no longer exhibits a characteristic (or is rendered delistable) is illegal.

5. Examples

a. Facility A generates an EP toxic wastewater that it mixes in tanks with other wastewater so that the characteristic is removed. After mixing, the aggregated wastewaters are discharged to waters of the United States.

The dilution prohibition does not apply because the wastewater is not a prohibited waste; it is not being land disposed. In addition, the Agency has determined not to apply the dilution prohibition rules to characteristic wastewaters (with the exception of those subject to certain treatment methods that are managed in Clean Water Act facilities).

b. Facility B generates a wastewater that is corrosive and EP toxic for a pesticide. It is mixed in tanks with other wastewaters generated at the same facility so that both characteristics are removed. The aggregated mixture is then injected into a Class I UIC well. While a restricted waste at the point of generation, these wastes are not prohibited because they are injected below the characteristic level in a Class I injection well. See § 268.1(c)(3).

c. Facility C generates a wastewater that is a listed hazardous waste that contains metals for which EPA has established treatment standards. It aggregates this waste with organic wastewaters that are generated on-site so that the metal levels in the aggregated wastewaters are below the treatment standard. The aggregated mixture is then sent to a surface impoundment for biological treatment and then discharged to waters of the United States.

The dilution prohibition would be violated. EPA does not consider

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biological treatment to be an appropriate mode of treating metal-bearing toxic wastes (*i.e.*, wastes for which there are treatment standards for inorganic hazardous constituents). Any metal removal is incidental because the treatment technology is not designed to remove metals. In addition, removals are at a rate that is considerably less efficient than could be achieved by chemical precipitation or other forms of wastewater treatment. Thus, in the example, dilution would be used as a substitute for treatment of the listed waste and would therefore be illegal dilution and not treatment. (See 54 FR 38968 (Sept. 6, 1989) (dilution prohibition applies to wastes managed in section 268.4 impoundments).)

d. Facility D generates an EP toxic nonwastewater that it stabilizes to meet the treatment standard. The waste's volume increases 400 per cent as a result of stabilization.

Although there are too few facts in this example to give a definitive answer, normally this large an increase in waste volume would indicate that the treatment standard is being achieved as a result of dilution rather than treatment, and therefore would be impermissible.

H. Applicability of Today's Final 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 (54 FR 36592) that narrowed the scope of this exclusion for 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 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 became effective on March 1, 1990. On January 23, 1990 (see 55 FR 2322–2354), EPA published another final rule removing an additional five of these wastes from the exclusion based on additional volume and/or hazard data. This final rule becomes effective on July 23, 1990.

EPA believes that these previously excluded wastes are "newly identified" for the purpose 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 November 8, 1984 enactment of HSWA. A permissible interpretation of RCRA section 3004(g)(4), which is ambiguous as to whether it applies to wastes first brought into the Subtitle C system after 1984 due to regulatory re-interpretation, is that wastes brought into the system after the 1984 RCRA amendments may be prohibited from land disposal under a different schedule than those wastes that were hazardous on the date of enactment of HSWA, and also are not subject to the statutory hard hammer. The policy reasons for preferring this interpretation are those that prompted Congress to establish a separate prohibition schedule for other newly identified and listed wastes: the need to study such wastes separately, and prioritization of hammer dates. Consequently, because these wastes are considered to be 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 promulgates treatment standards for characteristic wastes. A 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 has the choice of whether 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 promulgated today as BDAT for EP toxic hazardous wastes or other characteristic hazardous wastes can be achieved in treating the various mineral processing wastes. Therefore, EPA has determined that these newly identified mineral processing wastes are *not* subject to the BDAT standards promulgated today for characteristic hazardous wastes. The Agency plans to study the mineral processing wastes in the future to determine BDAT for these newly identified hazardous wastes.

There are circumstances when newly identified mineral processing wastes can, however, be subject to existing hazardous waste prohibitions. In particular, 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 solicited comment on applicability of California list prohibitions, but has determined that these prohibitions will not apply. See section III.F for a discussion of this issue.

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 rules removing wastes from the scope of the Bevill exclusion are not being adopted pursuant to HSWA, they do 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.

The Agency, in the proposed rule, solicited comment on whether the BDAT treatment standards proposed for the EP toxic metals are appropriate for the newly identified mineral processing wastes. Of the comments received, almost all supported EPA's position that the mineral processing wastes are sufficiently different from other characteristic wastes to warrant additional analysis, and that the statutory hammer and the California list prohibitions apply only to those wastes regulated as hazardous at the time of the HSWA enactment.

Several commenters argued against the Agency's position on mineral processing wastes. One commenter stated that since EPA has extensive information available from the listing process, that should be sufficient to develop BDAT treatment standards. However, data collected and analyzed for the purpose of listing a waste as hazardous are different from those required to perform BDAT analyses. In addition, most of the analyses

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performed have been to determine if the mineral processing wastes fall within the scope of the Bevill Amendment (*i.e.*, high volume/low hazard). Thus, the Agency does not agree that it has sufficient data to determine BDAT standards for mineral processing wastes.

Another commenter argued that these wastes were improperly excluded from regulation in the first place by an illegal interpretation of the Bevill Amendment in 1980, so should not be considered newly identified at this time. The Agency disagrees with the commenter that mineral processing wastes cannot be considered newly identified wastes. These wastes have become subject to the subtitle C regulations subsequent to the enactment of HSWA, and thus need not be subject to the hard hammer, nor must treatment standards for characteristic hazardous wastes be applied to them in this rulemaking. Certainly, there is no indication in either the statute or the legislative history that in creating a 66-month deadline for characteristic wastes, Congress expected the Agency to address wastes within the scope of the Bevill Amendment at the time of HSWA's promulgation.

I. 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 applicable treatment standards and prohibition levels. This notice must include the EPA Hazardous Waste Number, the corresponding treatment standards and all applicable prohibitions set forth in 40 CFR 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, the generator 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)). (EPA reiterates that such determination must, of course, be accurate. Thus, failure to accurately determine a waste's status as restricted is a violation of § 268.7 (a)(1) or (a)(2), as well as a potential violation of other provisions.)

The Agency had received, prior to the Third Third proposed rule, 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 of 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 these pre-proposal commenters had 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 argued that referencing the standards serves the same purpose as listing the specific treatment standards. Furthermore, they stated 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 listing each treatment standard on the notification form imposes an unnecessary burden on generators.

As proposed in the Third Third notice on November 22, 1989 (54 FR 48496), the Agency today is amending 40 CFR 268.7 to allow referencing the Code of Federal Regulations (CFR) rather than listing each treatment standard. EPA solicited comment in the Third Third proposed rule on this action to determine if the regulated community anticipated any problems with referencing of the CFR, and to determine the effect this action would have on hazardous waste generators. The comments EPA received on the proposal were overwhelmingly in favor of allowing referencing the CFR. Commenters stated that this action will significantly reduce the paperwork involved in handling the waste shipments, reduce transcription errors, and in no way cause harm to the environment.

Although EPA today is allowing such references to the CFR, the following information also must be included in the reference: the EPA Hazardous Waste No., the subcategory of the waste code (*e.g.*, D003, reactive cyanide subcategory), the treatability group(s) of the waste(s) (*e.g.*, wastewater or non-wastewater), and the CFR sections and paragraphs where the applicable treatment standards appear. In addition, where treatment standards are expressed as specified technologies in § 268.42, the 5-letter treatment code found in Table I of § 268.42 (*e.g.*, INCIN, WETOX) must be listed. Omissions or inaccuracies in listing any of these items will be considered a violation. In addition, the Agency emphasizes that the change to 40 CFR 268.7 allows referencing of the CFR in lieu of only the individual treatment standards; all other § 268.7 information is still required in the notification.

EPA notes that these revised notification requirements also apply to treatment and storage facilities, with the following exceptions. These changes do not apply to generators, or treatment or storage facilities that ship spent solvents (F001–F005), multi-source leachate (F039) or California list wastes off-site to a disposal facility. These waste categories each contain a number of individual constituents or waste groups (*e.g.*, the waste code for multi-source leachate (F039) contains 230 constituents). Therefore, referencing only the CFR section in lieu of the treatment standards would not provide the disposal facility with meaningful information regarding which constituents might reasonably be expected to be present in the waste. The same is true for California list wastes and spent solvents. For each of these wastes, therefore, all applicable waste groups and individual constituents actually must be listed on the notification.

In addition, some pre-proposal commenters raised concerns about notification requirements with regard to shipments subject to the March 24, 1986 small quantity generator (SQG) rule. This rule, specifically 40 CFR 262.20(e), exempts SQGs (100–1000 kg/mo.) with recycling tolling agreements (as defined in 40 CFR 262.20(e)) from the full Part 262 manifesting requirements. EPA received a number of comments supporting the proposed approach, and today is amending § 268.7 to allow 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 three years after termination or expiration of the agreement in keeping with the provisions of 40 CFR 262.20(e)(2).

The Agency is promulgating 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

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the agreement to apprise the subsequent handler of the land disposal restrictions applicable to the waste.

J. Waste Analysis Plans and Treatment/ Disposal Facility Testing Requirements

In the proposed rule, EPA noted that §§ 268.7 (b) and (c) currently require treatment and disposal facilities to test their wastes in order to ensure that they are in compliance with applicable treatment standards and prohibition levels. EPA also noted that these provisions require such testing to be performed according to the frequency specified in the facility's § 264.13 or § 265.13 Waste Analysis Plan (WAP). Although §§ 264.13 and 265.13 require that waste analyses contain enough information to allow the owner/operator to comply with the 40 CFR 268 requirements, the Agency noted that a comment found in both of these sections has created implementation problems. The comment states, "the owner or operator of an off-site (treatment, storage, or disposal) facility may arrange for the generator of the hazardous waste to supply part or all of the (waste analysis) information." This language has been construed erroneously as precluding EPA (or an authorized State) from requiring the owner/operator to conduct a detailed chemical and physical analysis of the waste where the generator has supplied the owner/operator with such waste analysis information. Although EPA stated in the proposal that it has authority to require owner/operators to test their wastes in such cases, the Agency stated its preference for removing any ambiguities and modifying the regulations in order to clarify EPA's intent.

The Agency noted in the proposal its belief that ordinarily, treatment and disposal facilities should do some corroborative testing to ensure compliance with LDR treatment standards and prohibitions. Although there are certainly situations where test data submitted by the generator, or the knowledge of the generator, may constitute an essential part of the necessary information, EPA's proposal was premised on a need to ensure that the LDR requirements are met *prior* to disposal. The Agency also noted that such corroborative testing provides records that may be useful in ascertaining compliance with LDR requriements. Thus, EPA stated that treatment and disposal facilities normally should do periodic independent corroborative testing of prohibited wastes, even if the generator also tests the waste or otherwise certifies that it is eligible for land disposal.

Given this context, the Agency proposed two approaches for specifying the circumstances under which EPA could require corroborative testing. The first approach would allow off-site facilities to arrange for the generator and/or treater of wastes to supply all or part of the waste analysis information only if an EPA-approved WAP affirmatively allows the generator and/ or treater to supply this information. Since interim status facilities do not have their WAPs approved until their permit applications are reviewed by EPA (or the authorized State), such facilities would no longer be able to rely upon generator data under this approach. Under the second approach, the Regional Administrator or his designate would determine the owner/ operator's testing frequency, but such facilities would be required to conduct waste analyses at least once a year. Since such an approach would be self-implementing, no revisions to existing permits would be necessary.

Numerous commenters pointed out the advantages and disadvantages of both approaches. The primary issues raised by commenters related to the flexibility and resources associated with the proposed approaches. Several commenters supported the flexibility that the first approach would provide. Individual facility circumstances can be considered, which the commenter, believed would result in appropriate testing frequencies. The Agency agrees with the commenters and continues to believe 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 managed, different types of waste matrices, number of processes invovled) is too broad to justify a single national testing frequency. However, evaluating the appropriate testing frequencies for every treatment and disposal facility can be very resource-intensive, a task that likely would take several years to complete. Some commenters expressed a preference for specific minimum testing frequencies, in part to establish a baseline level from which to depart. As stated above, a required testing frequency is difficult to specify for all facilities, and would be excessive and redundant in some situations while not being protective enough in others. To address this problem, the Agency is developing guidance to help identify what testing frequency, based on site-specific considerations, is reasonable and appropriate for treatment and disposal facilities.

Several commenters stated that corroborative testing by treatment and disposal facilities is unnecessary where generators supply such waste analysis data. Some of these commenters felt that testing should be required only where the generator does not supply testing data (*i.e.*, where the generator supplies waste characterization data based only on his knowledge of the waste or waste generation process). EPA disagrees with the commenters, and notes that the D.C. Circuit, in upholding EPA's § 268.7 testing framework, has expressed its support for treatment and disposal facility corroborative testing requirements:

> [I]t is the treatment facility's job to *transform* waste otherwise deemed too dangerous to permit into landfills into acceptable form. It is therefore not irrational for the EPA to introduce a backup, arguably "redundant" testing stage for these wastes requiring treatment and even to consider this a "critical" stage in the process.

886 F.2d at 370.

The court also noted that such corroborative testing is necessary for dispoasl facilities:

> [J]ust prior to land disposal, waste must be vigorously tested to confirm that it is what others have represented it to be and that it may permissibly be land disposed.

Id.

Given these concerns, the Agency today is promulgating an approach that combines elements of both the proposed approaches. EPA is revising the comment in §§ 264.13 and 265.13 to implement this approach.

Under the final approach, treatment and disposal facilities may generally rely on information provided to them by generators or treaters of the waste. However, treatment and disposal facilities must conduct periodic detailed physical and chemical analysis on their waste streams to assure that the appropriate part 268 treatment standards are being met. Specifically, today's final rule amends the comment in §§ 264.13 and 265.13 to make it clear that the restricted waste testing requirement (or other frequency approved by the Agency) is not superseded by the ability of the facility to rely on information supplied by the generator or treater. Also, with today's change, § 264.13 more clearly specifies that EPA may, through the permit, require the owner or generator of a treatment or disposal facility to conduct periodic chemical and physical analysis prior to treatment or other management of wastes.

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Interim status facilities are subject to the testing requirement for restricted wastes. Interim status waste analysis plans are developed by the facility and maintained on-site, in accordance with self-implementing procedures of § 265.13. Therefore, interim status facility owners or operators should ensure that their plan conforms with today's new requirement. For example, if the facility's plan specifies total reliance on generator or treater-provided information, then the plan will likely need to change to require appropriate testing (See discussion below regarding general Agency waste testing considerations). Also, interim status facilities should update their pending permit applications promptly to ensure that the applications reflect the most current information and today's revised regulatory requirements.

If a permitted facility wants to amend its WAP to better address restricted waste testing requirements, then it would follow the permit modification procedures in § 270.42. Under those modification procedures, a change to indicate a different testing frequency would most likely be a Class 2 modification (see appendix I to § 270.42, item B(1)).

EPA believes that there will be sufficient time to incorporate appropriate waste analysis requirements into the development of permits for the approximately 1000 interim status treatment and storage facilities expected to receive RCRA permits in the next several years. WAPs for permitted storage and treatment facilities (including incinerators) will be examined no later than at permit reissuance. Reevaluation of land disposal facility permits will occur no later than the five year permit review required by § 270.50(d), so WAP changes can be accomplished at that time. It should also be noted that for permitted facilities, EPA may address selected WAPs earlier than the above timeframes by using its general authority to reopen permits when new standards or regulations have been promulgated (§ 270.41(a)(3)).

For both permitted and interim status facilities, the Agency retains its authority (particularly where a revised WAP has not been Agency-approved) to determine that, based on an inspection or other information, the testing frequencies and/or protocols are inadequate at a particular facility. In such cases, EPA (or an authorized State) may take a number of actions, including, but not limited to, terminating or modifiying a facility's permit or pursuing an enforcement action.

In order to aid permit writers and the regulated community in determining the appropriate testing frequencies at both stages in time, the Agency expects to issue guidance soon which will further address these issues.

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

As noted in the November 22, 1989 proposal, treatment of prohibited wastes conducted in so-called 90-day tanks (or containers) regulated under § 262.34 is not presently subject to a waste analysis plan requirement. 54 FR 48497. Thus, there is no regulatory vehicle for determining testing frequency in such circumstances. In contrast, 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.

Therefore, in order to close this regulatory gap, EPA proposed that generators treating prohibited wastes in § 262.34 tanks and containers must prepare a plan justifying the frequency of testing they choose to adopt (54 FR 48497). EPA disagrees with several commenters who contended that sufficient regulatory mechanisms are already in place for these units. Most importantly, there is no regulation at all addressing testing frequency. Since a substantial volume of hazardous waste is treated in these units, the issue of testing frequency is viewed by the Agency as important for ensuring the integrity of the section 3004(m) treatment standards. Furthermore, today's imposition of a waste analysis plan requirement—addressing, among other issues, testing frequency—on persons treating in 90-day tanks is consistent with the Agency's determination in the Solvents and Dioxins final rule that generators who also treat must assume the same responsibilities as off-site treaters. See 51 FR 40597). Put another way, EPA believes that persons treating prohibited wastes should ordinarily have the same recordkeeping and documentation responsibilities whether the treatment occurs off-site or in 90-day tanks.

Therefore, in today's final rule, the Agency is promulgating the proposed action with several modifications in § 268.7(a)(4). In addition to the modifications (and in accordance with majority of comments), the Agency is clarifying that only generators treating wastes to comply with the applicable BDAT treatment standards (as opposed to wastes treated partially but receiving further off-site treatment before meeting the treatment standard) are subject to the new requirement to prepare a waste analysis plan. Specifically, generators treating prohibited wastes in § 262.34 tanks and containers to meet the applicable BDAT treatment standard must prepare a plan detailing the frequency of testing that is to be conducted. The plan is to be justified on 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 (see §§ 264.13 and 265.13, from which these substantive requirements are drawn), including the selected testing frequency. Examples of factors EPA would expect to be included in the plan are: discussion of the number of prohibited wastes treated, their variability, and the variability of the treatment process. See section III.J of today's preamble for more detailed information on factors to include in the plan.

EPA does not believe however, that it needs to require waste analysis plans from 90-day generators who treat partially, but do not treat to achieve the treatment standard. Such a requirement would duplicate waste analysis plans of the ultimate treatment facility. The requirement that EPA is adopting today is meant to close an outright regulatory gap which exists only when the 90-day generator is the sole treater.

The plan will be self-implementing in the sense that there is no requirement of prior approval from any regulatory entity. There is, however, a requirement that the plan be retained as a facility record, where it serves as the means of justifying to enforcement officials why the frequency of testing selected by the facility is reasonable. Furthermore, as suggested by several commenters, this plan should be filed with the EPA Regional office or State within 30 days prior to the activity by some mechanism that can verify delivery (*e.g.*, return receipt requested, Federal Express, or messenger). This provision will allow the Agency or State an opportunity to review the testing plan established. EPA notes, however, that it reserves the right at any subsequent time to disapprove of the testing plan. This review mechanism should ease one commenter's concerns about these plans being self-implementing *and* not subject to regulatory review.

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

1. Residues Remaining in Containers or Inner Liners

In the November 22, 1989 proposal, EPA proposed several amendments to clarify the existing language of 40 CFR 261.33. The first amendment involved 40 CFR 261.33(c), a provision that lists residues remaining in containers or in an inner liner that have held commercial chemical products listed in 40 CFR 261.33(e). EPA believes that this language was partially in error as it does not include residues remaining in containers or in an inner liner contaminated with the 40 CFR 261.33(f) materials. All of the other provisions in 40 CFR 261.33 refer to both 40 CFR 261.33 (e) and (f) wastes, and there is no reason that 40 CFR 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.

Many commenters misunderstood the Agency's intent by this clarification. It was not our intent to subject "U" wastes (*i.e.*, non-acute hazardous wastes) to the triple-rinsing requirements of 40 CFR 261.7(b)(3) as this section applies solely to acute hazardous wastes. In 40 CFR 261.33(c), there is not a corresponding reference, however, that residues remaining in containers or in an inner liner contaminated with "U" wastes are subject to regulation, unless empty as defined in 40 CFR 261.7(b)(1). This omission could be read as allowing the disposal of full containers of "U" listed wastes. While this would clearly be an incorrect reading, today's final action corrects this omission.

2. Spill Residues

In addition, EPA proposed a clarifying amendment to 40 CFR 261.33(d) to be codified in 40 CFR 261.2 (b) and (c) to state that residues of spills of commercial chemical products listed in 40 CFR 261.33 (e) and (f) will be considered solid wastes if they are not recycled within 90 days of the spill. 54 FR 48493–94. The Agency's rationale was that although such spilled materials may be considered to be "abandoned" under the existing regulatory language, it might be more appropriate to establish a specific time period after which such spills became solid wastes. The Agency noted further that it ordinarily views spilled commercial chemicals as solid wastes because the nature of a spill constitutes disposal, and because of the difficulty of recycling spill residues in such matrices as soil or groundwater. *Id.* In these instances, not only are spill residues of commercial chemical products unlike other 40 CFR 261.33 material (e.g., off-specification products), but the Agency believes that marginal claims of recyclability could be asserted to avoid proper cleanup of spills. *Id.*

While comments on this issue were mixed, a number of commenters made the point that this issue was inappropriate for determination in the Third Third rulemaking because it is not directly related to the Land Disposal Restrictions program. Given that these comments have merit and considering the number of issues that must be decided under the pressing timetable imposed by the statute, the Agency will not go forward with the quantified standard that it proposed.

Furthermore, the Agency believes that this issue can be addressed by interpretation of existing regulations. Under 40 CFR 261.33, mere assertion of intent to recycle a spill residue of a commercial chemical product does not automatically immunize the spill area from RCRA subtitle C jurisdiction. The generator has the burden of proving that the spilled material is not a solid waste, and a generalized assertion does not satisfy the burden. See 40 CFR 261.2(f). Objective considerations that could be pointed to to satisfy this burden include whether the generator has begun to recycle the spill residue, the length of time the spill residue has existed, the value of the spilled material, whether it is technically feasible or technically practical to recycle the spill residue, and whether there is any past history of the company recycling this type of residue. EPA repeats that assertion of intent to recycle does not satisfy the generator's burden of proof. Rather, there must be objective indicators of intent, and the indicators must be strong given that a spill of hazardous material to soil or groundwater is normally a simple act of disposal.

3. *De Minimis* Exception to the Mixture Rule

In the context of the Third Third proposal, several commenters requested clarification of the scope of the mixture rule exemption to the definition of hazardous waste under 40 CFR 261.3(a)(2)(iv). This provision exempts mixtures which contain small amounts of listed spent solvents ("F-listed solvents") or other *de minimis* losses of commercial chemical wastes ("P and U wastes") from manufacturing operations when these listed wastes are mixed with other wastewater "the discharge of which is subject to regulation under either section 402 or section 307(b) of the Clean Water Act (including wastewater at facilities that have eliminated the discharge of wastewater)." [20] Commenters raised the issue of whether disposal of such mixtures via Class I UIC wells allows the facility to claim this exemption. In particular, commenters expressed concern that recent EPA statements regarding the scope of this exemption imply that large volumes of wastewater will require treatment of the P and U wastes within the wastewater stream before injection of a Class I well, and that capacity for treatment of such wastestreams is not currently available.

Before responding to these comments, some background information is in order. RCRA subtitle C generally regulates as hazardous all mixtures of listed hazardous wastes and other solid wastes. One exception from this rule is for mixtures that "consist[] of wastewater the discharge of which is subject to regulation under either section 402 or 307(b) of the Clean Water Act (including wastewater at facilities which have eliminated the discharge of wastewater) and: [contain specific amounts of listed solvents or *de minimis* losses of discarded chemical products]." 40 CFR 261.3(a)(2)(iv). This exception to the mixture rule was established by regulation on November 17, 1981. *See* 46 FR 56582. A specific level for spent solvents is established by the regulation (either 1 ppm or 25 ppm). The regulation sets a worst-case maximum concentration of solvent within the wastewater stream; the actual concentration will almost certainly be less. Conversely, there is no set regulatory concentration for *de minimis* loss levels of P and U wastes that are listed in 40 CFR 261.33(e) and (f).

In the 1981 interim final rule, EPA did not exempt all *de minimis* mixtures generated at all facilities. Rather, EPA limited the exemption as follows: "[The exemption] applies only to wastewater mixtures managed in wastewater treatment systems whose discharge is subject to regulation under * * * the [CWA]. This requirement will help to prevent indiscriminate discharge of wastes into wastewater treatment systems because to do so would jeopardize the generator's ability to comply with its [CWA] discharge requirements. * * * [T]he Agency

[20] The exemption also covers mixtures of small amounts of listed hazardous wastes in wastewaters resulting from laboratory operations. 40 CFR 261.3(a)(2)(iv)(E). Also, there is similar, but not identical, language contained in a final rule that provided interpretations of certain terms and provisions of standards for hazardous waste tank systems (53 FR 34079, September 2, 1988). Today's notice is not changing the applicability of the September 2, 1988 final rule with respect to hazardous waste tank systems.

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means to include all facilities which generate wastewater which is discharged into surface water or into a POTW(.) The Agency also means to include those facilities (known as 'zero dischargers') that have eliminated the discharge of wastewater as a result of, or by exceeding (*i.e.*, doing better than), NPDES or pretreatment program requirements.' 46 FR 56584 (Nov. 17, 1981).

Furthermore, the applicability of the mixture rule exemption for P and U wastes was limited to the introduction of these wastes into wastewaters "in the normal handling of these materials, either as raw products used in the manufacturing process or as intermediate or chemical products *used in or produced by the manufacturing process.*" [emphasis added] 46 FR 56586.

Certain commenters assert that the mixture rule exemption currently applies to wastewater disposed of in a UIC well. Specifically, these commenters argue first that all injection wells dispose of wastewater "the discharge of which is subject to regulation [under the CWA]." Second, commenters argue that UIC wells *per se* constitute a method for facilities to "eliminate * * * the discharge of wastewater." Commenters further suggest that wastewater disposal via UIC wells should be exempted as consistent with the purposes for the exemption expressed by EPA, *i.e.*, that such wastewater mixed with *de minimis* levels of listed wastes are adequately regulated by another statute. These commenters express their belief that disposal of such mixtures down UIC wells would be adequately controlled under the UIC regulations, and that injection was the environmentally sound method of disposal for these wastewaters.

EPA does not agree completely with the commenters' analysis of the scope of the mixture rule exemption. First, injection of a fluid in a UIC well is not a "discharge" within the meaning of the CWA. Injection wells can, in appropriate instances, constitute a practice which has "eliminated the discharge of wastewater," but these instances must be evaluated on a case-by-case basis. As the regulation states, the issue is whether the "discharge" is subject to section 402 or 307(b) of the CWA, not whether the facility is "subject to regulation" under section 402. A UIC well, whether or not the state adopts its regulations under 402(d) addressing such a well, is not a CWA discharge point. Thus, facilities with wells for injection of wastewater do not fall within the mixture rule exemption simply because they have an injection well on site.

UIC wells may, however, be "zero discharge" facilities, i.e., those which have eliminated their discharge. To qualify as such a facility, it must satisfy the definition of a "zero discharge" facility outlined in the November 17, 1981 regulation. To repeat the language from the 1981 preamble discussing that provision, "(t)he Agency * * * means to include those facilities (known as 'zero dischargers') that have eliminated the discharge of wastewater *as a result of, or by exceeding, NPDES or pretreatment program requirements.*" 46 FR 56584 (Nov. 17, 1981) [emphasis added]. Thus, a UIC well will certainly qualify as a zero discharge facility *if* the facility injects the wastewater to comply with NPDES permit conditions or an applicable CWA effluent guideline. A well at a facility which is not "subject to (CWA) regulation" under an NPDES permit or an effluent guideline is not within the scope of the language of the mixture rule exemption. EPA notes that this interpretation is fully consistent with its 1981 preamble, and thus does not constitute a "change" in interpretation, as suggested by certain commenters.

EPA notes, that, as a practical matter, the facilities concerned about the scope of the mixture rule exemption are likely unaffected by today's clarification. Most of these facilities are, in fact, in an industry category (organic chemicals) whose facilities are "subject to regulation" under section 402 by virture of the effluent guideline for that category. *See* 40 CFR part 414 (1989). Thus, EPA does not believe that there will be a problem with treatment capacity for P and U wastes, because most wastewaters containing *de minimis* amounts of P and U wastes now being injected are not hazardous waste now being injected are not hazardous waste and will be unaffected by today's rule. Nonetheless, EPA wishes to caution such facilities that the mixture rule exemption does not constitute a license to mix collected volumes of E, P, or U wastes into a treated wastewater stream and then inject such a stream. As EPA clearly stated in 1981, the exemption is designed to cover situations where "various spills or incidental losses" of solvents or commercial chemicals are "reasonably and efficiently managed by being discharged into a plant's wastewater treatment system." 46 FR 56584. EPA clearly did not assume that facilities would attempt to avoid treatment of such wastes.

M. Storage Prohibition

In the proposed rule, EPA recognized that there are concerns with its existing interpretation of the statutory storage prohibition set out in section 3004(j) of RCRA. Section 3004(j) provides that storage of prohibited hazardous waste 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." Principal concerns are that some storage may be prohibited even where it is not being used with the intent to circumvent the land disposal prohibitions, and whether the storage prohibition should only apply if storage is used as surrogate disposal.

To fully evaluate these concerns, the Agency requested comment on an alternative interpretation of 40 CFR 268.50. Under the alternative approach, storage of prohibited wastes in tanks or containers pending the utilization of proper treatment, recovery or disposal capacity would not be prohibited. EPA provided two examples of allowable storage under this alternative approach:

(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 recognized in the proposal that under the alternative approach, the phrase "utilization of *proper* treatment, recovery or disposal capacity" needed to be further defined. The Agency also sought further 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. Commenters were also asked to address other potential situations where they believed that an overly literal reading of 3004(j) may have consequences they believe Congress did not intend.

Many of the commenters supported the proposed broadening of the allowable bases for storing prohibited wastes. However, the commenters did not offer specific workable suggestions for defining terms such as "pending" and "proper", as EPA noted was necessary. Without objective criteria for defining the limits of allowable storage, EPA believes that the proposed reinterpretation will be very difficult to implement and enforce. For example, does it matter how far in the future—five years, two years, six months—

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proper treatment might be utilized? Must there be a contract with a treatment company? What if it is contingent, or contains option provisions? Thus, the Agency is instead retaining its longstanding interpretation of the storage prohibition and is not finalizing the proposed alternative approach.

Under the existing approach, both RCRA 3004(j) and 40 CFR 268.50 provide 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." Storage of prohibited wastes is only allowed in non-land based storage units (*i.e.*, tanks and containers), since land-based storage is a type of land disposal.

Two major principles underlie the storage prohibition: (1) the need to reduce the risks created by long-term storage; and (2) the goal of the Land Disposal Restrictions, and HSWA generally, to encourage the expeditious use of alternative treatment technologies. Cf. *Hazardous Waste Treatment Council* v. *EPA*, 886 F.2d. 355 (D.C. Cir. Sept. 15, 1989) ("*HWTC III*") where the court said:

> 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.

886 F.2d. at 357.

Mechanisms such as national capacity variances and case-by-case extensions are intended to address situations where there is a lack of treatment capacity.

No firm time limit is established pursuant to § 268.50. Generators and owners or operators can store as long as necessary. The legislative history makes it clear that the intent of RCRA 3004(j) and § 268.50 is to prohibit use of long-term storage to circumvent treatment requirements imposed by the Land Disposal Restrictions. 129 Cong. Rec. H8139 (daily ed. October 6, 1983). 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.

Finally, EPA reemphasizes that intent is not a critical factor in determining liability. In order to successfully enforce this provision, the Agency need not demonstrate that those storing prohibited wastes have a particular state of mind. Rather, objective factors such as the type and amount of waste in storage and the time in storage still may be relied upon as the key factors in interpreting this provision. In determining whether storage is lawful, the Agency will continue to evaluate these factors in light of its "treat as you go" approach noted in *HWTC III*. EPA notes, however, that the intent of those storing prohibited wastes may be relevant in the Agency's determination regarding what type of relief, if any, to seek in a civil or criminal enforcement action.

1. Storage of Radioactive Mixed Waste

Several commenters urged the Agency to modify its existing interpretation of the section 3004(j) storage prohibition as it relates to radioactive mixed waste. Mixed waste contains both a hazardous waste component subject to RCRA hazardous waste management standards and a radioactive waste component regulated under the Atomic Energy Act (AEA). The commenters asserted that there is little or no available permitted treatment or disposal capacity for commercially generated mixed waste, and that many of these mixed wastes contain spent solvents or California list wastes that are not eligible for the national capacity variance which EPA is granting for mixed waste containing first, second, and third-third wastes. The commenters emphasized that generators have no practical option but to store their prohibited mixed waste on-site, pending the availability of treatment and disposal capacity. The commenters stated that the Agency should not interpret such storage as "surrogate disposal" that violates section 3004(j), since this interpretation would result in a requirement allowing no possibility of compliance by generators. The commenters further asserted that interpreting section 3004(j) in this manner could give rise to an inconsistency with the AEA, within the meaning of RCRA section 1006(a).

EPA is aware of the difficulties posed by the applicability of the section 3004(j) storage prohibition to mixed wastes under circumstances where there is no treatment or disposal capacity. These issues and their effects on certain low-level waste generators (e.g., hospitals, research institutions, universities), were also discussed at length in a recent report developed by the Office of Technology Assessment (OTA). (See "Partnerships Under Pressure, Managing Commercial Low-level Radioactive Waste," OTA, November 1989).

EPA acknowledges that the current shortage of treatment or disposal capacity, and the requirements and deadlines under other statutory programs, are factors which are affecting the management of mixed waste. EPA will further evaluate the legal, policy, and factual issues relevant to this matter. Since this issue is not material to the requirements which EPA must promulgate in order to meet the May 8, 1990 Third Third rule statutory deadline, EPA will resolve this matter separately from this rulemaking. The Agency expects to issue its policy on the mixed waste storage issue during the next 90 days.

N. Case-by-Case Extensions

Under RCRA Section 3004(h)(3), EPA can grant case-by-case extensions of the prohibition effective dates for up to one year beyond the applicable deadlines; extensions are renewable once for up to one additional year. On November 7, 1986, EPA published a final rule (51 FR 40572) establishing the regulatory framework to implement the land disposal restrictions program, including the procedures for submitting case-by-case petitions.

To obtain a case-by-case extension, the statute requires that the applicant make the following demonstrations:

(1) A binding contractual commitment has been made to construct or otherwise provide alternative treatment, recovery, or disposal capacity that protects human health and the environment.[21]

(2) Due to circumstances beyond his or her control, such alternative capacity cannot reasonably be made available by the applicable effective date.

(3) If a surface impoundment or landfill is used by the applicant to manage the waste during the extension period, the unit must meet the requirements of section 3004(o). EPA has interpreted these statutory provisions to also require the following (see 40 CFR 268.5(a)):

(1) A good-faith effort must be made to locate and contract with treatment, recovery, or disposal facilities nationwide to manage the waste in accordance with restrictions by the applicable effective date.

(2) The capacity being constructed or otherwise provided will be sufficient to manage the entire quantity of waste that is the subject of the petition.

[21] Section 3004(h)(3) refers to "such alternative capacity," referring back to Section 3004(h)(2), which speaks of "alternative treatment, recovery, or disposal capacity which protects human health and the environment." For disposal capacity, EPA interprets this language to mean a no-migration unit. See Sections 3004 (d)(1), (e)(1), and (g)(5). For treatment and recovery capacity, the reference refers to capacity that satisfies the Section 3004(m) standard.

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(3) A detailed schedule for obtaining required operating and constructing permits, or an outline of how and when alternative capacity will be available.

(4) Adequate capacity is available to manage the waste during the extension period, documenting in the petition the location of all sites at which the waste will be managed.

After an applicant has been granted a case-by-case extension, the applicant must notify the Administrator as soon as he or she has knowledge of any change in the demonstrations made in the petition. In addition, the applicant must submit progress reports, at specified intervals, that describe the progress being made towards obtaining adequate alternative capacity, identify any delay or possible delay in developing the capacity, and describe the mitigating actions being taken in response to the event. See 40 CFR 268.5 (f) and (g).

The Agency has received a number of inquiries on whether a proposed no-migration petition or proposed treatability variance would satisfy the first statutory requirement. That is, could a proposed no-migration variance or a proposed treatability variance constitute the "alternative treatment, recovery, or disposal capacity." If so, and if the Agency were to grant a case-by-case extension, this could provide petitioners with additional time while their no-migration petition or treatability variance is being considered for final approval.

First, it should be noted that the amount of time required to process no-migration and treatability variances (for other than injected wastes) is expected to be 12–18 months due to the complexity of the technical demonstrations that must be made, and their subsequent evaluation. On the other hand, the case-by-case petitions generally can be processed in about 6–8 months because the required demonstrations are more straightforward. This could give the petitioner about 6 months of relief. Some petitioners believe that there are a number of legitimate circumstances where the few extra months gained would make the difference between closing a facility which ultimately will be granted a valid variance request, and keeping it in operation.

In response to these inquiries, EPA is taking this opportunity to clarify that the statutory requirement to obtain a "binding contractual commitment to construct or otherwise provide alternative treatment, recovery, or disposal capacity" may be satisfied by a Federal Register notice wherein the Agency *proposes* to grant either a no-migration extension or a treatability variance. The Agency believes that EPA's proposing to grant either a treatability variance petition or a no-migration petition is sufficient demonstration that the petitioner has made a good faith effort to commit to obtaining alternative protective disposal capacity; any further commitment is solely contingent on EPA's action at this point. In addition, the Agency's action in proposing to grant the variance petition serves as a partial imprimatur that the alternative capacity under consideration will prove to be protective. However, the mere filing of a variance petition provides no such guarantee (most of the no-migration petitions for surface units filed to date, for example, have proven technically deficient), and thus cannot be deemed to satisfy the statutory requirement.

Of course, should EPA then grant a case-by-case extension, that grant would be conditional: if EPA denies the no-migration petition or the treatability variance, then the basis for the case-by-case extension may no longer exist, and the variance will be terminated unless there is additional basis for the variance. In addition, when the no-migration or treatability variance is granted, the case-by-case extension automatically expires (since it is no longer needed).

Because significant time and resources would have been expended on the case-by-case petition review unnecessarily if the no-migration petition or treatability variance is ultimately denied, EPA will begin review of a case-by-case extension petition *only* after receiving a clear indication that the Agency has the intention of proposing to grant the no-migration petition or treatability variance (and will not propose to grant a case-by-case extension unless the Agency has actually proposed to grant the variance). Conversely, when the clear indication is that the no-migration petition or treatability variance will be denied, EPA will not review the case-by-case petition, and the petitioner will be notified at the same time he or she is notified of the status of the other petition.

O. Applicability of California List Prohibitions after May 8, 1990

In the November 22, 1989 proposal, EPA discussed two issues relating to California list wastes. 54 FR 48498. The first issue is the question of continued applicability of California list prohibitions to wastes which are granted a national capacity variance in today's rulemaking. The second issue is whether California list prohibitions apply to wastes that are first identified and listed after the date of the HSWA amendments. 54 FR 48498–99.

EPA discussed the relationship of California list prohibitions to scheduled wastes subject to a capacity variance (either national or case-by-case) in the preamble to the First Third rule. 53 FR 31188. The Agency established in the First Third rule that although specific prohibitions and treatment standards take precedence over California list prohibitions, during the period of a capacity variance the California list prohibitions continue to apply. EPA included this discussion in the Third Third proposal not to reopen the issue but to put persons on notice that the same reading applies to Third Third wastes, including characteristic wastes. In fact, the few commenters on the issue indicated that they agreed with and were aware of the Agency's position.

The Agency did solicit comment, however, on whether it would be permissible to reevaluate whether the California list prohibitions for acid corrosive wastes would apply during the period of a national capacity variance for Third Third acid corrosive wastes (which are identical substances). Several commenters suggested that the prohibition for California list corrosives should not apply to Third Third corrosives that are granted national capacity variances in today's rulemaking. The Agency disagrees with this assertion and believes that not applying the more generally applicable California list prohibitions as an interim prohibition is contrary to the literal statutory language and enunciations of Congressional intent in the legislative history. See S. Rep. No. 284, 98th Cong. 1st Sess. 17. Also, given the fact that these wastes have been restricted since July 8, 1987, it is illogical that the Agency would grant these wastes a capacity extension in today's rulemaking. Therefore, a corrosive waste that is injected underground is at a minimum subject to the California list prohibitions on August 8, 1990.

The other issue on which EPA solicited comment is whether newly identified or listed wastes could be covered by California list prohibitions. Most of the comments supported the Agency's tentative conclusion that the statutory language does not compel a reading that California list prohibitions apply, and further supported the view that California list prohibitions should not apply. EPA is adopting that reading in today's rule. As the Agency noted at proposal, there would be massive dislocations in the regulated community if California list prohibitions were to apply to newly identified and listed

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wastes. For example, if wastes identified by the new Toxicity Characteristic were HOCs, thus triggering immediate California list prohibitions, there would be immediate prohibitions of these wastes rather than the more phased schedule specified in section 3004(g)(4). EPA does not believe this result is desirable. In addition, the Agency believes that the better reading of the statute is that the California list prohibitions were not meant to apply to wastes that are newly identified or listed. Consequently, EPA is determining today that wastes that are newly identified and listed [22] are prohibited only when the Agency takes specific action with regard to them pursuant to section 3004(g)(4).

Since the California list prohibitions are superseded by more specific treatment standards (with the *caveat* that the prohibitions continue to apply during capacity variance periods as discussed above) with the promulgation of the Third Third final rule, almost all of the California list prohibitions will be superseded by more specific prohibitions and treatment standards.[23] The California list prohibitions remain applicable for (1) liquid hazardous wastes that contain over 50 ppm PCBs; (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); 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.

Finally, EPA proposed that it would delete the provision specifying burning in boilers and furnaces as a specified method of treatment for California list HOCs (existing § 268.42(a)(2)) because there are virtually no situations to which the provision could apply. 54 FR 48499. There was virtually no comment on this point, and EPA is finalizing this action as proposed for the reasons stated at proposal.

[22] Newly identified means either newly subject to an existing characteristic (*e.g.*, such as those wastes removed from the Bevill exclusion) or subject to a new characteristic. Newly listed wastes may still be subject to any preexisting applicable characteristic standards or California list prohibitions stemming from the characteristic.

[23] 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).

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

The exception is the clarifying amendment to § 261.33(c). This clarification is 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 have 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 final rule in authorized States until their programs are modified to adopt these rules and the modification is approved by EPA. Because the rule is promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under RCRA section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that HSWA interim authorization will expire on January 1, 1993 (see 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 these regulations is July 1, 1991, in accordance with section 271.21(e). These deadlines can be extended in certain cases (see section 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 rule. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under 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

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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 promulgated today need not affect the State's Underground Injection Control (UIC) primacy status. A State currently authorized to administer the UIC program under the Safe Drinking Water Act (SDWA) 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 rule and impact State actions on the regulated community:

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

2. Also under part 268, EPA is granting two-year national variances from the 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 tht 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 for surface disposal facilities 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 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 (SDWA)

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

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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 emissions 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 (SO2). 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 SO2 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 SO2 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. EPA is addressing problems of potential mercury emissions by requiring that retorters either be subject to the NESHAP or operate with the PSDs on which the NESHAP was based.

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 of SO2 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 SO2), then such emissions would be subject to best available control technology (BACT) requirements. An air quality analysis for mercury and SO2 would also be required under PSD. Moreover, an air quality analysis must be conducted to demonstrate that the SO2 emissions would neither cause nor contribute to violations of any national ambient air quality standard (NAAQS) or PSD increment for SO2. Facilities that are located in areas that have failed to meet any NAAQS for SO2 (i.e., designated nonattachment areas) and emit more than 100 tons per year of SO2, must not only apply emission controls that meet the lowest achievable emission rate but also offset their remaining SO2 emissions by acquiring federally enforceable emission reductions from other nearby SO2 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.5.b of today's preamble. A discussion of potential nitrogen oxide emissions from organo-nitrogen wastes is contained in section III.A.5.c.

There are several general regulatory development programs under RCRA that address treatment technology air emissions. The Agency has initiated a three-phased program under § 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 expected to be promulgated this spring.

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 expected to be proposed in the **Federal Register** this spring.

In the third phase of the section 3004(n) standards development, the Agency will develop additional standards for the sources addressed in

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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. The Agency is considering whether to propose regulations in a separate rulemaking to limit 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 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 under today's rulemaking. 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. With promulgation of today's final 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 final rule and has determined that today's final rule constitutes a "major regulation" because it results 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 final rule. The complete RIA document, Regulatory Impact Analysis of the Land Disposal Restrictions for Third Third Scheduled Wastes Final Rule (April 24, 1990), is available for review in the public docket for today's final 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 final rule, as detailed in the RIA document, as well as comments received on the regulatory impact analysis for the proposed rule. 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.

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).[24] The effects of the final rule were estimated by comparing post-regulatory management practices and conditions with those occurring under baseline conditions. Two post-regulatory scenarios were examined. Under the first scenario, the "subtitle C" scenario, all treatment residuals would be disposed of in subtitle C units. For the second, "subtitle D," scenario, all characteristic waste treatment residuals would be disposed of in Subtitle D units. The baseline was

[24] 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.

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defined as continued land disposal of wastes in units meeting minimum technological requirements.

The Agency adjusted reported waste management practices to reflect compliance with the 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. However, though First Third soft hammer wastes were examined under the First Third rule Second Third soft hammer wastes are included in today's analysis. Thus, all First Third, Second Third, and Third Third wastes have been addressed in the land disposal restrictions rules collectively.

1. Overview of Affected Wastes, Facilities, and Management

The universe of waste and facilities examined for the RIA was developed from EPA's "National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities" (hereafter, the TSDR survey) and EPA's 1984 "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated under RCRA in 1981" (hereafter, the RIA Mail survey). Data from these surveys have been updated as part of the capacity analysis accompanying this rulemaking (see discussion in Section 3B). The data used for the final regulatory analysis reflect this updated data base and are consistent with the data used for the capacity analysis accompanying the proposed rule.

As with past land disposal restrictions RIAs, the TSDR and RIA Mail surveys provide an overview of the number of facilities treating, storing, and disposing of waste; the quantities and types of waste (by RCRA waste code) 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.

Several commenters noted that the quantities of waste estimated do not include non-hazardous waste that may have been affected by the Agency's proposed dilution prohibition. In today's rule, however, the Agency is allowing facilities that discharge their characteristic wastes under a NPDES permit or dispose of it in a UIC well to dilute. The Agency is also allowing facilities that generate non-toxic characteristic wastes (with the exception of high TOC ignitable nonwastewaters, reactive cyanide wastes, and reactive sulfide wastes) to dilute their wastes in order to achieve treatment standards. However, characteristic wastes discharged pursuant to an NPDES permit, with a specified method, cannot be rendered nonhazardous through dilution alone. The Agency believes, therefore, that it has accurately analyzed the impact of today's rule.

Quantity of Affected Waste. Today's rule affects approximately 277 million gallons of waste per year as shown in Table VI-1. An additional 44 million gallons (per year) of multisource leachate may also be affected by today's rule.

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

[in million gallons per year]

	Vol.	Percent
Ignitable (D001), corrosive (D002), and reactive wastes (D003)	42	15
EP toxic wastes (D004-D016) and mixtures	122	44
Listed wastes	2	1
Mixtures of wastes	32	12
CBI wastes	79	28
Total	277	100

Characteristic wastes constitute the largest volume of wastes covered by the final rule. In addition to the 59 percent identified as D001-D016, the waste mixtures category is dominated by characteristic wastes. Table VI-2 gives the volumes of the most affected characteristic wastes.

TABLE VI-2.—PREDOMINANT CHARACTERISTIC WASTES BY VOLUME

[in million gallons per year]

D008 (EP Toxic for lead)	53
D007 (EP Toxic for chromium)	41
D002 (Corrosive)	17
D001 (Ignitable)	17
Mixtures of D006 and D008	9
D006 (Cadmium)	8
D003 (Reactive)	7

Affected Facilities. A total of 110 waste management facilities and nearly 1,700 waste generators are affected by today's final 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]

Facilities	Volume	Percent	No. of facilities
Commercial Facilities	212	77	37
Non-Commercial Facilities	65	23	73
Generators	NA	NA	1,686
Total	277	100	1,796

The affected facilities represent a wide variety of industries in 22 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 commercial process waste, which accounts for 77 percent of the total waste volume, is distributed across the following SIC groups:

- Electric, Gas, & Sanitary Services (SIC 49)..... 43 percent
- Services Not Elsewhere Classified (SIC 89)..... 8 percent
- Chemicals & Allied Products (SIC 28)..... 7 percent
- CBI Facilities..... 32 percent

The volume of noncommercial process waste, which accounts for 23 percent of the total waste volume, is distributed across the following Standard Industrial Code (SIC) groups:

- Non-classifiable Establishments (SIC 99)..... 52 percent
- Primary Metals Industries (SIC 33)...13 percent
- Petroleum Refining & Related Industries (SIC 29)..... 10 percent
- Chemicals & Allied Products (SIC 28)..... 6 percent
- CBI Facilities..... 16 percent

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, approximately half of the waste volume covered by the final rule is currently managed in landfills. Landfills are also the most prevalent baseline practice, occurring at just over one half of the affected facilities.

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

[in million gallons per year]

Baseline practice	Volume	Percent
Facilities:		
Landfill	212	77
Land treatment	6	2
Storage waste piles	28	10
Treatment waste piles	27	10
Disposal surface impoundments	3	1
Total *	277	100

* Excludes estimated 44 million gallons of multisource leachate.

The quantity of multisource leachate is not well characterized at present. However, the RIA estimates that over 150 million gallons of leachate are generated (annually) creating up to 44 million gallons of leachate residue subject to the land disposal restrictions.

Treatment practices in compliance with today's final rule significantly redistribute the quantities of waste among managemnt practices. Most important, while 277 million gallons of waste per year are land disposed under baseline management practices (of which 212 million gallons are landfilled), 206 million gallons of waste per year would be disposed of in landfills under the subtitle C scenario as a result of today's final rule and 208 million gallons of waste per year under the subtitle D scenario. Thus, the final rule results in a 26 percent reduction in the volume of Third Third wastes being land disposed under the Subtitle C scenario, and a 25 percent reduction under the subtitle D scenario. Many of the wastes covered by the final rule are treated by chemical precipitation or stabilization.

2. Benefits of the Final Rule

The final rule would result in several benefits including reduced human health risks, imroved 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 final rule reduces cancer cases by 316 and reduces the number of people exposed to at least one noncarcinogen above health based criteria by about 5,400. These results are the same for both scenarios.

In general, the majority of cancer cases averted is due to reduced inhalation exposure to benzene, acrylonitrile, phenanthrene, fluroanthene, dichloromethane and other carcinogenic constituents in D001 ignitable wastes and mixtures of ignitable and reactive wastes. The majority noncarcinogenic benefits is due to reduced ingestion of cadmium (D006), chromium (D007), lead (D008), as well as mixtures with these metals or mercury and D001 ignitable waste containing pentaclorobenzene and methanol.

It is important to note that these human health benefits are highly sensitive to the facility (and population) and waste characterizations used for the analysis. In fact, the majority of human health benefits is due to a limited number of waste streams at a few facilities. For example, over 4,000 of the non-cancer "benefits" result from the reduction of a highly concentrated chromium waste that leaches to ground water used as a drinking water source for a populous Northeastern community. And nearly 1,000 non-cancer"benefits" are attributable to reducing high concentration air releases of pentachlorobenzene and methanol in a land application and a landfill unit. Similarly, over 200 of the cancer cases averted result from reducing air releases of phenanthrene and fluroanthene in land application units at two facilities.

What these examples reveal is the relationship between human health benefits and the attributes of a facility. Given any data base, the facilities with highly concentrated waste in densely populated areas will significantly drive the human health benefits results. Therefore, we believe that the data gives a true representation of reality by the inclusion of these few driving facilities.

The Agency has not estimated benefits attributable to treating multisource leachate residue because of a lack of characterization and facility data. However, the Agency, by way of a screening analysis, developed a hypothetical characterization of multisource leachate residue and simulated releases at several well-defined facilities. While the results are extremely sensitive to the assumptions and hypothetical characterization, they showed the possibility of roughly 200 cancer and 200 non-cancer cases avoided. Again, these results are highly uncertain because of the lack of sufficient data, but they do suggest that the benefits associated with the treatment of multisource leachate residues may be significant.

The Agency believes that the overall benefit 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 all of the 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. This underestimate is most likely to occur for wastes containing pesticides, the sole hazardous constituent of D012–D017, and about 16 "P" wastes.

Human health benefits may also be underestimated because the benefits model only includes exposure via drinking water or air. Not estimated are the deleterious effects from consuming of contaminated food, such as fish caught downstream of releases, recreation exposure, due to contact with polluted rivers, lakes, or streams, and the averting of public benefits due to the destruction of these recreational areas.

At the same time, benefits may be overestimated due to conservative exposure assumptions. Exposure scenarios are based on drinking 2 liters/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. In the past, land disposal of these wastes has only been allowed if the waste either is deactivated or precautions are taken to prevent accidental ignition or reaction. Until the ignitable or reactive wastes are deactivated, there is some continuing risk that the precautions may fail, resulting in fires, explosions, or release of toxic gases. The final rule requires deactivation of the approximately 24 million gallons of D001 and D003 being land disposed, thereby eliminating the safety risk. However, this benefit is not significant due to the popular practice of deactivation currently employed by facilities.

Environmental Benefits. The final rule results 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 final rule suggests 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, aquatic ecosystems may be at some risk even when there is no human health risk.

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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.[25] Wastes removed from some of these sites may be subject to the treatment standards promulgated in this rule. Thus, the final rule reduces ecological risk associated with Third Third wastes managed at these sites.

3. Costs

The final rule results in an annual incremental cost of approximately $353 million under the Subtitle D scenario and $440 million under the Subtitle C scenario, and affects over 1,700 facilities in 22 industrial sectors. Table VI–5 summarizes the estimated incremental costs associated with today's final rule by waste type.

TABLE VI–5.—THIRD THIRD RULE VOLUMES AND INCREMENTAL COST

[Million gallons/yr and million $/yr]

Waste type	Volume	Cost (in dollars)	
		Subtitle D	Subtitle C
D001, D002, D003	42	$61	$67
D004–D016	122	123	166
Listed waste	2	15	15
Mixtures	32	93	102
CBI facilities	79	61	90
Total	277	$353	$440

As expected, based on volumes, the largest incremental cost is attributed to the management of D008 (lead) waste. 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 relatively inexpensive to neutralize, resulting in a low cost per volume treated.

Five characteristic wastes contribute about 45 percent of the incremental cost of the rule as shown in table VI–6. EP toxic wastes for lead (D008) and ignitable wastes (D001) are the two single wastes that incur the most incremental cost.

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

TABLE VI–6.—WASTES INCURRING THE MOST INCREMENTAL COST

[In million dollars/year]

Waste stream	Costs	
	Subtitle D	Subtitle C
D008	57	85
D001	46	47
D007	34	38
D009	16	17
D004/D006/D007/D008	16	16
D003	9	12
D007/D008	12	12
D001/D002/D007/D008	11	11
D002	6	9

The cost of treating D002 corrosive wastes attributed to the final rule may be overestimated by as much as $5 million 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 final rule establishes a technology-based standard of deactivation (i.e., neutralization). The Agency does not have data on how facilities are meeting the California List standard. Without specific data about the post-California List practices, the entire cost of neutralizing D002 acidic wastes were attributed to this final rule.

4. Economic Impacts

Tables VI–7 and VI–8 summarize the cost and economic impact of the final rule under subtitle D and subtitle C, respectively. Compliance costs are the tax-adjusted revenue requirements needed to fund the incremental costs discussed above. Significantly affected facilities are those that either need to increase costs by more than 5 percent or their compliance costs exceed 5 percent of their cash from operations.

TABLE VI–7.—SUMMARY OF ECONOMIC IMPACT BY TYPE OF FACILITY—SUBTITLE D

Economic impact	Noncommercial	Com	Generator	Total
Compliance cost ($Mil)	24	329	235	259
Affected facs.	73	37	1,686	1,796
Significantly affected	3	NA	429	432
Estimated closures	0	NA	14	14
Affected industry groups	12	9	16	22

TABLE VI–8.—SUMMARY OF ECONOMIC IMPACT BY TYPE OF FACILITY—SUBTITLE C

Economic impact	Noncommercial	Com	Generator	Total
Compliance cost ($Mil)	30	410	299	329
Affected facs.	73	37	1,686	1,796
Significantly affected	4	NA	552	556
Estimated closures	0	NA	14	14
Affected industry groups	12	9	16	22

The economic analysis estimates that the final rule does not have a significant effect on industry. The effects of the final rule are distributed over a wide range of industries in 22 major industrial groups rather than concentrated in a few industries.

Generators are the type of facilities that incur the largest economic impact. The analysis estimates that 91 percent of the compliance cost are borne by generators under both subtitle C and subtitle D scenarios. Also, 33 percent of the affected generators are significantly affected under subtitle C scenario, and 25 percent are significantly affected under subtitle D scenario.

The analysis estimates that 14 facilities would close as a result of the final rule. By comparison, the First Third rule was estimated to result in almost 200 closures. These 14 potential closures represent less than 4 percent of the 429 significantly affected generators under subtitle D scenario and less than 3 percent of the 552 significantly affected generators under subtitle C scenario.

The TSDR survey identified only 2 small businesses that currently land dispose Third Third waste. Neither is significantly affected under the final rule.

B. Regulatory Flexibility Analysis—Surface Disposed Waste

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, whenever an Agency is required to publish a notice of rulemaking, 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.

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EPA evaluated the economic effect of the final 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 final 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 final rule's effects on small entities as required by the Regulatory Flexibility Act.

The economic analysis identified only 2 small businesses affected by the final rule. Neither of the 2 would be significantly affected. The Administrator therefore certifies that part 268 does 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 final rule. The completed RIA document, Regulatory Impact Analysis of Proposed Hazardous Waste Disposal Restrictions For Class I Injection of Third Thirds List Wastes, is available in the public docket for the final rule.

There are 65 injection facilities, of the total number of Class I injection facilities, injecting approximately 6 billion gallons of Third Third wastes annually, including over 4.7 billion gallons of characteristic wastes. These Class I hazardous injection facilities are required to either treat wastes, or file "no migration" petitions as outlined in 40 CFR part 148 (See 53 FR 28118 preamble for a more thorough discussion of the no migration petition review process). The additional facilities affected by today's rulemaking substantially contribute to overall compliance costs already incurred by Class I injection well owners and operators managing hazardous wastes regulated by previous rulemaking.

The Agency analyzed costs and benefits for today's rule by 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 volumes of injected wastes attributable to today's final rule.

Total compliance costs for injected wastes are estimated at $54 million annually. Alternative treatment costs are estimated at $53.7 million annually, and no migration 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 final rule. All of these costs will be incurred by Class I hazardous injection well owners and operators.

The benefits to human health and the environment in the RIA are generally defined as the reduced human health risk resulting from fewer instances of ground-water contamination. In general, potential health risks from Class I hazardous waste injection wells are extremely low. However, the RIA references a few isolated cases where risks to human health and the environment may be greater, but are still too low to quantify. These cases involve possible grout seal failure around the protective casing of an injection well, and the occurrence of unplugged bore holes around the injection well site. Of studies conducted to describe Class I well problems, only six wells, or less than two percent of all Class I wells, were reported to have experienced malfunctions that contributed to any contamination of the surface or an underground source of drinking water. No health-related problems attributed to Class I injection were reported.

D. Regulatory Flexibility Analysis—Underground Injection Wastes

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 final 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 final rule were promulgated in previous land disposal restrictions rulemakings (including those for the Underground Injection Control Program) and approved by the Office of Management and Budget (OMB) at that time. Since there are no new information collection requirements being promulgated today, 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 Section 261 Waste Profiles," Vols. I and II (August 1985);
- "Characterization of Constituents from Selected Waste Streams Listed in 40 CFR Section 261," Vols. I and II (August 1985);
- RCRA background and listing documents for 40 CFR Section 261;
- RCRA Section 3007 industry studies;
- "RCRA Risk-Cost Analysis Model, Appendix A: Waste Stream Data Base" (March 1984);
- 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 1990 terms.

List of Subjects in 40 CFR Parts 148, 261, 262, 264, 265, 268, 270, 271, and 302

Administrative practice and procedure, Confidential business information, Designated facility, Environmental protection, Hazardous

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materials, Hazardous materials transportation, Hazardous waste, Intergovernmental relations, Labeling, Manifests, Packaging and containers, Penalties, Recycling, Reportable Quantities, Reporting and recordkeeping requirements, Waste treatment and disposal, Water pollution control, Water supply.

Dated: May 8, 1990.

F. Henry Habicht,

Acting Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is 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 148.1 is amended by adding paragraph (d) to read as follows:

§ 148.1 Purpose, scope, and applicability.

* * * * *

(d) Wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited under this part, are not prohibited if the wastes:

(1) Are disposed into a nonhazardous or hazardous injection well defined under 40 CFR 144.6(a); and

(2) Do not exhibit any prohibited characteristic of hazardous waste identified in subpart C of part 261 at the point of injection.

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

§ 148.14 Waste specific prohibitions—first third wastes.

* * * * *

(d) Effective August 8, 1990, the wastes specified in 40 CFR 261.31 as EPA Hazardous Waste Number F006 (wastewaters) and F019; the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K004, K008, 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 at off-site injection facilities.

* * * * *

(f) Effective November 8, 1990, the wastes specified in paragraph (d) of this section are prohibited from underground injection at on-site injection facilities.

* * * * *

(i) Effective May 8, 1992, the wastes specified in 40 CFR 261.32 and 261.33 as EPA Hazardous Waste Numbers K011 (wastewaters), K013 (wastewaters), and K014 are prohibited from underground injection.

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

* * * * *

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

§ 148.15 Waste specific prohibitions—second third wastes.

* * * * *

(d) Effective August 8, 1990, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Number K025 (wastewaters), K029 (wastewaters), K041, K042, K095 (wastewaters), K096 (wastewaters), K097, K098, and K105; and the wastes specified in 40 CFR part 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, and U244 are prohibited from underground injection at off-site injection facilities.

* * * * *

(f) Effective November 8, 1990, the wastes specified in paragraph (d) of this section are prohibited from underground injection at on-site injection facilities.

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

* * * * *

5. 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 August 8, 1990, the wastes identified in 40 CFR 261.31 as EPA Hazardous Waste Number F039 (multi-source leachate); the wastes specified in 40 CFR 261.32 EPA Hazardous Waste Numbers K002, K003, K005 (wastewaters), K006, K007 (wastewaters), K023, K026, K032, K033, K034, K093, K094 and K100 (wastewaters); the wates 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, U038, 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 261.21, 261.23 or 261.24 as hazardous based on a characteristic alone, designated as D001, D004, D005, D006, D008, D009 (wastewaters), D010, D011, D012, D013, D014, D015, D016, D017 are prohibited from underground injection at off-site injection facilities.

(d) Effective August 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.

(e) Effective November 8, 1990, the wastes specified in paragraph (c) of this section are prohibited from underground

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injection at on-site injection facilities. These effective dates do not apply to the wastes listed in 40 CFR 148.12(b) which are prohibited from underground injection on August 8, 1990.

(f) Effective May 8, 1992, the wastes identified in 40 CFR 261.22, 261.23 or 261.24 as hazardous based on a characteristic alone, designated as D002 (wastewaters and nonwastewaters), D003 (wastewaters and nonwastewaters), D007 (wastewaters and nonwastewaters), and D009 (nonwastewaters) are prohibited from underground injection. These effective dates do no apply to the wastes listed in 40 CFR 148.12(b) which are prohibited from underground injection on August 8, 1990.

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

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTES

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 C—Characteristics of Hazardous Waste

2. In § 261.20, paragraph (b) is revised to read as follows:

§ 261.20 General.

* * * * *

(b) A hazardous waste which is identified by a characteristic in this subpart is assigned every EPA Hazardous Waste Number that is applicable as set forth in this subpart. This number must be in complying with the notification requirements of section 3010 of the Act and all applicable recordkeeping and reporting requirements under parts 262 through 265, 268, and 270 of this chapter.

* * * * *

3. In § 261.21, paragraph (b) is revised to read as follows:

§ 261.21 Characteristic of ignitability.

* * * * *

(b) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

4. In § 261.22, paragraph (b) is revised to read as follows:

§ 261.22 Characteristic of corrosivity.

* * * * *

(b) A solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.

5. In § 261.23, paragraph (b) is revised to read as follows:

§ 261.23 Characteristic of reactivity.

* * * * *

(b) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

6. In § 261.24, paragraph (b) introductory text is revised to read as follows:

§ 261.24 Toxicity characteristic.

* * * * *

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

* * * * *

Subpart D—Lists of Hazardous Wastes

7. Section 261.31 is amended by adding the following waste code in alphanumeric order.

§ 261.31 Hazardous wastes from non-specific sources.

* * * * *

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
*	*	*
F039	Leachate resulting from the treatment, storage, or disposal of wastes classified by more than one waste code under Subpart D, or from a mixture of wastes classified under Subparts C and D of this part. (Leachate resulting from the management of one or more of the following EPA Hazardous Wastes and no other hazardous wastes retains its hazardous waste code(s): F020, F021, F022, F023, F026, F027, and/or F028.)	(T).

8. Paragraph (c) of § 261.33 is revised to read as follows: (the comment paragraph remains):

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

* * * * *

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

* * * * *

9. Appendix VII is amended by adding the following waste stream in alphanumeric order to read as follows:

Appendix VII—Basis for Listing Hazardous Waste

EPA hazardous waste No.	Hazardous constituents for which listed
*	*
F039	All constituents for which treatment standards are specified for multi-source leachate (wastewaters and nonwastewaters) under 40 CFR 268.43(a), Table CCW.
*	*

PART 262—STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

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

Authority: 42 U.S.C. 6906, 6912, 6922, 6923, 6924, 6925, and 6937.

Subpart A—General

2. Paragraph (c) introductory text of § 262.11 is revised to read as follows:

§ 262.11 Hazardous waste determination.

* * * * *

(c) For purposes of compliance with 40 CFR part 268, or if the waste is not listed in subpart D of this part, the generator must then determine whether the waste is identified in subpart C of 40 CFR part 261 by either:

* * * * *

Subpart C—Pre-Transport Requirements

3. Paragraph (a)(4) of § 262.34 is revised to read as follows:

§ 262.34 Accumulation time.

(a) * * *

(4) The generator complies with the requirements for owners or operators in subparts C and D in 40 CFR part 265, with § 265.16, and with 40 CFR 268.7(a)(4).

* * * * *

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

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

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

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Subpart B—General Facility Standards

2. In § 264.13, the comment following Paragraph (a)(2) is revised to read as follows:

§ 264.13 General waste analysis.

(a) * * *

(2) * * *

[Comment: For example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part of the information required by paragraph (a)(1) of this section, except as othewise specified in 40 CFR 268.7 (b) and (c). 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 surfaee impoundment, unless the waste and impoundment satisfy all applicable requirements of 40 CFR 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 place in a waste pile unless the waste and waste pile satisfy all applicable requirements of 40 CFR 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 and the treatment zone meet all applicable requirements of 40 CFR part 268, and:

* * * * *

Subpart N—Landfills

6. In § 264.312, paragraphs (a) introductory text and (b) are 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 and landfill meet all applicable requirements of part 268, and:

* * * * *

(b) Except for prohibited wastes which remain subject to treatment standards in subpart D of part 268, ignitable wastes in containers may be landfilled without meeting the requirements of paragraph (a) of this section, provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

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) Such disposal is in compliance with the requirements of Part 268. Persons who incinerate lab packs according to the requirements in 40 CFR 268.42(c)(1) may use fiber drums in place of metal outer containers. Such fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in paragraph (b) of this section.

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

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 A—General

2. Section 265.1(e) is revised to read as follows:

§ 265.1 Purpose, scope, and applicability.

* * * * *

(e) The requirements of this part apply to owners or operators of all facilities which treat, store or dispose of hazardous waste referred to in 40 CFR part 268, and the 40 CFR part 268 standards are considered material conditions or requirements of the part 265 interim status standards.

Subpart B—General Facility Standards

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

§ 265.13 General waste analysis.

(a) * * *

(2) * * *

Comment: for example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part of the information required by paragraph (a)(1) of this section, except as otherwise specified in 40 CFR 268.7 (b) and (c). 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

4. 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 and impoundment satisfy all applicable requirements of 40 CFR part 268, and:

* * * * *

Subpart L—Waste Piles

5. Paragraph (a) introductory text of § 265.256 is revised to read as follows:

§ 265.256 Special requirements for ignitable or reactive waste.

(a) Ignitable or reactive waste must not be placed in a pile unless the waste and pile satisfy all applicable requirements of 40 CFR part 268, and:

* * * * *

Subpart M—Land Treatment

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

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§ 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 and treatment zone meet all applicable requirements of 40 CFR part 268, and:

* * * * *

Subpart N—Landfills

7. Paragraphs (a) introductory text and (b) of § 265.312 are 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 and landfill meets all applicable requirements of 40 CFR part 268, and:

* * * * *

(b) Except for prohibited wastes which remain subject to treatment standards in subpart D of part 268, ignitable wastes in containers may be landfilled without meeting the requirements of paragraph (a) of this section, provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

8. In § 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) Such disposal is in compliance with the requirements of 40 CFR part 268. Persons who incinerate lab packs according to the requirements in 40 CFR 268.42(c)(1) may use fiber drums in place of metal outer containers. Such fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in paragraph (b) of this section.

PART 268—LAND DISPOSAL RESTRICTIONS

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

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

Subpart A—General

2. In § 268.1, paragraph (c)(3) is added, and paragraph (c)(5) is removed, to read as follows:

§ 268.1 Purpose, scope, and applicability.

(c) * * *

(3) Wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited from land disposal under this part, are not prohibited from land disposal if the wastes:

(i) Are disposed into a nonhazardous or hazardous injection well as defined in 40 CFR 144.6(a); and

(ii) Do not exhibit any prohibited characteristic of hazardous waste at the point of injection.

* * * * *

3. Section 268.2 is revised to read as follows:

§ 268.2 Definitions applicable in this part.

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

(a) *Halogenated organic compounds* or *HOCs* means those compounds having a carbon-halogen bond which are listed under appendix III to this part.

(b) *Hazardous constituent or constituents* means those constituents listed in appendix VIII to part 261 of this chapter.

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

(d) *Nonwastewaters* are wastes that do not meet the criteria for wastewaters in paragraph (g)(6) of this section.

(e) *Polychlorinated biphenyls* or *PCBs* are halogenated organic compounds defined in accordanoe with 40 CFR 761.3.

(f) *Wastewaters* are wastes that contain less than 1% by weight total organic carbon (TOC) *and* less than 1% by weight total suspended solids (TSS), with the following exoeptions:

(1) *F001, F002, F003, F004, F005 solvent-water mixtures* that contain less than 1% by weight TOC or less than 1% by weight total F001, F002, F003, F004, F005 solvent constituents listed in § 268.41, Table CCWE.

(2) *K011, K013, K014 wastewaters* (as generated) that contain less than 5% by weight TOC and less than 1% by weight TSS.

(3) *K103 and K104 wastewaters* contain less than 4% by weight TOC and less than 1% by weight TSS.

(g) *Inorganic Solid Debris* are nonfriable inorganic solids that are incapable of passing through a 9.5 mm standard sieve that require cutting, or crushing and grinding in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials:

(1) Metal slags (either dross or scoria).

(2) Glassified slag.

(3) Glass.

(4) Concrete (excluding cementitious or pozzolanic stabilized hazardous wastes).

(5) Masonry and refractory bricks.

(6) Metal cans, containers, drums, or tanks.

(7) Metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment.

(8) Scrap metal as defined in 40 CFR 261.1(c)(6).

4. Section 268.3 is revised to read as follows:

§ 268.3 Dilution prohibited as a substitute for treatment.

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

(b) Dilution of wastes that are hazardous only because they exhibit a characteristic in a treatment system which treats wastes subsequently discharged to a water of the United States pursuant to a permit issued under section 402 of the Clean Water Act (CWA) or which treats wastes for purposes of pretreatment requirements under section 307 of the CWA is not impermissible dilution for purposes of this section unless a method has been specified as the treatment standard in § 268.42.

5. In § 268.7, paragraphs (a)(1)(ii), (a)(2)(i)(B), (a)(3)(ii), and (a)(4) are revised; new paragraphs (a)(7), (a)(8), and (a)(9) are added; paragraph (b)(4)(ii) is revised; the certification in paragraph (b)(5)(i) is revised; new paragraph (b)(5)(iii) is added; paragraph (b)(7) is removed and paragraph (b)(8) is redesignated as paragraph (b)(7); the

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introductory text to paragraph (c) is revised; and paragraphs (c)(3) and (c)(4) are removed, to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) * * *

(1) * * *

(ii) The corresponding treatment standards for wastes F001–F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA Section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 of § 268.42 (*e.g.*, INCIN, WETOX) also must be listed on the notification.

* * * * *

(2) * * *

(i) * * *

(B) The corresponding treatment standards for wastes F001–F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA Section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 § 268.42 (*e.g.*, INCIN, WETOX) also must be listed on the notification.

* * * * *

(3) * * *

(ii) The corresponding treatment standards for wastes F001–F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 of § 268.42 (*e.g.*, INCIN, WETOX) also must be listed on the notification.

(4) If a generator is managing a prohibited waste in tanks or containers regulated under 40 CFR 262.34, and is treating such waste in such tanks or containers to meet applicable treatment standards under Subpart D of this part, the generator must develop and follow a written waste analysis plan which describes the procedures the generator will carry out to comply with the treatment standards. The plan must be kept on-site in the generator's records, and the following requirements must be met:

(i) The waste analysis plan must be based on a detailed chemical and physical analysis of a representative sample of the prohibited waste(s) being treated, and contain all information necessary to treat the waste(s) in accordance with the requirements of this Part, including the selected testing frequency.

(ii) Such plan must be filed with the EPA Regional Administrator (or his designated representative) or State authorized to implement Part 268 requirements a minimum of 30 days prior to the treatment activity, with delivery verified.

(iii) Wastes shipped off-site pursuant to this paragraph must comply with the notification requirements of § 268.7(a)(2).

* * * * *

(7) If a generator is managing a lab pack that contains wastes identified in Appendix IV of this part and wishes to use the alternative treatment standard under § 268.42, with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section. The generator must also comply with the requirements in paragraphs (a)(5) and (a)(6) of this section, and must submit the following certification, which must be signed by an authorized representative:

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only the wastes specified in appendix IV to part 268 or solid wastes not subject to regulation under 40 CFR part 261. 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 organic wastes specified in Appendix V of this Part and wishes to use the alternate treatment standards under § 268.42, with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section. The generator also must comply with the requirements in paragraphs (a)(5) and (a)(6) of this section, and must submit the following certification which must be signed by an authorized representative:

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic waste specified in Appendix V to Part 268 or solid wastes not subject to regulation under 40 CFR Part 261. 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 the notification and certification, together with the tolling agreement, for at least three years after termination or expiration of the agreement. The three-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) * * *

(4) * * *

(ii) The corresponding treatment standards for wastes F001–F005, F039, and wastes prohibited pursuant to § 268.32 or RCRA Section 3004(d). Treatment standards for all other restricted wastes may be referenced by including on the notification the subcategory of the waste, the treatability group(s) of the waste(s), and the CFR section(s) and paragraphs where the treatment standards appear. Where the applicable treatment standards are expressed as specified technologies in § 268.42, the applicable five-letter treatment code found in Table 1 of § 268.42 (*e.g.*, INCIN, WETOX) also must be listed on the notification.

(5) * * *

(i) * * *

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

* * * * *

(iii) For wastes with treatment standards expressed as concentrations in the waste pursuant to § 268.43, if compliance with the treatment standards in subpart D of this part is

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based in part or in whole on the analytical detection limit alternative specified in § 268.43(c), the certification also must state the following:

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by incineration in units operated in accordance with 40 CFR part 264, subpart O) or 40 CFR part 265, subpart O, or by combustion in fuel substitution units operating in accordance with applicable technical requirements, and I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

* * * * *

(c) Except where the owner or operator is disposing of any waste that is a recyclable material used in a manner constituting disposal pursuant to 40 CFR 266.20(b), the owner or operator of any land disposal facility disposing any waste subject to restrictions under this part must:

* * * * *

6. Paragraph (a) of § 268.8 is revised to read as follows:

§ 268.8 Landfill and surface impoundment disposal restrictions.

(a) Prior to May 8, 1990, wastes which are otherwise prohibited from land disposal under § 268.33(f) of this part may be disposed in a landfill or surface impoundment which is in compliance with the requirements of § 268.5(h)(2) provided that the requirements of this section are met. As of May 8, 1990, this section is no longer in effect.

* * * * *

7. Section 268.9 is added to subpart A to read as follows:

§ 268.9 Special rules regarding wastes that exhibit a characteristic.

(a) The initial generator of a solid waste must determine each waste code applicable to the waste in order to determine the applicable treatment standards under subpart D of this part. For purposes of part 268, the waste will carry a waste code designation for any applicable listing under 40 CFR part 261, subpart D, and also one or more waste code designations under 40 CFR part 261, subpart C where the waste exhibits the relevant characteristic.

(b) Where a prohibited waste is both listed under 40 CFR part 261, subpart D and exhibits a characteristic under 40 CFR part 261, subpart C, the treatment standard for the waste code listed in 40 CFR part 261, subpart D will operate in lieu of the standard for the waste code under 40 CFR part 261, subpart C, provided that the treatment standard for the listed waste includes a treatment standard for the constituent that causes the waste to exhibit the characteristic. Otherwise, the waste must meet the treatment standards for all applicable listed and characteristic waste codes.

(c) In addition to any applicable standards determined from the initial point of generation, no prohibited waste which exhibits a characteristic under 40 CFR part 261, subpart C may be land disposed unless the waste complies with the treatment standards under subpart D of this part.

(d) Wastes that exhibit a characteristic are also subject to § 268.7 requirements, except that once the waste is no longer hazardous, for each shipment of such wastes to a subtitle D facility the initial generator or the treatment facility need not send a § 268.7 notification to such facility. In such circumstances, a notification and certification must be sent to the appropriate EPA Regional Administrator (or his delegated representative) or State authorized to implement part 268 requirements.

(1) The notification must include the following information:

(i) The name and address of the subtitle D facility receiving the waste shipment;

(ii) A description of the waste as initially generated, including the applicable EPA Hazardous Waste Number(s) and treatability group(s);

(iii) The treatment standards applicable to the waste at the initial point of generation.

(2) The certification must be signed by an authorized representative and must state the language found in § 268.7(b)(5)(i).

Subpart C—Prohibitions on Land Disposal

8. Section 268.35 is added to read as follows:

§ 268.35 Waste specific prohibitions—Third Third wastes.

(a) Effective August 8, 1990, the following wastes specified in 40 CFR 261.31 as EPA Hazardous Waste Numbers F006 (wastewaters), F019, and F039 (wastewaters); the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers 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); K048 (wastewaters); K049 (wastewaters); K050 (wastewaters); K051 (wastewaters); K052 (wastewaters); K060 (wastewaters); K061 (wastewaters); K069 (wastewaters); K073; K083 (wastewaters); K084 (wastewaters); K085; K095 (wastewaters); K096 (wastewaters); K097; K098; K100 (wastewaters); K101 (wastewaters); K102 (wastewaters); K105; and K106 (wastewaters); the wastes specified in 40 CFR 261.33(e) as EPA Hazardous Waste Numbers P001; P002; P003; P004; P005; P006; P007; P008; P009; P010 (wastewaters); P011 (wastewaters); P012 (wastewaters); P014; P015; P016; P017; P018 (wastewaters); P020; P022; P023; P024; 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; P075; P076; P077; P078; P081; P082; P084; P088; P092 (wastewaters); P093; P095; P096; P101; P102; P103; P105; P108; P109; P110; P112; P113; P114; P115; P116; P118; P119; P120; P122; and P123; and the wastes specified in 40 CFR 261.33(f) as EPA Hazardous Waste Numbers 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; 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;

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U194; U196; U197; U200; U201; U202; U203; U204; U205; 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; D002, D003, D004 (wastewaters), D005, D006; D007; D008 (except for lead materials stored before secondary smelting), D009 (wastewaters), D010, D011, D012, D013, D014, D015, D016, and D017 are prohibited from land disposal.

(b) Effective November 8, 1990, the following wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K048 (nonwastewaters), K049 (nonwastewaters), K050 (nonwastewaters), K051 (nonwastewaters), and K052 (nonwastewaters) are prohibited from land disposal.

(c) Effective May 8, 1992, the following waste specified in 40 CFR 261.31 as EPA Hazardous Waste Numbers F039 (nonwastewaters); the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Numbers K031 (nonwastewaters); K084 (nonwastewaters); K101 (nonwastewaters); K102 (nonwastewaters); K106 (nonwastewaters); the wastes specified in 40 CFR 261.33(e) as EPA Hazardous Waste Numbers P010 (nonwastewaters); P011 (nonwastewaters); P012 (nonwastewaters); P036 (nonwastewaters); P038 (nonwastewaters); P065 (nonwastewaters); P087 (nonwastewaters); and P092 (nonwastewaters); the wastes specified in 40 CFR 261.33(f) as EPA Hazardous Waste Numbers U136 (nonwastewaters); and U151 (nonwastewaters); and the following wastes identified as hazardous based on a characteristic alone: D004 (nonwastewaters); D008 (lead materials stored before secondary smelting); and D009 (nonwastewaters); inorganic solids debris as defined in 40 CFR 268.2(a)(7) (which also applies to chromium refractory bricks carrying the EPA Hazardous Waste Numbers K048–K052); and RCRA hazardous wastes that contain naturally occurring radioactive materials are prohibited from land disposal.

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

(e) 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, or vitrification, and which are contaminated soil or debris, are prohibited from land disposal.

(f) Between May 8, 1990 and August 8, 1990, the wastes included in paragraph (a) may be disposed of in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2).

(g) Between May 8, 1990 and November 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).

(h) Between May 8, 1990, and May 8, 1992, wastes included in paragraphs (c), (d), and (e) 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).

(i) The requirements of paragraphs (a), (b), (c), (d), and (e) of this section do not apply if:

(1) The wastes meet the applicable standards specified in subpart D of this part;

(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;

(3) The wastes meet the applicable alternate standards established pursuant to a petition granted under § 268.44;

(4) Persons have been granted an extension to the effective date of a prohibition pursuant to § 268.5, with respect to these wastes covered by the extension.

(j) 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.

9. Section 268.40 is amended by revising paragraphs (a) and (c) to read as follows:

§ 268.40 Applicability of treatment standards.

(a) A restricted waste identified in § 268.41 may be land disposed only if an extract of the waste or of the treatment residue of the waste developed using the test method in appendix I of this part does not exceed the value shown in Table CCWE of § 268.41 for any hazardous constituent listed in Table CCWE for that waste, with the following exceptions: D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136. Wastes D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136 may be land disposed only if an extract of the waste or of the treatment residue of the waste developed using either the test method in Appendix I of this part or the test method in appendix II of part 261 does not exceed the value shown in Table CCW of § 268.41 for any hazardous constituent listed in Table CCWE for that waste.

* * * * *

(c) Except as otherwise specified in § 268.43(c), a restricted waste identified in § 268.43 may be land disposed only if the constituent concentrations in the waste or treatment residue of the waste do not exceed the value shown in Table CCW of § 268.43 for any hazardous constituents listed in Table CCW for that waste.

10. Section 268.41 is amended by revising paragraph (a) and Table CCWE—Constituent Concentrations in Waste Extract, to read as follows:

§ 268.41 Treatment standards expressed as concentrations in waste extract.

(a) Table CCWE identifies the restricted wastes and the concentrations of their associated constituents which may not be exceeded by the extract of a waste or waste treatment residual developed using the test method in Appendix I of this part for the allowable land disposal of such wastes, with the exception of wastes D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U138. Table CCWE identifies the restricted wastes D004, D008, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136 and the concentrations of their associated constituents which may not be exceeded by the extract of a waste or waste treatment residual developed using the test method in Appendix I of this part or appendix II of 40 CFR part 261 for the allowable land disposal of such wastes. (Appendix II of this part provides Agency guidance on treatment methods that have been shown to achieve the Table CCWE levels for the respective wastes. Appendix II of this part is not a regulatory requirement but is provided to assist generators and owners/operators in their selection of appropriate treatment methods.) Compliance with these concentrations is required based upon grab samples.

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TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
D004	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.0#
D005	Table CCW in 268.43	Barium	7440-39-3	NA	100
D006	Table CCW in 268.43	Cadmium	7440-43-9	NA	1.0
D007	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.0
D008	Table CCW in 268.43	Lead	7439-92-1	NA	5.0
D009 (Low Mercury Subcategory—less than 260 mg/kg Mercury).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA	0.20
D010	Table CCW in 268.43	Selenium	7782-49-2	NA	5.7
D011	Table CCW in 268.43	Silver	7440-22-4	NA	5.0
F001-F005 spent solvents	Table 2 in 268.42 and Table CCW in 268.43.	Acetone	67-64-1	0.05	0.59
		n-Butyl alcohol	71-36-3	5.0	5.0
		Carbon disulfide	75-15-0	1.05	4.81
		Carbon tetrachloride	56-23-5	0.05	0.96
		Chlorobenzene	108-90-7	0.15	0.05
		Cresols (and cresylic acid)		2.82	0.75
		Cyclohexanone	108-94-1	0.125	0.75
		1,2-Dichlorobenzene	95-50-1	0.65	0.125
		Ethyl acetate	141-78-6	0.05	0.75
		Ethylbenzene	100-41-4	0.05	0.053
		Ethyl ether	60-29-7	0.05	0.75
		Isobutanol	78-83-1	5.0	5.0
		Methanol	67-56-1	0.25	0.75
		Methylene chloride	75-9-2	0.20	0.96
		Methyl ethyl ketone	78-93-3	0.05	0.75
		Methyl isobutyl ketone	108-10-1	0.05	0.33
		Nitrobenzene	98-95-3	0.66	0.125
		Pyridine	110-86-1	1.12	0.33
		Tetrachloroethylene	127-18-4	0.079	0.05
		Toluene	108-88-3	1.12	0.33
		1,1,1-Trichloroethane	71-55-6	1.05	0.41
		1,1,2-Trichloro-1,2,2-Tetrifluorethane	76-13-1	1.05	0.96
		Trichloroethylene	79-01-6	0.062	0.091
		Trichlorofluoromethane	75-69-4	0.05	0.96
		Xylene		0.05	0.15
F006	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F007	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F008	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F009	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F011	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F012	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Nickel	7440-02-0	NA	0.32
		Silver	7440-22-4	NA	0.072
F019	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.2
F020-F023 and F026-F028 dioxin containing wastes.*.		HxCDD-All Hexachlorodibenzo-p-dioxins.		<1 ppb	<1 ppb
		HxCDF-All Hexachlorodibenzofurans		<1 ppb	<1 ppb
		PeCDD-All Pentachlorodibenzo-p-dioxins.		<1 ppb	<1 ppb
		PeCDF-All Pentachlorodibenzofurans		<1 ppb	<1 ppb
		TCDD-All Tetrachlorodibenzo-p-dioxins.		<1 ppb	<1 ppb
		TCDF-All Tetrachlorodibenzofurans		<1 ppb	<1 ppb
		2,4,5-Trichlorophenol	95-95-4	<0.05 ppm	<0.05 ppm
		2,4,6-Trichlorophenol	88-06-2	<0.05 ppm	<0.05 ppm

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TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
		2,3,4,6-Tetrachlorophenol	58-90-2	<0.05 ppm	<0.05 ppm
		Pentachlorophenol	87-86-5	<0.01 ppm	<0.01 ppm
F024	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.073
		Lead	7439-92-1	NA	0.021
		Nickel	7440-02-0	NA	0.088
F039	Table CCW in 268.43	Antimony	7440-36-0	NA	0.23
		Arsenic	7440-38-2	NA	5.0
		Barium	7440-39-3	NA	52
		Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
		Mercury	7439-97-6	NA	0.025
		Nickel	7440-02-0	NA	0.32
		Selenium	7782-49-2	NA	5.7
		Silver	7440-22-4	NA	0.072
K001	Table CCW in 268.43	Lead	7439-92-1	NA	0.51
K002	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K003	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K004	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K005	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K006 (anhydrous)	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K006 (hydrated)	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.2
K007	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K008	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K015	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Lead	7439-92-1	NA	0.2
K021	Table CCW in 268.43	Antimony	7440-36-0	NA	0.23#
K022	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	5.2
		Nickel	7440-02-2	NA	0.32
K028	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.073
		Lead	7439-92-1	NA	0.021
		Nickel	7440-02-0	NA	0.088
K031	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K046	Table CCW in 268.43	Lead	7439-92-1	NA	0.18
K048	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K049	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K050	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K051	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K052	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	1.7
		Nickel	7440-02-0	NA	0.20
K061 (Low Zinc Subcategory—less than 15% Total Zinc).	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.14
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.24
		Nickel	7440-02-0	NA	0.32
K062	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K069 (Calcium Sulfate Subcategory)	Table 2 in 268.42 and Table CCW in 268.43.	Cadmium	7440-43-9	NA	0.14
		Lead	7439-92-1	NA	0.24
K071 (Low Mercury Subcategory—less than 16 mg/kg Mercury).	Table CCW in 268.43	Mercury	7439-97-8	NA	0.025
K083	Table CCW in 268.43	Nickel	7440-02-0	NA	0.088
K084	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K086	Table CCW in 268.43	Chromium (Total)	7440-47-32	NA	0.094
		Lead	7439-92-1	NA	0.37
K087	Table CCW in 268.43	Lead	7439-92-1	NA	0.51
K100	Table CCW in 268.43	Cadmium	7440-43-9	NA	0.066
		Chromium (Total)	7440-47-32	NA	5.2
		Lead	7439-92-1	NA	0.51
K101	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K102	Table CCW in 268.43	Arsenic	7440-38-2	NA	5.6#
K106 (Low Mercury Subcategory—less than 260 mg/kg Mercury—residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA	0.20
K106 (Low Mercury Subcategory—less than 260 mg/kg Mercury—that are not residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury	7439-97-6	NA	0.025

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TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT—Continued

Waste code	See also	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
K115	Table CCW	Nickel	7440-02-0	NA	0.32

#—These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.
*—These waste codes are not subcategorized into wastewaters and nonwastewaters.
NA—Not Applicable.

TABLE CCWE.—CONSTITUENT CONCENTRATIONS FOR WASTE EXTRACTS

Waste code	See also	Commercial chemical name	Regulated hazardous constituent	CAS number for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/l)
P010	Table CCW in 268.43	Arsenic acid	Arsenic	7440-38-2	NA	5.6
P011	Table CCW in 268.43	Arsenic pentoxide	Arsenic	7440-38-2	NA	5.6
P012	Table CCW in 268.43	Arsenic trioxide	Arsenic	7440-38-2	NA	5.6
P013	Table CCW in 268.43	Barium cyanide	Barium	7440-39-3	NA	52
P036	Table CCW in 268.43	Dichlorophenylarsine	Arsenic	7440-38-2	NA	5.6
P038	Table CCW in 268.43	Diethylarsine	Arsenic	7440-38-2	NA	5.6
P065 (Low Mercury Subcategory—less than 260 mg/kg Mercury-residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury fulminate	Mercury	7439-97-6	NA	0.20
P065 (Low Mercury Subcategory—less than 260 mg/kg Mercury-incinerator residues (and are not residues from RMERC)).	Table 2 in 268.42 and Table CCW in 268.43.	Mercury fulminate	Mercury	7439-97-6	NA	0.025
P073	Table CCW in 268.43	Nickel carbonyl	Nickel	7440-02-0	NA	0.32
P074	Table CCW in 268.43	Nickel cyanide	Nickel	7440-02-0	NA	0.32
P092 (Low Mercury Subcategory—less than 260 mg/kg Mercury residues from RMERC).	Table 2 in 268.42 and Table CCW in 268.43.	Phenyl mercury acetate	Mercury	7439-97-6	NA	0.20
P092 (Low Mercury Subcategory—less than 260 mg/kg Mercury-incinerator residues (and are not residues from RMERC)).	Table 2 in 268.42 and Table CCW in 268.43.	Phenyl mercury acetate	Mercury	7439-97-6	NA	0.025
P099	Table CCW in 268.43	Potassium silver cyanide	Silver	7440-22-4	NA	0.072
P103	Table CCW in 268.43	Selenourea	Selenium	7782-49-2	NA	5.7
P104	Table CCW in 268.43	Silver cyanide	Silver	7440-22-4	NA	0.072
P110	Table CCW in 268.43	Tetraethyl lead	Lead	7439-92-1	NA	0.51
P114	Table CCW in 268.43	Thallium selenite	Selenium	7782-49-2	NA	5.7
U032	Table CCW in 268.43	Calcium chromate	Chromium (Total)	7440-47-32	NA	0.094
U051	Table CCW in 268.43	Creosote	Lead	7439-92-1	NA	0.51
U136	Table CCW in 268.43	Cacodylic acid	Arsenic	7440-38-2	NA	5.6
U144	Table CCW in 268.43	Lead acetate	Lead	7439-92-1	NA	0.51
U145	Table CCW in 268.43	Lead phosphate	Lead	7439-92-1	NA	0.51
U146	Table CCW in 268.43	Lead subacetate	Lead	7439-92-1	NA	0.51
U151 (Low Mercury Subcategory—less than 260 mg/kg Mercury—residues from RMERC).	Table CCW in 268.43 and in Table 2 in 268.42.	Mercury	Mercury	7439-97-6	NA	0.20
U151 (Low Mercury Subcategory—less than 260 mg/kg Mercury—that are not residues from RMERC).	Table CCW in 268.43 and Table 2 in 268.42.	Mercury	Mercury	7439-97-6	NA	0.025
U204	Table CCW in 268.43	Selenium dioxide	Selenium	7782-49-2	NA	5.7
U205	Table CCW in 268.43	Selenium sulfide	Selenium	7782-49-2	NA	5.7

—These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.
*—These waste codes are not subcategorized into wastewaters and nonwastewaters.
NA—Not Applicable.

* * * * *

Section 268.42 is amended by revising paragraphs (a) introductory text and (a)(2), by removing paragraphs (a)(3) and (a)(4), by revising paragraph (b), and by adding paragraphs (c), (d), and (e) to read as follows:

§ 268.42 Treatment standards expressed as specified technologies.

(a) The following wastes in paragraphs (a)(1) and (a)(2) of this section and in Table 2 and Table 3 of this section must be treated using the technology or technologies specified in paragraphs (a)(1) and (a)(2) and Table 1 of this section.

* * * * *

(2) Nonliquid hazardous wastes containing halogenated organic compounds (HOCs) in total concentration greater than or equal to 1,000 mg/kg and liquid HOC-containing

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wastes that are prohibited under § 268.32(e)(1) of this part must be incinerated in accordance with the requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O. These treatment standards do not apply where the waste is subject to a part 268, subpart C treatment standard for specific HOC (such as a hazardous waste chlorinated solvent for which a treatment standard is established under § 268.41(a)).

TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS

Technology code	Description of technology-based standard
ADGAS	Venting of compressed gases into an absorbing or reacting media (i.e., solid or liquid)—venting can be accomplished through physical release utilizing values/piping; physical penetration of the container; and/or penetration through detonation.
AMLGM	Amalgamation of liquid, elemental mercury contaminated with radioactive materials utilizing inorganic reagents such as copper, zinc, nickel, gold, and sulfur that result in a nonliquid, semi-solid amalgam and thereby reducing potential emissions of elemental mercury vapors to the air.
BIODG	Biodegradation of organics or non-metallic inorganics (i.e., degradable inorganics that contain the elements of phosphorus, nitrogen, and sulfur) in units operated under either aerobic or anaerobic conditions such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the biodegradation of many organic constituents that cannot be directly analyzed in wastewater residues).
CARBN	Carbon adsorption (granulated or powdered) of non-metallic inorganics, organo-metallics, and/or organic constituents, operated such that a surrogate compound or indicator parameter has not undergone breakthrough (e.g., Total Organic Carbon can often be used as an indicator parameter for the adsorption of many organic constituents that cannot be directly analyzed in wastewater residues). Breakthrough occurs when the carbon has become saturated with the constituent (or indicator parameter) and substantial change in adsorption rate associated with that constituent occurs.
CHOXD	Chemical or electrolytic oxidation utilizing the following oxidation reagents (or waste reagents) or combinations or reagents: (1) Hypochlorite (e.g. bleach); (2) chlorine; (3) chlorine dioxide; (4) ozone or UV (ultraviolet light) assisted ozone; (5) peroxides; (6) persulfates; (7) perchlorates; (8) permangantes; and/or (9) other oxidizing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues). Chemical oxidation specifically includes what is commonly referred to as alkaline chlorination.
CHRED	Chemical reduction utilizing the following reducing reagents (or waste reagents) or combinations of reagents: (1) Sulfur dioxide; (2) sodium, potassium, or alkali salts of sulfites, bisulfites, metabisulfites, and polyethylene glycols (e.g., NaPEG and KPEG); (3) sodium hydrosulfide; (4) ferrous salts; and/or (5) other reducing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Halogens can often be used as an indicator parameter for the reduction of many halogenated organic constituents that cannot be directly analyzed in wastewater residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to the trivalent state.
DEACT	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
FSUBS	Fuel substitution in units operated in accordance with applicable technical operating requirements.
HLVIT	Vitrification of high level mixed radioactive wastes in units in compliance with all applicable radioactive protection requirements under control of the Nuclear Regulatory Commission.
IMERC	Incineration of wastes containing organics and mercury in units operated in accordance with the technical operating requirements of 40 CFR part 264, subpart O and 40 CFR part 265, subpart O. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
INCIN	Incineration in units operated in accordance with the technical operating requirements of 40 CFR part 264, subpart O and 40 CFR part 265, subpart O.
LLEXT	Liquid-liquid extraction (often referred to as solvent extraction) of organics from liquid wastes into an immiscible solvent for which the hazardous constituents have a greater solvent affinity, resulting in an extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and a raffinate (extracted liquid waste) proportionately low in organics that must undergo further treatment as specified in the standard.
MACRO	Macroencapsulation with surface coating materials such as polymeric organics (e.g. resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10.
NEUTR	Neutralization with the following reagents (or waste reagents) or combinations of reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.
NLDBR	No land disposal based on recycling.
PRECP	Chemical precipitation of metals and other inorganics as insoluble precipitates of oxides, hydroxides, carbonates, sulfides, sulfates, chlorides, flourides, or phosphates. The following reagents (or waste reagents) are typically used alone or in combination: (1) Lime (i.e., containing oxides and/or hydroxides of calcium and/or magnesium; (2) caustic (i.e., sodium and/or potassium hydroxides; (3) soda ash (i.e., sodium carbonate); (4) sodium sulfide; (5) ferric sulfate or ferric chloride; (6) alum; or (7) sodium sulfate. Additional floculating, coagulation, or similar reagents/processes that enhance sludge dewatering characteristics are not precluded from use.
RBERY	Thermal recovery of Beryllium.
RCGAS	Recovery/reuse of compressed gases including techniques such as reprocessing of the gases for reuse/resale; filtering/adsorption of impurities; remixing for direct reuse of resale; and use of the gas as a fuel source.
RCORR	Recovery of acids or bases utilizing one or more of the following recovery technologies: (1) Distillation (i.e., thermal concentration); (2) ion exchange; (3) resin or solid adsorption; (4) reverse osmosis; and/or (5) incineration for the recovery of acid—Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RLEAD	Thermal recovery of lead in secondary lead smelters.
RMERC	Retorting or roasting in a thermal processing unit capable of volatilizing mercury and subsequently condensing the volatilized mercury for recovery. The retorting or roasting unit (or facility) must be subject to one or more of the following: (a) A National Emissions Standard for Hazardous Air Pollutants (NESHAP) for mercury; (b) a Best Available Control Technology (BACT) or a Lowest Achievable Emission Rate (LAER) standard for mercury imposed pursuant to a Prevention of Significant Deterioration (PSD) permit; or (c) a state permit that establishes emission limitations (within meaning of Section 302 of the Clean Air Act) for mercury. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
RMETL	Recovery of metals or inorganics utilizing one or more of the following direct physical/removal technologies: (1) Ion exchange; (2) resin or solid (i.e., zeolites) adsorption; (3) reverse osmosis; (4) chelation/solvent extraction; (5) freeze crystalization; (6) ultrafiltration; and/or 6 simple precipitation (i.e., crystalization)—Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RORGS	Recovery of organics utilizing one or more of the following technologies: (1) Distillation; (2) thin film evaporation; (3) steam stripping; (4) carbon adsorption; (5) critical fluid extraction; (6) liquid-liquid extraction; (7) precipitation/crystallization (including freeze crystallization); or (8) chemical phase separation techniques (i.e., addition of acids, bases, demulsifiers, or similar chemicals); Note: This does not preclude the use of other physical phase separation techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RTHRM	Thermal recovery of metals or inorganics from nonwastewaters in units defined in 40 CFR 260.10, paragraphs (1), (6), (7), (11), and (12), under the definition of "industrial furnaces".

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TABLE 1.—TECHNOLOGY CODES AND DESCRIPTION OF TECHNOLOGY-BASED STANDARDS—Continued

Technology code	Description of technology-based standard
RZINC	Resmelting in for the purpose of recovery of zinc high temperature metal recovery units.
STABI.	Stabilization with the following reagents (or waste reagents) or combinations of reagents: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust)—this does not preclude the addition of reagents (e.g., iron salts, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to overall reduce the leachability of the metal or inorganic.
SSTRP	Steam stripping of organics from liquid wastes utilizing direct application of steam to the wastes operated such that liquid and vapor flow rates, as well as, temperature and pressure ranges have been optimized, monitored, and maintained. These operating parameters are dependent upon the design parameters of the unit such as, the number of separation stages and the internal column design. Thus, resulting in a condensed extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and an extracted wastewater that must undergo further treatment as specified in the standard.
WETOX	Wet air oxidation performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues).
WTRRX	Controlled reaction with water for highly reactive inorganic or organic chemicals with precautionary controls for protection of workers from potential violent reactions as well as precautionary controls for potential emissions of toxic/ignitable levels of gases released during the reaction.

NOTE 1: When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in § 268.42, Table 2 by indicating the five letter technology code that must be applied first, then the designation "fb." (an abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

NOTE 2: When more than one technology (or treatment train) are specified as *alternative* treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "OR". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
D001		Ignitable Liquids based on 261.21(a)(1)—Wastewaters.	NA	DEACT	NA.
D001		Ignitable Liquids based on 261.21(a)(1)—Low TOC Ignitable Liquids Subcategory—Less than 10% total organic carbon.	NA	NA	DEACT.
D001		Ignitable Liquids based on 261.21(a)(1)—High TOC Ignitable Liquids Subcategory—Greater than or equal to 10% total organic carbon.	NA	NA	FSUBS; RORGS; or INCIN.
D001		Ignitable compressed gases based on 261.21(a)(3).	NA	NA	DEACT**.
D001		Ignitable reactives 261.21(a)(2)	NA	NA	DEACT.
D001		Oxidizers based on 261.21(a)(4)	NA	DEACT	DEACT.
D002		Acid subcategory based on 261.22(a)(1)	NA	DEACT	DEACT.
D002		Alkaline subcategory based on 261.22(a)(1)	NA	DEACT	DEACT.
D002		Other corrosives based on 261.22(a)(2)	NA	DEACT	DEACT.
D003		Reactive sulfides based on 261.23(a)(5)	NA	DEACT	DEACT.
D003		Explosives based on 261.23(a) (6), (7), and (8)	NA	DEACT	DEACT.
D003		Water reactives based on 261.23(a) (2), (3), and (4).	NA	NA	DEACT.
D003		Other reactives based on 261.23(a)(1)	NA	DEACT	DEACT.
D006		Cadmium containing batteries	7440-43-9	NA	RTHRM.
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).).	7439-92-1	NA	RLEAD.
D009	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—contains mercury and organics (and are not incinerator residues)).	7439-97-6	NA	IMERC; or RMERC.
D009	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—inorganics (including incinerator residues and residues from RMERC)).	7439-97-6	NA	RMERC.
D012	Table CCW in 268.43	Endrin	72-20-8	BIODG; or INCIN	NA.
D013	Table CCW in 268.43	Lindane	58-89-9	CARBN; or INCIN	NA.
D014	Table CCW in 268.43	Methoxychlor	72-43-5	WETOX; or INCIN	NA.
D015	Table CCW in 268.43	Toxaphene	8001-35-1	BIODG; or INCIN	NA.
D016	Table CCW in 268.43	2,4-D	94-75-7	CHOXD; BIODG; or INCIN	NA.
D017	Table CCW in 268.43	2,4,5-TP	93-72-1	CHOXD; or INCIN	NA.
F005	Table CCWE in 268.41 and Table CCW in 268.43.	2-Nitropropane	79-46-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

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TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
F005	Table CCWE in 268.41 and Table CCW in 268.43.	2-Ethoxyethanol	110-80-5	BIODG: or INCIN	INCIN.
F024	Table CCWE in 268.41 and Table CCW in 268.43.		NA	INCIN	INCIN.
K025		Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	NA	LLEXT fb SSTRP fb CARBN; or INCIN	INCIN.
K026		Stripping still tails from the production of methyl ethyl pyridines.	NA	INCIN	INCIN.
K027		Centrifuge and distillation residues from toluene diisocyanate production.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K039		Filter cake from the filtration of diethylphosphorodithioc acid in the production of phorate.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K044		Wastewater treatment sludges from the manufacturing and processing of explosives.	NA	DEACT	DEACT.
K045		Spent carbon from the treatment of wastewater containing explosives.	NA	DEACT	DEACT.
K047		Pink/red water from TNT operations	NA	DEACT	DEACT.
K061	Table CCW in 268.43.	Emission control dust/sludge from the primary production of steel in electric furnaces (High Zinc Subcategory—greater than or equal to 15% total Zinc).	NA	NA	NLDBR.
K069	Table CCWE in 268.41 and Table CCW in 268.43.	Emission control dust/sludge from secondary lead smelting: Non-Calcium Sulfate Subcategory.	NA	NA	RLEAD.
K106	Table CCWE in 268.41 and Table CCW in 268.43.	Wastewater treatment sludge from the mercury cell process in chlorine production: (High Mercury Subcategory-greater than or equal to 260 mg/kg total mercury).	NA	NA	RMERC.
K113		Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K114		Vicinals from the purification of toluenediame in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K115		Heavy ends from the purification of toluenediame in the production of toluenediamine via hydrogenation of dinitrotoluene.	NA	CARBN; or INCIN	FSUBS; or INCIN.
K116		Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	NA	CARBN; or INCIN	FSUBS; or INCIN.
P001		Warfarin (>0.3%)	81-81-2	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P002		1-Acetyl-2-thiourea	591-08-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P003		Acrolein	107-02-8	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P005		Allyl alcohol	107-18-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P006		Aluminum phosphide	20859-73-8	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
P007		5-Aminoethyl 3-isoxazolol	2763-96-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P008		4-Aminopyridine	504-24-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P009		Ammonium picrate	131-74-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P014		Thiophenol (Benzene thiol)	108-98-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P015		Beryllium dust	7440-41-7	NA	RMETL; or RTHRM.
P016		Bis(chloromethyl)ether	542-88-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P017		Bromoacetone	598-31-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P018		Brucine	357-57-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P022	Table CCW in 268.43.	Carbon disulfide	75-15-0	NA	INCIN.
P023		Chloroacetaldehyde	107-20-0	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P026		1-(o-Chlorophenyl) thiourea	5344-82-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P027		3-Chloropropionitrile	542-76-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P028		Bensyl chloride	100-44-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

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TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
P031		Cyanogen	460-19-5	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN.
P033		Cyanogen chloride	506-77-4	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN.
P034		2-Cyclohexyl-4,6-dinitrophenol	131-89-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P040		0,0-Diethyl 0-pyrazinyl phosphorothioate	297-97-2	CARBN; or INCIN	FSUBS; or INCIN.
P041		Diethyl-p-nitrophenyl phosphate	311-45-5	CARBN; or INCIN	FSUBS; or INCIN.
P042		Epinephrine	51-43-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P043		Diisopropylfluorophosphate (DFP)	55-91-4	CARBN; or INCIN	FSUBS; or INCIN.
P044		Dimethoate	60-51-5	CARBN; or INCIN	FSUBS; or INCIN.
P045		Thiofanox	39196-18-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P046		alpha, alpha-Dimethylphenethylamine	122-09-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P047		4,6-Dinitro-o-cresol salts	534-52-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P049		2,4-Dithiobiuret	541-53-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P054		Aziridine	151-56-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P056	Table CCW in 268.43	Fluorine	7782-41-4	NA	ADGAS fb NEUTR.
P057		Fluoroacetamide	640-19-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P058		Fluoroacetic acid, sodium salt	62-74-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P062		Hexaethyltetraphosphate	757-58-4	CARBN; or INCIN	FSUBS; or INCIN.
P064		Isocyanic acid, ethyl ester	624-83-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P065	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury fulminate: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—either incinerator residues or residues from RMERC).	628-86-4	NA	RMERC.
P065	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury fulminate: (All nonwastewaters that are not incinerator residues from RMERC; regardless of Mercury Content).	628-86-4	NA	IMERC.
P066		Methomyl	16752-77-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P067		2-Methylaziridine	75-55-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P068		Methyl hydrazine	60-34-4	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P069		Methyllactonitrile	75-86-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P070		Aldicarb	116-06-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P072		1-Naphthyl-2-thiourea	86-88-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P075		Nicotine and salts	54-11-5*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P076		Nitric oxide	10102-43-9	ADGAS	ADGAS.
P078		Nitrogen dioxide	10102-44-0	ADGAS	ADGAS.
P081		Nitroglycerin	55-63-0	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P082	Table CCW in 268.43	N-Nitrosodimethylamine	62-75-9	NA	INCIN.
P084		N-Nitrosomethylvinylamine	4549-40-0	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P085		Octamethylpyrophosphoramide	152-16-9	CARBN; or INCIN	FSUBS; or INCIN.
P087		Osmium tetroxide	20816-12-0	NA	RMETL; or RTHRM.
P088		Endothall	145-73-3	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P092	Table CCWE in 268.41 and Table CCW in 268.43.	Phenyl mercury acetate: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury—either incinerator residues or residues from RMERC).	62-38-4	NA	RMERC.
P092	Table CCWE in 268.41 and Table CCW in 268.43.	Phenyl mercury acetate: (All nonwastewaters that are not incinerator residues and are not residues from RMERC: regardless of Mercury Content).	62-38-4	NA	IMERC; or RMERC.
P093		N-Phenylthiouea	103-85-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P095		Phosgene	75-44-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P096		Phosphine	7803-51-2	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.

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TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
P102		Propargyl alcohol	107-19-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
P105		Sodium azide	26628-22-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P108		Strychnine and salts	57-24-9*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P109		Tetraethyldithiopyrophosphate	3689-24-5	CARBN; or INCIN	FSUBS; or INCIN.
P112		Tetranitromethane	509-14-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
P113	Table CCW in 268.43	Thallic oxide	1314-32-5	NA	RTHRM; or STABL.
P115	Table CCW in 268.43	Thallium (I) sulfate	7446-18-6	NA	RTHRM; or STABL.
P116		Thiosemicarbazide	79-19-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P118		Trichloromethanethiol	75-70-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
P119	Table CCW in 268.43	Ammonium vanadate	7803-55-6	NA	STABL.
P120	Table CCW in 268.43	Vanadium pentoxide	1314-62-1	NA	STABL.
P122		Zinc Phosphide (<10%)	1314-84-7	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
U001		Acetaldehyde	75-07-0	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U003	Table CCW in 268.43	Acetonitrile	75-05-8	NA	INCIN.
U006		Acetyl Chloride	75-36-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U007		Acrylamide	79-06-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U008		Acrylic acid	79-10-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U010		Mitomycin C	50-07-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U011		Amitrole	61-82-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U014		Auramine	492-80-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U015		Azaserine	115-02-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U016		Benz(c)acridine	225-51-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U017		Benzal chloride	98-87-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U020		Benzenesulfonyl chloride	98-09-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U021		Benzidine	92-87-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U023		Benzotrichloride	98-07-7	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U026		Chlornaphazin	494-03-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U033		Carbonyl fluoride	353-50-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U034		Trichloroacetaldehyde (Chloral)	75-87-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U035		Chlorambucil	305-03-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U038	Table CCW in 268.43	Chlorobenzilate	510-15-6	NA	INCIN.
U041		1-Chloro-2,3-epoxypropane (Epichlorohydrin)	106-89-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U042	Table CCW in 268.43	2-Chloroethyl vinyl ether	110-75-8	NA	INCIN.
U046		Chloromethyl methyl ether	107-30-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U049		4-Chloro-o-toluidine hydrochloride	3165-93-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U053		Crotonaldehyde	4170-30-3	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U055		Cumene	98-82-8	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U056		Cyclohexane	110-82-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U057	Table CCW in 268.43	Cyclohexanone	108-94-1	NA	FSUBS; or INCIN.
U058		Cyclophosphamide	50-18-0	CARBN; or INCIN	FSUBS; or INCIN.
U059		Daunomycin	20830-81-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U062		Diallate	2303-16-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U064		1,2,7,8-Dibenzopyrene	189-55-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.

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TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
U073		3,3'-Dichlorobenzidine	91-94-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U074		cis-1,4-Dichloro-2-butene	1476-11-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
		trans-1,4-Dichloro-2-butene		(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U085		1,2:3,4-Diepoxybutane	1464-53-5	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U086		N,N-Diethylhydrazine	1615-80-1	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U087		0,0-Diethyl S-methyldithiophosphate	3288-58-2	CARBN; or INCIN	FSUBS; or INCIN.
U089		Diethyl stilbestrol	56-53-1	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U090		Dihydrosafrole	94-58-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U091		3,3'-Dimethoxybenzidine	119-90-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U092		Dimethylamine	124-40-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U093	Table CCW in 268.43	p-Dimethylaminoazobenzene	621-90-9	NA	INCIN.
U094		7,12-Dimethyl benz(a)anthracene	57-97-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U095		3,3'-Dimethylbenzidine	119-93-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U096		a,a-Dimethyl benzyl hydroperoxide	80-15-9	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U097		Dimethylcarbomyl chloride	79-44-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U098		1,1-Dimethylhydrazine	57-14-7	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U099		1,2-Dimethylhydrazine	540-73-8	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U103		Dimethyl sulfate	77-78-1	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U109		1,2-Diphenylhydrazine	122-66-7	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U110		Dipropylamine	142-84-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U113		Ethyl acrylate	140-88-5	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U114		Ethylene bis-dithiocarbamic acid	111-54-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U115		Ethylene oxide	75-21-8	(WETOX or CHOXD) fb CARBN; or INCIN	CHOXD; or INCIN.
U116		Ethylene thiourea	96-45-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U119		Ethyl methane sulfonate	62-50-0	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U122		Formaldehyde	50-00-0	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U123		Formic acid	64-18-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U124		Furan	110-00-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U125		Furfural	98-01-1	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U126		Glycidaldehyde	765-34-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U132		Hexachlorophenene	70-30-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U133		Hydrazine	302-01-2	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U134	Table CCW in 268.43	Hydrogen Flouride	7664-39-3	NA	ADGAS fb NEUTR; or NEUTR.
U135		Hydrogen Sulfide	7783-06-4	CHOXD; CHRED, or INCIN	CHOXD; CHRED; or INCIN.
U143		Lasiocarpine	303-34-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U147		Maleic anhydride	108-31-6	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U148		Maleic hydrazide	123-33-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U149		Malononitrile	109-77-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U150		Melphalan	148-82-3	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

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TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
U151	Table CCWE in 268.41 and Table CCW in 268.43.	Mercury: (High Mercury Subcategory—greater than or equal to 260 mg/kg total Mercury).	7439-97-6	NA	RMERC.
U153		Methane thiol	74-93-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U154		Methanol	67-56-1	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U156		Methyl chlorocarbonate	79-22-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U160		Methyl ethyl ketone peroxide	1338-23-4	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN.
U163		N-Methyl N'-nitro N-Nitrosoguanidine	70-25-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U164		Methylthiouracil	56-04-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U166		1,4-Naphthoquinone	130-15-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U167		1-Naphthlyamine	134-32-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U168	Table CCW in 268.43	2-Naphthlyamine	91-59-8	NA	INCIN.
U171		2-Nitropropane	79-48-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U173		N-Nitroso-di-n-ethanolamine	1116-54-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U176		N-Nitroso-N-ethylurea	759-73-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U177		N-Nitroso-N-methylurea	684-93-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U178		N-Nitroso-N-methylurethane	615-53-2	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U182		Paraldehyde	123-63-7	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U184		Pentachloroethane	76-01-7	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U186		1,3-Pentadiene	504-60-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U189		Phosphorus sulfide	1314-80-3	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.
U191		2-Picoline	109-06-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U193		1,3-Propane sultone	1120-71-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U194		n-Propylamine	107-10-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U197		p-Benzoquinone	106-51-4	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U200		Reserpine	50-55-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U201		Resorcinol	108-46-3	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U202		Saccharin and salts	81-07-2*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U206		Streptozatocin	18883-66-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U213		Tetrahydrofuran	109-99-9	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U214	Table CCW in 268.43	Thallium (I) acetate	563-68-8	NA	RTHRM; or STABL.
U215	Table CCW in 268.43	Thallium (I) carbonate	6533-73-9	NA	RTHRM; or STABL.
U216	Table CCW in 268.43	Thallium (I) chloride	7791-12-0	NA	RTHRM; or STABL.
U217	Table CCW in 268.43	Thallium (I) nitrate	10102-45-1	NA	RTHRM; or STABL.
U218		Thioacetamide	62-55-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U219		Thiourea	62-56-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U221		Toluenediamine	25376-45-8	CARBN; or INCIN	FSUBS; or INCIN.
U222		o-Toluidine hydrochloride	636-21-5	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U223		Toluene diisocyanate	26471-62-5	CARBN; or INCIN	FSUBS; or INCIN.
U234		sym-Trinitrobenzene	99-35-4	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U236		Trypan Blue	72-57-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U237		Uracil mustard	66-75-1	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U238		Ethyl carbamate	51-79-6	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.

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TABLE 2.—TECHNOLOGY-BASED STANDARDS BY RCRA WASTE CODE—Continued

Waste code	See also	Waste descriptions and/or treatment subcategory	CAS No. for regulated hazardous constituents	Technology code	
				Wastewaters	Nonwastewaters
U240		2,4-Dichlorophenoxyacetic (salts and esters)	94-75-7*	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U244		Thiram	137-26-8	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN.
U246		Cyanogen bromide	506-68-3	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN.
U248		Warfarin (greater than or equal to 3%)	81-81-2	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN.
U249		Zinc Phosphide (<10%)	1314-84-7	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN.

* CAS Number given for parent compound only.
** This waste code exists in gaseous form and is not categorized as wastewater or nonwastewater forms.
NA—Not Applicable.

TABLE 3.—TECHNOLOGY-BASED STANDARDS FOR SPECIFIC RADIOACTIVE HAZARDOUS MIXED WASTE

Waste code	Waste descriptions and/or treatment subcategory	CAS Number	Technology code	
			Wastewaters	Nonwastewaters
D002	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D004	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D005	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D006	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D007	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D008	Radioactive Lead Solids Subcategory (Note: these lead solids include, but are not limited to, all forms of lead shielding, 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 stabilized as ash.).	7439-92-1	NA	MACRO
D008	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D009	Elemental mercury contaminated with radioactive materials	7439-97-6	NA	AMLGM
D009	Hydraulic oil contaminated with Mercury Radioactive Materials Subcategory	7439-97-6	NA	INCIN
D009	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D010	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
D011	Radioactive High Level Wastes Generated During the Reprocessing of Fuel Rods Subcategory.	NA	NA	HLVIT
U151	Mercury: Elemental mercury contaminated with radioactive materials	7439-97-6	NA	AMLGM

NA—Not Applicable.

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

(c) As an alternative to the otherwise applicable subpart D treatment standards, lab packs are eligible for land disposal provided the following requirements are met:

(1) The lab packs comply with the applicable provisions of 40 CFR 264.316 and 40 CFR 265.316;

(2) All hazardous wastes contained in such lab packs are specified in appendix IV or appendix V to part 268;

(3) The lab packs are incinerated in accordance with the requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O; and

(4) Any incinerator residues from lab packs containing D004, D005, D006, D007, D008, D010, and D011 are treated in compliance with the applicable treatment standards specified for such wastes in subpart D of this part.

(d) Radioactive hazardous mixed wastes with treatment standards specified in Table 3 of this section are not subject to any treatment standards specified in § 268.41, § 268.43, or Table 2 of this section. Radioactive hazardous mixed wastes not subject to treatment standards in Table 3 of this section remain subject to all applicable treatment standards specified in

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§ 268.41, § 268.43, and Table 2 of this section.

12. Section 268.43 is amended by revising paragraph (a) and Table CCW—Constituent Concentrations in Wastes, and by adding paragraph (c) to read as follows:

§ 268.43 Treatment standards expressed as waste concentrations.

(a) Table CCW identifies the restricted wastes and the concentrations of their associated hazardous constituents which may not be exceeded by the waste or treatment residual (not an extract of such waste or residual) for the allowable land disposal of such waste or residual. Compliance with these concentrations is required based upon grab samples, unless otherwise noted in the following Table CCW.

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
D003 (Reactive cyanides subcategory—based on 261.23(a)(5)).		Cyanides (Total)	57-12-5	Reserved	# 590
		Cyanides (Amenable)	57-12-5	0.86	30
D004	Table CCWE in 268.41	Arsenic	7440-38-2	5.0	NA
D005	Table CCWE in 268.41	Barium	7440-39-3	100	NA
D006	Table CCWE in 268.41	Cadmium	7440-43-9	1.0	NA
D007	Table CCWE in 268.41	Chromium (Total)	7440-47-32	5.0	NA
D008	Table CCWE in 268.41	Lead	7439-92-1	5.0	NA
D009	Table CCWE in 268.41	Mercury	7439-97-6	0.20	NA
D010	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
D011	Table CCWE in 268.41	Silver	7440-22-4	5.0	NA
D012	Table 2 in 268.42	Endrin	720-20-8	NA	0.13
D013	Table 2 in 268.42	Lindane	58-89-9	NA	0.066
D014	Table 2 in 268.42	Methoxychlor	72.43-5	NA	0.18
D015	Table 2 in 268.42	Toxaphene	8001-35-1	NA	1.3
D016	Table 2 in 268.42	2,4-D	94-75-7	NA	10.0
D017	Table 2 in 268.42	2,4,5-TP Silvex	93-76-5	NA	7.9
F001–F005 spent solvents	Table CCWE in 268.41 and Table 2 in 268.42.	1,1,2-Trichloroethane	71-55-6	0.030	● 7.6
		Benzene	71-43-2	0.070	● 3.7
F001–F005 spent solvents (Pharmaceutical industry wastewater subcategory).		Methylene chloride	75-09-2	0.44	NA
F006	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.2	590
		Cyanides (Amenable)	57-12-5	0.86	30
		Cadmium	7440-43-9	1.6	NA
		Chromium	7440-47-32	0.32	NA
		Lead	7439-92-1	0.040	NA
		Nickel	7440-02-0	0.44	NA
F007	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	590
		Cyanides (Amenable)	57-12-5	0.1	30
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F008	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	590
		Cyanides (Amenable)	57-12-5	0.1	30
		Chromium	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F009	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	590
		Cyanides (Amenable)	57-12-5	0.1	30
		Chromium	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F010		Cyanides (Total)	57-12-5	1.9	1.5
		Cyanides (Amenable)	57-12-5	0.1	NA
F011	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
		Cyanides (Amenable)	57-12-5	0.1	9.1
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F012	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
		Cyanides (Amenable)	57-12-5	0.1	9.1
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
F019	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.2	# 590
		Cyanides (Amenable)	57-12-5	0.86	# 30
		Chromium (Total)	7440-47-32	0.32	NA
F024	Table CCWE in 268.41 and Table 2 in 268.42 (Note: F024 organic standards must be treated via incineration (INCIN)).	2-Chloro-1,3-butadiene	126-99-8	● 0.28	● 0.28
		3-Chloropropene	107-05-1	● 0.28	● 0.28
		1,1-Dichloroethane	75-34-3	● 0.014	● 0.014
		1,2-Dichloroethane	107-08-2	● 0.014	● 0.014
		1,2-Dichloropropane	78-87-5	● 0.014	● 0.014
		cis-1,3-Dichloropropene	10061-01-5	● 0.014	● 0.014
		trans-1,3-Dichloropropene	10061-02-6	● 0.014	● 0.014

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Bis(2-ethylhexyl)phthalate	117-81-7	[e] 0.036	[e] 1.8
		Hexachloroethane	67-72-1	[e] 0.036	[e] 1.8
		Chromium (Total	7440-47-32	0.35	NA
		Nickel	7440-02-0	0.47	NA
F025 (Light ends subcategory)		Chloroform	67-66-3	[e] 0.046	[e] 6.2
		1,2-Dichloroethane	107-06-2	[e] 0.21	[e] 8.2
		1,1-Dichloroethylene	75-35-4	[e] 0.025	[e] 6.2
		Methylene chloride	75-9-2	[e] 0.089	[e] 31
		Carbon tetrachloride	56-23-5	[e] 0.057	[e] 6.2
		1,1,2-Trichloroethane	79-00-5	[e] 0.054	[e] 6.2
		Trichloroethylene	79-01-6	[e] 0.054	[e] 5.6
		Vinyl chloride	75-01-4	[e] 0.27	[e] 33
F025 (Spent filters/aids and desiccants subcategory).		Chloroform	67-66-3	[e] 0.046	[e] 6.2
		Methylene chloride	75-9-2	[e] 0.089	[e] 31
		Carbon tetrachloride	56-23-5	[e] 0.057	[e] 6.2
		1,1,2-Trichloroethane	79-00-5	[e] 0.054	[e] 6.2
		Trichloroethylene	79-01-6	[e] 0.054	[e] 5.6
		Vinyl chloride	75-01-4	[e] 0.27	[e] 33
		Hexachlorobenzene	118-74-1	[e] 0.055	[e] 37
		Hexachlorobutadiene	87-68-3	[e] 0.055	[e] 28
		Hexachloroethane	67-72-1	[e] 0.055	[e] 30
F039	Table CCWE in 268.41	Acetone	67-64-1	[e] 0.28	[e] 160
		Acenaphtalene	208-96-8	[e] 0.059	[e] 3.4
		Acenaphthene	83-32-9	[e] 0.059	[e] 4.0
		Acetonitrile	75-05-8	[e] 0.17	NA
		Acetophenone	96-86-2	[e] 0.010	[e] 9.7
		2-Acetylaminofluorene	53-96-3	[e] 0.059	[e] 140
		Acrylonitrile	107-13-1	[e] 0.24	[e] 84
		Aldrin	309-00-2	[e] 0.021	[e] 0.066
		4-Aminobiphenyl	92-67-1	[e] 0.13	NA
		Aniline	62-53-3	[e] 0.81	[e] 14
		Anthracene	120-12-7	[e] 0.059	[e] 4.0
		Aroclor 1016	12674-11-2	[e] 0.013	[e] 0.92
		Aroclor 1221	11104-28-2	[e] 0.014	[e] 0.92
		Aroclor 1232	11141-16-5	[e] 0.013	[e] 0.92
		Aroclor 1242	53469-21-9	[e] 0.017	[e] 0.92
		Aroclor 1248	12672-29-6	[e] 0.013	[e] 0.92
		Aroclor 1254	11097-69-1	[e] 0.014	[e] 1.8
		Aroclor 1260	11096-82-5	[e] 0.014	[e] 1.8
		alpha-BHC	319-84-6	[e] 0.00014	[e] 0.066
		beta-BHC	319-85-7	[e] 0.00014	[e] 0.066
		delta-BHC	319-86-8	[e] 0.023	[e] 0.066
		gamma-BHC	58-89-9	[e] 0.0017	[e] 0.066
		Benzene	71-43-2	[e] 0.14	[e] 36
		Benzo(a)anthracene	56-55-3	[e] 0.059	[e] 8.2
		Benzo(b)fluoranthene	205-99-2	[e] 0.055	[e] 3.4
		Benzo(k)fluoranthene	207-08-9	[e] 0.059	[e] 3.4
		Benzo(g,h,i)perylene	191-24-2	[e] 0.0055	[e] 1.5
		Benzo(a)pyrene	50-32-8	[e] 0.061	[e] 8.2
		Bromodichloromethane	75-27-4	[e] 0.35	[e] 15
		Bromoform	75-25-2	[e] 0.63	[e] 15
		Bromomethane (methyl bromide)	74-83-9	[e] 0.11	[e] 15
		4-Bromophenyl phenyl ether	101-55-3	[e] 0.055	[e] 15
		n-Butyl alcohol	71-36-3	[e] 5.6	[e] 2.6
		Butyl benzyl phthalate	85-68-7	[e] 0.017	[e] 7.9
		2-sec-Butyl-4,6-dinitrophenol	88-85-7	[e] 0.066	[e] 2.5
		Carbon tetrachloride	56-23-5	[e] 0.057	[e] 5.6
		Carbon disulfide	75-15-0	[e] 0.014	NA
		Chlordane	57-74-9	[e] 0.0033	[e] 0.13
		p-Chloroaniline	106-47-8	[e] 0.46	[e] 16
		Chlorobenzene	108-90-7	[e] 0.057	[e] 5.7
		Chlorobenzilate	510-15-6	[e] 0.10	[e] NA
		Chlorodibromomethane	124-48-1	[e] 0.057	[e] 16
		Chloroethane	75-00-3	[e] 0.27	[e] 6.0
		bis(2-Chloroethoxy) methane	111-91-1	[e] 0.036	[e] 7.2
		bis(2-Chloroethyl) ether	111-44-4	[e] 0.033	[e] 7.2
		2-Chloroethyl vinyl ether		[e] 0.057	NA
		Chloroform	67-66-3	[e] 0.046	[e] 5.6
		bis(2-Chloroisopropyl) ether	39638-32-9	[e] 0.055	[e] 7.2
		p-Chloro-m-cresol	59-50-7	[e] 0.018	[e] 14
		Chloromethane (Methyl chloride)	74-87-3	[e] 0.19	[e] 33
		2-Chloronaphthalene	91-8-7	[e] 0.055	[e] 5.6
		2-Chlorophenol	95-57-8	[e] 0.044	[e] 5.7
		3-Chloropropene	107-05-1	[e] 0.036	[e] 28
		Chrysene	218-01-9	[e] 0.059	[e] 8.2
		o-Cresol	95-48-7	[e] 0.11	[e] 5.6

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Cresol (m- and p-isomers)		[1] 0.77	[2] 3.2
		Cyclohexanone	108-94-1	[1] 0.36	NA
		1,2-Dibromo-3-chloropropane	96-12-8	[1] 0.11	[2] 15
		1,2-Dibromoethane (Ethylene dibromide).	106-93-4	[1] 0.028	[2] 15
		Dibromomethane	74-95-3	[1] 0.11	[2] 15
		2,4-Dichlorophenoxyacetic acid (2,4-D).	94-75-7	[1] 0.72	[2] 10
		o,p'-DDD	53-19-0	[1] 0.023	[2] 0.087
		p,p'-DDD	72-54-8	[1] 0.023	[2] 0.087
		o,p'-DDE	3424-82-6	[1] 0.031	[2] 0.087
		p,p'-DDE	72-55-9	[1] 0.031	[2] 0.087
		o,p'-DDT	789-02-6	[1] 0.0039	[2] 0.087
		p,p'-DDT	50-29-3	[1] 0.0039	[2] 0.087
		Dibenzo(a,h)anthracene	53-70-3	[1] 0.055	[2] 8.2
		m-Dichlorobenzene	541-73-1	[1] 0.036	[2] 6.2
		o-Dichlorobenzene	95-50-1	[1] 0.088	[2] 6.2
		p-Dichlorobenzene	106-46-7	[1] 0.090	[2] 6.2
		Dichlorodifluoromethane	75-71-8	[1] 0.23	[2] 7.2
		1,1-Dichloroethane	75-34-3	[1] 0.059	[2] 7.2
		1,2-Dichloroethane	107-06-2	[1] 0.21	[2] 7.2
		1,1-Dichloroethylene	75-35-4	[1] 0.025	[2] 33
		trans-1,2-Dichloroethene		[1] 0.054	[2] 33
		2,4-Dichlorophenol	120-83-2	[1] 0.044	[2] 14
		2,6-Dichlorophenol	87-65-0	[1] 0.044	[2] 14
		1,2-Dichloropropane	78-87-5	[1] 0.85	[2] 18
		cis-1,3-Dichloropropene	10061-01-5	[1] 0.036	[2] 18
		trans-1,3-Dichloropropene	10061-02-6	[1] 0.036	[2] 18
		Dieldrin	60-57-1	[1] 0.017	[2] 0.13
		Diethyl phthalate	84-66-2	[1] 0.20	[2] 28
		p-Dimethylaminoazobenzene	60-11-3	[1] 0.13	NA
		2,4-Dimethyl phenol	105-67-9	[1] 0.036	[2] 14
		Dimethyl phthalate	131-11-3	[1] 0.047	[2] 28
		Di-n-butyl phthalate	84-74-2	[1] 0.057	[2] 28
		1,4-Dinitrobenzene	100-25-4	[1] 0.32	[2] 2.3
		4,6-Dinitro-o-cresol	534-52-1	[1] 0.28	[2] 160
		2,4-Dinitrophenol	51-28-5	[1] 0.12	[2] 160
		2,4-Dinitrotoluene	121-14-2	[1] 0.32	[2] 140
		2,6-Dinitrotoluene	606-20-2	[1] 0.55	[2] 28
		Di-n-octyl phthalate	117-84-0	[1] 0.017	[2] 28
		Di-n-propylnitrosoamine	621-64-7	[1] 0.40	[2] 14
		1,2-Diphenyl hydrazine		[1] 0.087	NA
		1,4-Dioxane	123-91-1	[1] 0.12	[2] 170
		Disulfoton	298-04-4	[1] 0.017	[2] 6.2
		Endosulfan I	939-98-8	[1] 0.023	[2] 0.066
		Endosulfan II	33213-6-5	[1] 0.029	[2] 0.13
		Endosulfan sulfate	1-31-07-8	[1] 0.029	[2] 0.13
		Endrin	7-20-8	[1] 0.0028	[2] 0.13
		Endrin aldehyde	7421-93-4	[1] 0.025	[2] 0.13
		Ethyl acetate	141-78-6	[1] 0.34	[2] 33
		Ethyl cyanide		[1] 0.24	NA
		Ethyl benzene	100-41-4	[1] 0.057	[2] 6.0
		Ethyl ether	60-29-7	[1] 0.12	[2] 160
		bis(2-Ethylhexyl) phthalate	117-81-7	[1] 0.28	[2] 28
		Ethyl methacrylate	97-63-2	[1] 0.14	[2] 160
		Ethylene oxide	75-21-8	[1] 0.12	NA
		Famphur	52-85-7	[1] 0.017	[2] 15
		Fluoranthene	206-44-0	[1] 0.068	[2] 8.2
		Fluorene	86-73-7	[1] 0.059	[2] 4.0
		Fluorotrichloromethane	75-69-4	[1] 0.020	[2] 33
		Heptachlor	76-44-8	[1] 0.0012	[2] 0.066
		Heptachlor epoxide	1024-57-3	[1] 0.016	[2] 0.066
		Hexachlorobenzene	118-74-1	[1] 0.055	[2] 37
		Hexachlorobutadiene	87-68-3	[1] 0.055	[2] 28
		Hexachlorocyclopentadiene	77-47-4	[1] 0.057	[2] 3.6
		Hexachlorodibenzo-furans		[1] 0.000063	[2] 0.001
		Hexachlorodibenzo-p-dioxins		[1] 0.000063	[2] 0.001
		Hexachloroethane	67-72-1	[1] 0.055	[2] 28
		Hexachloropropene	1888-71-7	[1] 0.035	[2] 28
		Indeno(1,2,3,-c,d)pyrene	193-39-5	[1] 0.0055	[2] 8.2
		Iodomethane	74-88-4	[1] 0.019	[2] 65
		Isobutanol	78-83-1	[1] 5.6	[2] 170
		Isodrin	465-73-6	[1] 0.021	[2] 0.066
		Isosafrole	120-58-1	[1] 0.081	[2] 2.6
		Kepone	143-50-8	[1] 0.0011	[2] 0.13
		Methacrylonitrile	126-98-7	[1] 0.24	[2] 84
		Methapyrilene	91-80-5	[1] 0.081	[2] 1.5

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Methoxychlor	72-43-5	*0.25	●0.18
		3-Methylcholanthrene	56-49-5	*0.0055	●15
		4,4-Methylene-bis-(2-chloroaniline)	101-14-4	*0.50	●35
		Methylene chloride	75-09-2	*0.089	●33
		Methyl ethyl ketone	78-93-3	*0.28	●36
		Methyl isobutyl ketone	108-10-1	*0.14	●33
		Methyl methacrylate	80-62-6	*0.14	●160
		Methyl methansulfonate		*0.018	NA
		Methyl parathion	298-00-0	*0.014	●4.6
		Naphthalene	91-20-3	*0.059	●3.1
		2-Naphtylamine	91-59-8	*0.52	NA
		p-Nitroaniline	100-01-6	*0.028	●28
		Nitrobenzene	98-95-3	*0.068	●14
		5-Nitro-o-toluidine	99-55-8	*0.32	●28
		4-Nitrophenol	100-02-7	*0.12	●29
		N-Nitrosodiethylamine	55-18-5	*0.40	●28
		N-Nitrosodimethylamine	62-75-9	*0.40	NA
		N-Nitroso-di-n-butylamine	924-16-3	*0.40	●17
		N-Nitrosomethylethylamine	10595-95-6	*0.40	●2.3
		N-Nitrosomorpholine	59-89-2	*0.40	●2.3
		N-Nitrosopiperidine	100-75-4	*0.013	●35
		N-Nitrosopyrrolidine	930-55-2	*0.013	●35
		Parathion	56-38-2	*0.017	●4.6
		Pentachlorobenzene	608-93-5	*0.055	●37
		Pentachlorodibenzo-furans		*0.000035	●0.001
		Pentachlorodibenzo-p-dioxins		*0.000063	●0.001
		Pentachloronitrobenzene	82-68-8	*0.055	●4.8
		Pentachlorophenol	87-86-5	*0.089	●7.4
		Phenacetin	62-44-2	*0.081	●16
		Phenanthrene	85-01-8	*0.059	●3.1
		Phenol	108-95-2	*0.039	●6.2
		Phorate	298-02-2	*0.021	●4.6
		Propanenitrile (ethyl cyanide)	107-12-0	*0.24	●360
		Pronamide	23950-58-5	*0.093	●1.5
		Pyrene	129-00-0	*0.067	●8.2
		Pyridine	110-86-1	*0.014	●16
		Safrole	94-59-7	*0.081	●22
		Silvex (2,4,5-TP)	93-72-1	*0.72	●7.9
		2,4,5-T	93-76-5	*0.72	●7.9
		1,2,4,5,-Tetrachlorobenzene	95-94-3	*0.055	●19
		Tetrachlorodibenzo-furans		*0.000063	●0.001
		Tetrachlorodibenzo-p-dioxins		*0.000063	●0.001
		2,3,7,8-Tetrachlorodibenzo-p-dioxin		*0.000063	NA
		1,1,1,2-Tetrachloroethane	630-20-6	*0.057	●42
		1,1,2,2-Tetrachloroethane	79-34-6	*0.057	●42
		Tetrachloroethene	127-18-4	*0.056	●5.6
		2,3,4,6-Tetrachlorophenol	58-90-2	*0.030	●37
		Toluene	108-88-3	*0.080	●28
		Toxaphene	8001-35-1	*0.0095	●1.3
		1,2,4-Trichlorobenzene	120-82-1	*0.055	●19
		1,1,1-Trichloroethane	71-55-6	*0.054	●5.6
		1,1,2-Trichloroethane	79-00-5	*0.054	●5.6
		Trichloroethylene	79-01-6	*0.054	●5.6
		2,4,5-Trichlorophenol	95-95-4	*0.18	●37
		2,4,6-Trichlorophenol	88-06-2	*0.035	●37
		1,2,3-Trichloropropane	96-18-4	*0.85	●28
		1,1,2-Trichloro-1,2,2-trifluoro-ethane	76-13-1	*0.057	●28
		Vinyl chloride	75-01-4	*0.27	●33
		Xylene(s)		*0.32	●28
		Cyanides (Total)	57-12-5	*1.2	●1.8
		Cyanides (Amenable)	57-12-5	*0.86	NA
		Fluoride	16964-48-6	*35	NA
		Sulfide	8496-25-8	*14	NA
		Antimony	7440-38-0	*1.9	NA
		Arsenic	7440-38-2	*5.0	NA
		Barium	7440-39-3	*1.2	NA
		Beryllium	7440-41-7	*0.82	NA
		Cadmium	7440-43-9	*0.20	NA
		Chromium (Total)	7440-47-32	*0.37	NA
		Copper	7440-50-8	*1.3	NA
		Lead	7439-92-1	*0.28	NA
		Mercury	7439-97-6	*0.15	NA
		Nickel	7440-02-0	*0.55	NA
		Selenium	7782-49-2	*0.82	NA
		Silver	7440-22-4	*0.29	NA
		Vanadium	7440-62-2	*0.042	NA
K001	Table CCWE in 268.41	Naphthalene	91-20-3	●0.031	●1.5

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Pentachlorophenol	87-86-5	[e] 0.031	[e] 1.5
		Phenanthrene	85-01-8	[e] 0.031	[e] 1.5
		Pyrene	129-00-0	[e] 0.028	[e] 1.5
		Toluene	108-88-3	[e] 0.028	[e] 28
		Xylenes (Total)		[e] 0.032	[e] 33
		Lead	7439-92-1	[e] 0.037	NA
K002	Table CCWE in 268.41	Chromium (Total)	7440-47-32	[a] 2.9	NA
		Lead	7439-92-1	[a] 3.4	NA
K003	Table CCWE in 268.41	Chromium (Total)	7440-47-32	[a] 2.9	NA
		Lead	7439-92-1	[a] 3.4	NA
K004	Table CCWE in 268.41	Chromium (Total)	7440-47-32	[a] 2.9	NA
		Lead	7439-92-1	[a] 3.4	NA
K005	Table CCWE in 268.41	Chromium (Total)	7440-47-32	[a] 2.9	NA
		Lead	7439-92-1	[a] 3.4	NA
		Cyanides (Total)	57-12-5	[a] 0.74	[f]
K006	Table CCWE in 268.41	Chromium (Total)	7440-47-32	[a] 2.9	NA
		Lead	7439-92-1	[a] 3.4	NA
K007	Table CCWE	Chromium (Total)	7440-47-32	[a] 2.9	NA
		Lead	7439-92-1	[a] 3.4	[d] NA
		Cyanides (Total)	57-12-5	[a] 0.74	
K008	Table CCWE in 268.41	Chromium (Total)	7440-47-32	[a] 2.9	NA
		Lead	7439-92-1	[a] 3.4	NA
K009		Chloroform	67-66-3	0.1	[e] 6.0
K010		Chloroform	67-66-3	0.1	6.0
K011		Acetonitrile	75-05-8	38	1.8
		Acrylonitrile	107-13-1	0.06	1.4
		Acrylamide	79-06-1	19	23
		Benzene	71-43-2	0.02	0.03
		Cyanide (Total)	57-12-5	21	57
K013		Acetonitrile	75-05-8	38	[e] 1.8
		Acrylonitrile	107-13-1	0.06	[e] 1.4
		Acrylamide	79-06-1	19	[e] 23
		Benzene	71-43-2	0.02	[e] 0.03
		Cyanide (Total)	57-12-5	21	57
K014		Acetonitrile	75-05-8	38	[e] 1.8
		Acrylonitrile	107-13-1	0.06	[e] 1.4
		Acrylamide	79-06-1	19	[e] 23
		Benzene	71-43-2	0.02	[e] 0.03
		Cyanide (Total)	57-12-5	21	57
K015	Table CCWE in 268.41	Anthracene	120-12-7	1.0	[e] 3.4
		Benzal chloride	98-87-3	0.28	[e] 6.2
		Sum of Benzo(b)fluoranthene and Benzo(k)fluoranthene.	205-99-2 207-08-9	0.029	3.4
		Phenanthrene	85-01-8	0.27	[e] 3.4
		Toluene	108-88-3	0.15	[e] 6.0
		Chromium (Total)	7440-47-32	0.32	NA
		Nickel	7440-02-0	0.44	NA
K016		Hexachlorobenzene	118-74-1	[e] 0.033	[e] 28
		Hexachlorobutadiene	87-68-3	[e] 0.007	[e] 5.6
		Hexachlorocyclopentadiene	77-47-4	[e] 0.007	[e] 5.6
		Hexachloroethane	67-72-1	[e] 0.033	[e] 28
		Tetrachloroethene	127-18-4	[e] 0.007	[e] 6.0
K017		1,2-Dichloropropane	78-87-5	[b],[c] 0.85	[e] 18
		1,2,3-Trichloropropane	96-18-4	[b],[c] 0.85	[e] 28
		Bis(2-chloroethyl)ether	111-44-4	[b],[c] 0.033	[e] 7.2
K018		Chloroethane	75-00-3	[e] 0.007	[e] 6.0
		1,1-Dichloroethane	75-34-3	[e] 0.007	[e] 6.0
		1,2-Dichloroethane	107-06-2	[e] 0.007	[e] 6.0
		Hexachloroethane	67-72-1	[e] 0.007	[e] 28
		Hexachlorobutadiene	87-68-3	[e] 0.033	[e] 5.6
		Hexachloroethane	67-72-1	[e] 0.007	[e] 28
		Pentachloroethane	76-01-7	[e] 0.007	[e] 5.6
		1,1,1-Trichloroethane	71-55-6	[e] 0.007	[e] 6.0
K019		Bis(2-chloroethyl)ether	111-44-4	[e] 0.007	[e] 5.6
		Chlorobenzene	108-90-7	[e] 0.006	[e] 6.0
		Chloroform	67-66-3	[e] 0.007	[e] 6.0
		p-Dichlorobenzene	106-46-7	[e] 0.008	NA
		1,2-Dichloroethane	107-06-2	[e] 0.007	[e] 6.0
		Fluorene	86-73-7	[e] 0.007	NA
		Hexachloroethane	67-72-1	[e] 0.033	[e] 28
		Naphthalene	91-20-3	[e] 0.007	[e] 5.6
		Phenanthrene	85-01-8	[e] 0.007	[e] 5.6
		1,2,4,5-Tetrachlorobenzene	95-94-3	[e] 0.017	NA
		Tetrachloroethene	127-18-4	[e] 0.007	[e] 6.0
		1,2,4-Trichlorobenzene	120-82-1	[e] 0.023	[e] 19
		1,1,1-Trichloroethane	71-55-6	[e] 0.007	[e] 6.0
K020		1,2-Dichloroethane	106-93-4	[e] 0.007	[e] 6.0

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		1,1,2,2-Tetrachloroethane	79-34-6	[e] 0.007	[e] 5.6
		Tetrachloroethene	127-18-4	[e] 0.007	[e] 6.0
K021	Table CCWE in 268.41	Chloroform	67-66-3	[*] 0.046	[e] 6.2
		Carbon tetrachloride	56-23-5	[*] 0.057	[e] 6.2
		Antimony	7440-36-0	[*] 0.60	NA
K022	Table CCWE in 268.41	Toluene	108-88-3	[*] 0.080	[e] 0.034
		Acetophenone	96-86-2	0.010	[e] 19
		Diphenylamine	22-39-4	[*] 0.52	NA
		Diphenylnitrosamine	86-30-6	[*] 0.40	NA
		Sum of Diphenylamine and Diphenylnitrosamine.		NA	[e] 13
		Phenol	108-95-2	0.039	[e] 12
		Chromium (Total)	7440-47-32	0.35	NA
		Nickel	7440-02-0	0.47	NA
K023		Phthalic anhydride (measured as Phthalic acid).	85-44-9	[e] 0.54	[e] 28
K024		Phthalic anhydride (measured as Phthalic acid).	85-44-9	[e] 0.54	[e] 28
K028	Table CCWE in 268.41	1,1-Dichloroethane	75-34-3	[e] 0.007	[e] 6.0
		trans-1,2-Dichloroethane		[e] 0.033	[e] 6.0
		Hexachlorobutadiene	87-68-3	[e] 0.007	[e] 5.6
		Hexachloroethane	67-72-1	[e] 0.033	[e] 28
		Pentachloroethane	76-01-7	[e] 0.033	[e] 5.6
		1,1,1,2-Tetrachloroethane	630-20-6	[e] 0.007	[e] 5.6
		1,1,2,2-Tetrachloroethane	79-34-6	[e] 0.007	[e] 5.6
		1,1,1-Trichloethane	71-55-6	[e] 0.007	[e] 6.0
		1,1,2-Trichlorethane	79-00-5	[e] 0.007	[e] 6.0
		Tetrachloroethylene	127-18-4	[e] 0.007	[e] 6.0
		Cadmium	7440-43-9	6.4	NA
		Chromium (Total)	7440-47-32	0.35	NA
		Lead	7439-92-1	0.037	NA
		Nickel	7440-02-0	0.47	NA
K029		Chloroform	67-66-3	0.46	[e] 6.0
		1,2-Dichloroethane	107-06-2	0.21	[e] 6.0
		1,1-Dichloroethylene	75-35-4	0.025	[e] 6.0
		1,1,1-Trichloroethane	71-55-6	0.054	[e] 6.0
		Vinyl chloride	75-01-4	0.27	[e] 6.0
K030		o-Dichlorobenzene	95-50-1	[e] 0.008	NA
		p-Dichlorobenzene	106-46-7	[e] 0.008	NA
		Hexachlorobutadiene	87-68-3	[e] 0.007	[e] 5.6
		Hexachlorobutadiene	67-72-1	[e] 0.033	[e] 28
		Hexachloropropene	1888-71-7	NA	[e] 19
		Pentachlorobenzene	608-93-5	NA	[e] 28
		Pentachloroethane	76-01-7	[e] 0.007	[e] 5.6
		1,2,4,5-Tetrachlorobenzene	95-94-3	[e] 0.017	[e] 14
		Tetrachloroethane	127-18-4	[e] 0.007	[e] 6.0
		1,2,4-Trichlorobenzene	120-82-1	[e] 0.023	[e] 19
K031	Table CCWE in 268.41	Arsenic	7440-38-2	0.79	NA
K032		Hexachloropentadiene	77-47-4	[*] 0.057	[e] 2.4
		Chlordane	57-74-9	[*] 0.0033	[e] 0.26
		Heptachlor	76-44-8	[*] 0.012	[e] 0.066
		Heptachlor epoxide	1024-57-3	[*] 0.016	[e] 0.066
K033		Hexachlorocyclopentadiene	77-47-4	[*] 0.057	[e] 2.4
K034		Hexachlorocyclopentadiene	77-47-4	[*] 0.057	[e] 2.4
K035		Acenaphthene	83-32-9	NA	[e] 3.4
		Anthracene	120-12-7	NA	[e] 3.4
		Benz(a)anthracene	56-55-3	[*] 0.059	[e] 3.4
		Benzo(a)pyrene	50-32-8	NA	[e] 3.4
		Chrysene	218-01-9	[*] 0.059	[e] 3.4
		Dibenz(a,h)anthracene	53-70-3	NA	[e] 3.4
		Fluoranthene	206-44-0	[*] 0.068	[e] 3.4
		Fluorene	86-73-7	NA	[e] 3.4
		Indeno(1,2,3-cd)pyrene	193-39-5	NA	[e] 3.4
		Cresols (m- and p-isomers)		[*] 0.77	NA
		Naphthalene	91-20-3	[*] 0.059	[e] 3.4
		o-cresol	95-48-7	[*] 0.11	NA
		Phenanthrene	65-01-8	[*] 0.059	[e] 3.4
		Phenol	108-95-2	0.039	NA
		Pyrene	129-00-0	[*] 0.067	[e] 8.2
K036		Disulfoton	298-04-4	[*] 0.025	[e] 0.1
K037		Disulfoton	298-04-4	[*] 0.025	[e] 0.1
		Toluene	108-88-3	[*] 0.080	[e] 28
K038		Phorate	298-02-2	0.025	[e] 0.1
K040		Phorate	298-02-2	0.025	[e] 0.1
K041		Toxaphene	6001-35-1	[*] 0.0095	[e] 2.6
K042		1,2,4,5-Tetrachlorobenzene	95-94-3	[*] 0.055	[e] 4.4
		o-Dichlorobenzene	95-50-1	[*] 0.088	[e] 4.4

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		p-Dichlorobenzene	106-46-7	[1] 0.090	[2] 4.4
		Pentachlorobenzene	608-93-5	[1] 0.055	[2] 4.4
		1,2,4-Trichlorobenzene	120-82-1	[1] 0.055	[2] 4.4
K043		2,4-Dichlorophenol	120-83-2	[2] 0.049	[2] 0.38
		2,6-Dichlorophenol	87-65-0	[2] 0.013	[2] 0.34
		2,4,5-Trichlorophenol	95-95-4	[2] 0.016	[2] 8.2
		2,4,6-Trichlorophenol	88-06-2	[2] 0.039	[2] 7.6
		Tetrachlorophenols (Total)		[2] 0.018	[2] 0.68
		Pentachlorophenol	87-86-5	[2] 0.22	[2] 1.9
		Tetrachloroethene	79-01-6	[2] 0.006	[2] 1.7
		Hexachlorodibenzo-p-dioxins		[2] 0.001	[2] 0.001
		Hexachlorodibenzo-furans		[2] 0.001	[2] 0.001
		Pentachlorodibenzo-p-dioxins		[2] 0.001	[2] 0.001
		Pentachlorodibenzo-furans		[2] 0.001	[2] 0.001
		Tetrachlorodibenzo-p-dioxins		[2] 0.001	[2] 0.001
		Tetrachlorodibenzo-furans		[2] 0.001	[2] 0.001
K046	Table CCWE in 268.41	Lead	7439-92-1	0.037	NA
K048	Table CCWE in 268.41	Benzene	71-43-2	[2] 0.011	[2] 14
		Benzo(a)pyrene	50-32-8	[2] 0.047	[2] 12
		Bis(2-ethylhexyl)phthalate	117-81-7	[2] 0.043	[2] 7.3
		Chrysene	218-01-9	[2] 0.043	[2] 15
		Di-n-butyl phthalate	84-74-2	[2] 0.06	[2] 3.6
		Ethylbenzene	100-41-4	[2] 0.011	[2] 14
		Fluorene	86-73-7	[2] 0.05	NA
		Naphthalene	91-20-3	[2] 0.033	[2] 42
		Phenanthrene	85-01-8	[2] 0.039	[2] 34
		Phenol	108-95-2	[2] 0.047	[2] 3.6
		Pyrene	129-00-0	[2] 0.045	[2] 36
		Toluene	108-88-3	[2] 0.011	[2] 14
		Xylene(s)		[2] 0.011	[2] 22
		Cyanides (Total)	57-12-5	[2] 0.028	[2] 1.8
		Chromium (Total)	7440-47-32	0.2	NA
		Lead	7439-92-1	0.037	NA
K049	Table CCWE in 268.41	Anthracene	120-12-7	[2] 0.039	[2] 28
		Benzene	71-43-2	[2] 0.011	[2] 14
		Benzo(a)pyrene	50-32-8	[2] 0.047	[2] 12
		Bis(2-ethylhexyl)phthalate	117-81-7	[2] 0.043	[2] 7.3
		Carbon disulfide	75-15-0	[2] 0.011	NA
		Chrysene	2218-01-9	[2] 0.043	[2] 15
		2,4-Dimethylphenol	105-67-9	[2] 0.033	NA
		Ethylbenzene	100-41-4	[2] 0.011	[2] 14
		Naphthalene	91-20-3	[2] 0.033	[2] 42
		Phenanthrene	85-01-8	[2] 0.039	[2] 34
		Phenol	108-95-2	[2] 0.047	[2] 3.6
		Pyrene	129-00-0	[2] 0.045	[2] 36
		Toluene	108-88-3	[2] 0.011	[2] 14
		Xylene(s)		[2] 0.011	[2] 22
		Cyanides (Total)	57-12-5	[2] 0.028	[2] 1.8
		Chromium (Total)	7440-47-32	0.2	NA
		Lead	7439-92-1	0.037	NA
K050	Table CCWE in 268.41	Benzo(a)pyrene	50-32-8	[2] 0.047	[2] 12
		Phenol	108-95-2	[2] 0.047	[2] 3.6
		Cyanides (Total)	57-12-5	[2] 0.028	[2] 1.8
		Chromium (Total)	7440-47-32	0.2	NA
		Lead	7439-92-1	0.037	NA
K051	Table CCWE in 268.41	Acenaphthene	208-96-8	[2] 0.05	NA
		Anthracene	120-12-7	[2] 0.039	[2] 28
		Benzene	71-43-2	[2] 0.011	[2] 14
		Benzo(a)anthracene	50-32-8	[2] 0.043	[2] 20
		Benzo(a)pyrene	117-81-7	[2] 0.047	[2] 12
		Bis(2-ethylhexyl)phthalate	75-15-0	[2] 0.043	[2] 7.3
		Chrysene	2218-01-9	[2] 0.043	[2] 15
		Di-n-butyl phthalate	105-67-9	[2] 0.06	[2] 3.6
		Ethylbenzene	100-41-4	[2] 0.011	[2] 14
		Fluorene	86-73-7	[2] 0.05	[2] NA
		Naphthalene	91-20-3	[2] 0.033	[2] 42
		Phenanthrene	85-01-8	[2] 0.039	[2] 34
		Phenol	108-95-2	[2] 0.047	[2] 3.6
		Pyrene	129-00-0	[2] 0.045	[2] 36
		Toluene	108-88-3	[2] 0.011	[2] 14
		Xylene(s)		[2] 0.011	[2] 22
		Cyanides (Total)	57-12-5	[2] 0.028	[2] 1.8
		Chromium (Total)	7440-47-32	0.2	NA
		Lead	7439-92-1	0.037	NA
K052	Table CCWE in 268.41	Benzene	71-43-2	[2] 0.011	[2] 14
		Benzo(a)pyrene	50-32-8	[2] 0.047	[2] 12
		o-Cresol	95-48-7	[2] 0.011	[2] 6.2

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		p-Cresol	106-44-5	●0.011	●6.2
		2,4-Dimethylphenol	105-67-9	●0.033	●NA
		Ethylbenzene	100-41-4	●0.011	●14
		Naphthalene	91-20-3	●0.033	●42
		Phenanthrene	85-01-8	●0.039	●34
		Phenol	108-95-2	●0.047	●3.6
		Toluene	108-88-3	●0.011	●14
		Xylenes		●0.011	●22
		Cyanides (Total)	57-12-5	●0.028	●1.8
		Chromium (Total)	7440-47-32	0.2	NA
		Lead	7439-92-1	0.037	NA
K060		Benzene	71-43-2	*,●0.17	●0.071
		Benzo(a)pyrene	50-32-8	*,●0.035	●3.6
		Naphthalene	91-20-3	*,●0.028	●3.4
		Phenol	108-95-2	*,●0.042	●3.4
		Cyanides (Total)	57-12-5	1.9	1.2
K061	Table CCWE in 268.41 and Table 2 in 268.42.	Cadmium	7440-43-9	1.61	NA
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.51	NA
		Nickel	7440-02-0	0.44	NA
K062	Table CCWE in 268.41	Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.04	NA
		Nickel	7440-02-0	0.44	NA
K069	Table CCWE in 268.41 and Table 2 in 268.42.	Cadmium	7440-43-9	1.6	NA
		Lead	7439-92-1	0.51	NA
K071	Table CCWE in 268.41	Mercury	7439-97-6	0.030	NA
K073		Carbon tetrachloride	56-23-5	*0.057	●6.2
		Chloroform	67-66-3	*0.046	●6.2
		Hexachloroethane	67-72-1	*0.055	●30
		Tetrachloroethene	127-18-4	*0.056	●6.2
		1,1,1-Trichloroethane	71-55-6	*0.054	●6.2
K083	Table CCWE in 268.41	Benzene	71-43-2	*0.14	●6.6
		Aniline	62-53-3	*0.81	●14
		Diphenylamine	22-39-4	*0.52	NA
		Diphenylnitrosamine	86-30-6	*0.40	NA
		Sum of Diphenylamine and Diphenylnitrosamine.		NA	●14
		Nitrobenzene	98-95-3	*0.068	●14
		Phenol	108-95-2	0.039	●5.6
		Cyclohexanone	108-94-1	0.36	●30
		Nickel	7440-02-0	0.47	NA
K084		Arsenic	7440-38-2	0.79	NA
K085		Benzene	71-43-2	*0.14	●4.4
		Chlorobenzene	108-90-7	*0.057	●4.4
		o-Dichlorobenzene	95-50-1	*0.088	●4.4
		m-Dichlorobenzene	541-73-1	*0.036	●4.4
		p-Dichlorobenzene	106-46-7	*0.090	●4.4
		1,2,4-Trichlorobenzene	120-82-1	*0.055	●4.4
		1,2,4,5-Tetrachlorobenzene	95-94-3	*0.055	●4.4
		Pentachlorobenzene	608-93-5	0.055	●4.4
		Hexachlorobenzene	118-74-1	*0.055	●4.4
		Aroclor 1016	12674-1, 2	*0.013	●0.92
		Aroclor 1221	11104-28-2	*0.014	●0.92
		Aroclor 1232	11141-16-5	*0.013	●0.92
		Aroclor 1242	53469-21-9	*0.017	●0.92
		Aroclor 1248	12672-29-6	*0.013	●0.92
		Aroclor 1254	11097-69-1	*0.014	●1.8
		Aroclor 1260	11096-82-5	*0.014	●1.8
K086	Table CCWE in 268.41	Acetone	67-64-1	0.28	●160
		Acetophenone	96-86-2	0.010	●9.7
		Bis(2-ethylhexyl)phthalate	117-81-7	*0.28	●28
		n-Butyl alcohol	71-36-3	5.6	●2.6
		Butylbenzylphthalate	85-68-7	*0.017	●7.9
		cyclohexanone	108-94-1	0.36	NA
		1,2-Dichlorobenzene	95-50-1	0.088	●6.2
		Diethyl phthalate	84-66-2	*0.20	●28
		Dimethyl phthalate	131-11-3	*0.047	●28
		Di-n-butyl phthalate	84-74-2	*0.057	●28
		Di-n-octyl phthalate	117-84-0	*0.017	●28
		Ethyl acetate	141-78-6	*0.34	●33
		Ethylbenzene	100-41-4	*0.057	●6.0
		Methanol	67-56-1	*5.6	NA
		Methyl isobutyl ketone	108-10-1	0.14	●33
		Methyl ethyl ketone	78-93-3	0.28	●36
		Methylene chloride	75-09-2	*0.089	●33

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		Naphthalene	91-20-3	[1] 0.059	[2] 3.1
		Nitrobenzene	98-95-3	[1] 0.068	[2] 14
		Toluene	108-88-3	[1] 0.080	[2] 28
		1,1,1-Trichloroethane	71-55-6	[1] 0.054	[2] 5.6
		Trichloroethylene	79-01-6	[1] 0.054	[2] 5.6
		Xylenes (Total)		[1] 0.32	[2] 28
		Cyanides (Total)	57-12-5	1.9	1.5
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.037	NA
K087	Table CCWE in 268.41	Acenaphthalene	208-96-8	[2] 0.028	3.4
		Benzene	71-43-2	[2] 0.014	[2] 0.071
		Chrysene	218-01-9	[2] 0.028	[2] 3.4
		Fluoranthene	206-44-0	[2] 0.028	[2] 3.4
		Indeno(1,2,3-cd)pyrene	193-39-5	[2] 0.028	[2] 3.4
		Naphthalene	91-20-3	[2] 0.028	[2] 3.4
		Phenanthrene	85-01-8	[2] 0.028	[2] 3.4
		Toluene	108-88-3	[2] 0.008	[2] 0.65
		Xylenes		[2] 0.014	[2] 0.07
		Lead	7439-92-1	0.037	NA
K093		Phthalic anhydride (measured as Phthalic acid).	85-44-9	[2] 0.54	[2] 28
K094		Phthalic anhydride (measured as Phthalic acid).	85-44-9	[2] 0.54	[2] 28
K095		1,1,1,2-Tetrachloroethane	630-20-6	0.057	[2] 5.6
		1,1,2,2-Tetrachloroethane	79-34-6	0.057	[2] 5.6
		Tetrachloroethene	127-18-4	0.056	[2] 6.0
		1,1,2-Trichloroethane	79-00-5	0.054	[2] 6.0
		Trichloroethylene	79-01-6	0.054	[2] 5.6
		Hexachloroethane	67-72-1	0.055	[2] 28
		Pentachloroethane	76-01-7	0.055	[2] 5.6
K096		1,1,1,2-Tetrachloroethane	630-20-6	0.057	[2] 5.6
		1,1,2,2-Tetrachloroethane	79-34-6	0.057	[2] 5.6
		Tetrachloroethene	127-18-4	0.056	[2] 6.0
		1,1,2-Trichloroethane	79-00-5	0.054	[2] 6.0
		Trichloroethene	79-01-6	0.054	[2] 5.6
		1,3-Dichlorobenzene	541-73-1	0.036	[2] 5.6
		Pentachloroethane	76-01-7	0.055	[2] 5.6
		1,2,4-Trichlorobenzene	120-82-1	0.055	[2] 19
K097		Hexachlorocyclopentadiene	77-47-4	[1] 0.057	2.4
		Chlordane	57-74-9	[1] 0.0033	[2] 0.26
		Heptachlor	76-44-8	[1] 0.0012	[2] 0.066
		Heptachlor epoxide	1024-57-3	[1] 0.016	[2] 0.066
K098		Toxaphene	8001-35-1	[1] 0.0095	[2] 2.6
K099		2,4-Dichlorophenoxyacetic acid	94-75-7	[2] 1	[2] 1
		Hexachlorodibenzo-p-dioxins		[2] 0.001	[2] 0.001
		Hexachlorodibenzofurans		[2] 0.001	[2] 0.001
		Pentachlorodibenzo-p-dioxins		[2] 0.001	[2] 0.001
		Pentachlorodibenzofurans		[2] 0.001	[2] 0.001
		Tetrachlorodibenzo-p-dioxins		[2] 0.001	[2] 0.001
		Tetrachlorodibenzofurans		[2] 0.001	[2] 0.001
K100	Table CCWE in 268.41	Cadmium	7440-43-9	1.6	NA
		Chromium (Total)	7440-47-32	0.32	NA
		Lead	7439-92-1	0.51	NA
K101		o-Nitroaniline		[2] 0.27	[2] 14
		Arsenic	7440-38-2	0.79	NA
		Cadmium	7440-43-9	0.24	NA
		Lead	7439-92-1	0.17	NA
		Mercury	7439-97-6	0.082	NA
K102	Table CCWE in 268.41	o-Nitrophenol		[2] 0.028	[2] 13
		Arsenic	7440-38-2	0.79	NA
		Cadmium	7440-43-9	0.24	NA
		Lead	7439-92-1	0.17	NA
		Mercury	7439-97-6	0.082	NA
K103		Aniline	62-53-3	[2] 4.5	5.6
		Benzene	71-43-2	[2] 0.15	[2] 6.0
		2,4-Dinitrophenol	51-28-5	[2] 0.61	[2] 5.6
		Nitrobenzene	98-95-3	[2] 0.07	[2] 5.6
		Phenol	108-95-2	[2] 1.4	[2] 5.6
K104		Aniline	62-53-3	[2] 4.5	[2] 5.6
		Benzene	71-43-2	[2] 0.15	[2] 6
		2,4-Dinitrophenol	51-28-5	[2] 0.61	5.6
		Nitrobenzene	98-95-3	[2] 0.073	[2] 5.6
		Phenol	108-95-2	[2] 1.4	[2] 5.6
		Cyanides (Total)	57-12-5	2.7	[2] 1.8
K105		Benzene	71-43-2	0.14	[2] 4.4
		Chlorobenzene	108-90-7	0.057	[2] 4.4
		o-Dichlorobenzene	95-50-1	0.088	[2] 4.4

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
		p-Dichlorobenzene	106-46-7	0.090	● 4.4
		2,4,5-Trichlorophenol	95-95-4	0.18	● 4.4
		2,4,6-Trichlorophenol	88-06-2	0.035	● 4.4
		2-Chlorophenol	95-57-8	0.044	● 4.4
		Phenol	108-95-2	0.039	● 4.4
K106	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury	7439-97-6	0.030	NA
K115	Table CCWE in 268.41	Nickel	7440-02-0	0.47	NA

● Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40 CFR Part 264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40 CFR Section 268.7.

* Based on analysis of composite samples.

As analyzed using SW-846 Method 9010; sample size: 0.5-10; distillation time: one hour to one hour and fifteen minutes.

NA—Not Applicable.

TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
P004	Aldrin		Aldrin	309-00-2	* 0.21	0.066
P010	Arsenic acid	Table CCWE in 268.41	Arsenic	7440-38-2	0.79	NA
P011	Arsenic pentoxide	Table CCWE in 268.41	Arsenic	7440-38-2	0.79	NA
P012	Arsenic trioxide	Table CCWE in 268.41	Arsenic	7440-38-2	0.79	NA
P013	Barium cyanide	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.1	9.1
P020	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)		2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	0.066	● 2.5
P021	Calcium cyanide		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.1	9.1
P022	Carbon disulfide	Table 2 in 268.42	Carbon disulfide	75-15-0	0.014	NA
P024	p-Chloroaniline		p-Chloroaniline	106-47-8	0.46	● 16
P029	Copper cyanide		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.1	9.1
P030	Cyanides (soluble salts and complexes)		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.1	9.1
P036	Dichlorophenylarsine	Table CCWE in 268.41	Arsenic	7440-38-2	0.79	NA
P037	Dieldrin		Dieldrin	60-57-1	* 0.017	● 0.13
P038	Diethylarsine	Table CCWE in 268.41	Arsenic	7740-38-2	0.79	NA
P039	Disulfoton		Disulfoton	298-04-4	0.017	● 0.1
P047	4,6-Dinitro-o-cresol		4,6-Dinitro-o-cresol	534-52-1	* 0.28	● 160
P048	2,4-Dinitrophenol		2,4-Dinitrophenol	51-28-5	* 0.12	● 160
P050	Endosulfan		Endosulfan I	939-98-8	* 0.023	● 0.066
			Endosulfan II	33213-6-5	* 0.029	● 0.13
			Endosulfan sulfate	1031-07-8	* 0.029	● 0.13
P051	Endrin		Endrin	72-20-8	* 0.0028	● 0.13
			Endrin aldehyde	7421-93-4	* 0.025	● 0.13
P056	Fluoride	Table 2 in 268.42	Fluoride	16964-48-8	35	NA
P059	Heptachlor		Heptachlor	76-44-8	* 0.0012	● 0.066
			Heptachlor epoxide	1024-57-3	* 0.016	● 0.066
P060	Isodrin		Isodrin	465-73-6	* 0.021	● 0.066
P063	Hydrogen cyanide		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
P065	Mercury fulminate	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury	7439-97-6	0.030	NA
P071	Methyl parathion		Methyl parathion	298-00-0	0.025	● 0.1
P073	Nickel carbonyl	Table CCWE in 268.41	Nickel	7440-02-0	0.44	NA
P074	Nickel cyanide	Table CCWE in 268.41	Cyanides (Table)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
			Nickel	7440-02-0	0.44	NA
P077	p-Nitroaniline		p-Nitroaniline	100-01-6	* 0.028	● 28
P082	N-Nitrosodimethylamine	Table 2 in 268.42	N-Nitrosodimethylamine	62-75-9	* 0.40	NA
P089	Parathion		Parathion	56-38-2	0.025	● 0.1
P092	Phenylmercury acetate	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury	7439-97-6	0.030	NA
P094	Phorate		Phorate	298-02-2	0.025	● 0.1
P097	Famphur		Famphur	52-85-7	0.025	● 0.1
P098	Potassium cyanide		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
P099	Potassium silver cyanide	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.1	9.1
			Silver	7440-22-4	0.29	NA
P101	Ethyl cyanide (Propanenitrile)		Ethyl cyanide (Propanenitrile)	107-12-0	* 0.24	# 360
P103	Selenourea	Table CCWE in 268.41	Selenium	7782-49-2	* 1 0	NA

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
P104	Silver cyanide	Table CCWE in 268.41	Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
			Silver	7440-22-4	0.29	NA
P106	Sodium cyanide		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
P110	Tetraethyl lead	Table CCWE in 268.41 and Table 2 in 268.42	Lead	7439-92-1	0.040	NA
P113	Thallic oxide	Table 2 in 268.42	Thallium	7440-28-0	[a] 0.14	NA
P114	Thallium selenite	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
P115	Thallium(I)sulfate	Table 2 in 268.42	Thallium	7440-28-0	[a] 0.14	NA
P119	Ammonia vanadate	Table 2 in 268.42	Vanadium	7440-62-2	[a] 28	NA
P120	Vanadium pentoxide	Table 2 in 268.42	Vanadium	7440-62-2	[a] 28	NA
P121	Zinc cyanide		Cyanides (Total)	57-12-5	1.9	110
			Cyanides (Amenable)	57-12-5	0.10	9.1
P123	Toxaphene		Toxaphene	8001-35-1	[a] 0.0095	[c] 1.3
U002	Acetone		Acetone	67-64-1	0.28	[c] 160
U003	Acetonitrile	Table 2 in 268.42	Acetonitrile	75-05-8	017	NA
U004	Acetophenone		Acetophenone	98-86-2	[c] 0.010	[c] 9.7
U005	2-Acetylaminofluorene		2-Acetylaminofluorene	53-96-3	[a] 0.059	[c] 140
U009	Acrylonitrile		Acrylonitrile	107-13-1	[a] 0.24	[c] 84
U012	Aniline		Aniline	62-53-3	0.81	[c] 14
U018	Benz(a)anthracene		Benz(a)anthracene	56-55-3	[a] 0.059	[c] 8.2
U019	Benzene		Benzene	71-43-2	[a] 0.14	[c] 36
U022	Benzo(a)pyrene		Benzo(a)pyrene	50-32-8	[a] 0.061	[c] 8.2
U024	Bis(2-chloroethoxy)methane		Bis(2-chloroethoxy)methane	111-91-1	0.036	[c] 7.2
U025	Bis(2-chloroethyl)ether		Bis(2-chloroethyl)ether	111-44-4	0.033	[c] 7.2
U027	Bis(2-chloroisopropyl) ether		Bis(2-chloroisopropyl) ether	39638-32-9	[a] 0.055	[c] 7.2
U028	Bis(2-ethylhexyl) pthalate		Bis(2-ethylhexyl) pthalate	117-81-7	[c] 0.54	[c] 28
U029	Bromomethane (Methyl bromide)		Bromomethane (Methyl bromide)	74-83-9	[a] 0.11	[c] 15
U030	4-Bromophenyl phenyl ether		4-Bromophenyl phenyl ether	101-55-3	[a] 0.055	[c] 15
U031	n-Butyl alcohol		n-Butyl alcohol	71-36-3	5.6	[c] 2.6
U032	Calcium chromate	Table CCWE in 268.41	Chromium (Total)	7440-47-32	0.32	NA
U036	Chlordane (alpha and gamma)		Chlordane (alpha and gamma)	57-74-9	[a] 0.0033	[c] 0.13
U037	Chlorobenzene		Chlorobenzene	108-90-7	[a] 0.057	[c] 5.7
U038	Chlorobenzilate	Table 2 in 268.42	Chlorobenzilate	510-15-6	[a] 0.10	NA
U039	p-Chloro-m-cresol		p-Chloro-m-cresol	59-50-7	[a] 0.018	[c] 14
U042	2-Chloroethyl vinyl	Table 2 in 268.42	2-Chloroethyl vinyl	110-75-8	0.057	NA
U043	Vinyl chloride		Vinyl chloride	75-01-4	[a] 0.27	[c] 33
U044	Chloroform		Chloroform	67-66-3	[a] 0.046	[c] 5.6
U045	Chloromethane (Methyl chloride)		Chloromethane (Methyl chloride)	74-87-3	[a] 0.19	[c] 33
U047	2-Chloronaphthalene		2-Chloronaphthalene	91-58-7	[a] 0.055	[c] 5.6
U048	2-Chlorophenol		2-Chlorophenol	95-57-8	[a] 0.044	[c] 5.7
U050	Chrysene		Chrysene	218-01-9	[a] 0.059	[c] 8.2
U051	Creosote	Table CCWE in 268.41	Naphthalene	91-20-3	[c] 0.031	[c] 1.5
			Pentachlorophenol	87-86-5	[c] 0.18	[c] 7.4
			Phenanthrene	85-01-8	[c] 0.031	[c] 1.5
			Pyrene	129-00-0	[c] 0.028	[c] 28
			Toluene	108-88-3	[c] 0.028	[c] 33
			Xylenes (Total)	7439-92-1	[c] 0.032	NA
			Lead		[c] 0.037	
U052	Cresols (Cresylic acid)		o-Cresol	95-48-7	[a] 0.11	[c] 5.6
			Cresols (m- and p- isomers)		[a] 0.77	[c] 3.2
U057	Cyclohexanone	Table 2 in 268.42	Cyclohexanone	108-94-1	0.36	NA
U060	DDD		o,p'-DDD	53-19-0	0.023	[c] 0.087
			p,p'-DDD	72-54-8	0.023	[c] 0.087
U061	DDT		o,p'-DDT	789-02-6	[a] 0.0039	[c] 0.087
			p,p'-DDT	50-29-3	[a] 0.0039	[c] 0.087
			o,p'-DDD	53-19-0	[a] 0.023	[c] 0.087
			p,p'-DDD	72-54-8	[a] 0.023	[c] 0.087
			o,p'-DDE	3424-82-6	[a] 0.031	[c] 0.087
			p,p'-DDE	72-55-9	[a] 0.031	[c] 0.087
U063	Dibenzo(a,h)anthracene		Dibenzo(a,h)anthracene	53-70-3	[a] 0.055	[c] 8.2
U066	1,2-Dibromo-3-chloropropane		1,2-Dibromo-3-chloropropane	96-12-8	[a] 0.11	[c] 15
U067	1,2-Dibromoethane (Ethylenedibromide)		1,2-Dibromoethane (Ethylene dibromide)	106-93-4	[a] 0.028	15
U068	Dibromomethane		Dibromomethane	74-95-3	[a] 0.11	15
U069	Di-n-butyl phthalate		Di-n-butyl phthalate	84-74-2	[c] 0.54	[c] 28
U070	o-Dichlorobenzene		o-Dichlorobenzene	95-50-1	[a] 0.088	[c] 6.2
U071	m-Dichlorobenzene		m-Dichlorobenzene	541-73-1	0.036	6.2
U072	p-Dichlorobenzene		p-Dichlorobenzene	104-46-7	[a] 0.090	[c] 6.2
U075	Dichlorodifluoromethane		Dichlorodifluoromethane	75-71-8	[a] 0.23	[c] 7.2
U076	1,1-Dichloroethane		1,1-Dichloroethane	75-34-3	[a] 0.059	7.2
U077	1,2-Dichloroethane		1,2-Dichloroethane	107-06-2	[a] 0.21	[c] 7.2
U078	1,1-Dichloroethylene		1,1-Dichloroethylene	75-35-4	[a] 0.025	[c] 33
U079	1,2-Dichloroethylene		trans-1,2-Dichloroethylene	156-60-5	[a] 0.054	[b] 33
U080	Methylene chloride		Methylene chloride	75-09-2	[d] 0.089	[b] 33
U081	2,4-Dichlorophenol		2,4-Dichlorophenol	120-83-2	[e] 0.044	[b] 14
U082	2,6-Dichlorophenol		2,6-Dichlorophenol	87-65-0	[e] 0.044	[b] 14

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
U083	1,2-Dichloropropane		1,2-Dichloropropane	78-87-5	[2] 0.85	[1] 18
U084	1,3-Dichloropropene		cis-1,3-Dichloropropylene	10061-01-5	[2] 0.036	[1] 18
			trans-1,3-Dichloropropylene	10061-02-6	[2] 0.036	[1] 18
U088	Diethyl phthalate		Diethyl phthalate	84-66-2	[1] 0.54	[1] 28
U093	p-Dimethylaminoazobenzene	Table 2 in 268.42	p-Dimethylaminoazobenzene	60-11-7	[2] 0.13	NA
U101	2,4-Dimethylphenol		2,4-Dimethylphenol	105-67-9	[2] 0.036	[1] 14
U102	Dimethyl phthalate		Dimethyl phthalate	131-11-3	[1] 0.54	[1] 28
U105	2,4-Dinitrotoluene		2,4-Dinitrotoluene	121-14-2	[2] 0.32	[1] 140
U106	2,6-Dinitrotoluene		2,6-Dinitrotoluene	606-20-2	[2] 0.55	[1] 28
U107	Di-n-octyl phthalate		Di-n-octyl phthalate	117-84-0	[1] 0.54	[1] 28
U108	1,4-Dioxane		1,4-Dioxane	123-91-1	[2] 0.12	[1] 170
U111	Di-n-propylnitrosoamine		Di-n-propylnitrosoamine	621-64-7	[2] 0.40	[1] 14
U112	Ethyl acetate		Ethyl acetate	141-78-6	[2] 0.34	[1] 33
U117	Ethyl ether		Ethyl ether	60-29-7	[2] 0.12	[1] 160
U118	Ethyl methacrylate		Ethyl methacrylate	97-63-2	[2] 0.14	[1] 160
U120	Fluoranthene		Fluoranthene	206-44-0	[2] 0.068	[1] 8.2
U121	Trichloromonofluoromethane		Trichloromonofluoromethane	75-69-4	[2] 0.020	[1] 33
U127	Hexachlorobenzene		Hexachlorobenzene	118-74-1	[2] 0.055	[1] 37
U128	Hexachlorobutadiene		Hexachlorobutadiene	87-68-3	[2] 0.055	[1] 28
U129	Lindane		alpha-BHC	319-84-6	[2] 0.00014	[1] 0.066
			beta-BHC	319-85-7	0.00014	[1] 0.066
			Delta-BHC	319-86-8	0.023	[1] 0.066
			gamma-BHC (Lindane)	58-89-9	0.0017	[1] 0.066
U130	Hexachlorocyclopentadiene		Hexachlorocyclopentadiene	77-47-7	[2] 0.057	[1] 3.6
U131	Hexachloroethane		Hexachloroethane	67-72-1	[2] 0.055	[1] 28
U134	Hydrogen fluoride	Table 2 in 268.42	Fluoride	16964-48-8	35	NA
U136	Cacodylic acid	Table CCWE in 268.41	Arsenic	7440-38-2	0.79	NA
U137	Indeno(1,2,3-c,d)pyrene		Indeno(1,2,3-c,d)pyrene	193-39-5	[2] 0.0055	[1] 8.2
U138	Iodomethane		Iodomethane	74-88-4	[2] 0.19	[1] 65
U140	Isobutyl alcohol		Isobutyl alcohol	78-83-1	5.6	[1] 170
U141	Isosafrole		Isosafrole	120-58-1	0.081	[1] 2.6
U142	Kepone		Kepone	143-50-8	0.0011	[1] 0.13
U144	Lead acetate	Table CCWE in 268.41	Lead	7439-92-1	0.040	NA
U145	Lead phosphate	Table CCWE in 268.41	Lead	7439-92-1	0.040	NA
U146	Lead subacetate	Table CCWE in 268.41	Lead	7439-92-1	0.040	NA
U151	Mercury	Table CCWE in 268.41 and Table 2 in 268.42.	Mercury	7439-97-6	0.030	NA
U152	Methacrylonitrile		Methacrylonitrile	126-98-7	[2] 0.24	[1] 84
U155	Methapyrilene		Methapyrilene	91-80-5	0.081	[1] 1.5
U157	3-Methylcholanthrene		3-Methylcholanthrene	56-49-5	[2] 0.0055	[1] 15
U158	4,4'-Methylenebis(2-chloroaniline)		4,4'-Methylenebis(2-chloroaniline)	101-14-4	[2] 0.50	[1] 35
U159	Methyl ethyl ketone		Methyl ethyl ketone	78-93-3	0.28	[1] 36
U161	Methyl isobutyl ketone		Methyl isobutyl ketone	108-10-1	0.14	[1] 33
U162	Methyl methacrylate		Methyl methacrylate	80-62-6	0.14	[1] 160
U165	Naphthalene		Naphthalene	91-20-3	[2] 0.059	[1] 3.1
U168	2-Naphthylamine	Table 2 in 268.42	2-Naphthylamine	91-59-8	[2] 0.52	NA
U169	Nitrobenzene		Nitrobenzene	98-95-3	[2] 0.068	[1] 14
U170	4-Nitrophenol		4-Nitrophenol	100-02-7	[2] 0.12	[1] 29
U172	n-Nitrosodi-n-butylamine		n-Nitrosodi-n-butylamine	924-16-3	[2] 0.40	[1] 17
U174	N-Nitrosodiethylamine		n-Nitrosodiethylamine	55-18-5	[2] 0.40	[1] 28
U179	N-Nitrosopiperidine		n-Nitrosopiperidine	100-75-4	[2] 0.013	[1] 35
U180	N-Nitrosopyrrolidine		n-Nitrosopyrrolidine	930-55-2	[2] 0.013	[1] 35
U181	5-Nitro-o-toluidine		5-Nitro-o-toluidine	99-55-8	[2] 0.32	[1] 28
U183	Pentachlorobenzene		Pentachlorobenzene	608-93-5	[2] 0.055	[1] 37
U185	Pentachloronitrobenzene		Pentachloronitrobenzene	82-68-8	[2] 0.055	[1] 4.8
U187	Phenacetin		Phenacetin	62-44-2	0.081	[1] 16
U188	Phenol		Phenol	108-95-2	0.039	[1] 6.2
U190	Phthalic anhydride (measured as Phthalic acid).		Phthalic anhydride (measured as Phthalic acid).	85-44-9	[1] 0.54	[1] 28
U192	Pronamide		Pronamide	23950-58-5	0.093	[1] 1.5
U196	Pyridine		Pyridine	110-86-1	[2] 0.014	[1] 16
U203	Safrole		Safrole	94-59-7	0.081	[1] 22
U204	Selenium dioxide	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
U205	Selenium sulfide	Table CCWE in 268.41	Selenium	7782-49-2	1.0	NA
U207	1,2,4,5-Tetrachlorobenzene		1,2,4,5-Tetrachlorobenzene	95-94-3	[2] 0.055	[1] 19
U208	1,1,1,2-Tetrachloroethane		1,1,1,2-Tetrachloroethane	630-20-6	0.057	[1] 42
U209	1,1,2,2-Tetrachloroethane		1,1,2,2-Tetrachloroethane	79-34-5	[2] 0.057	[1] 42
U210	Tetrachloroethylene		Tetrachloroethylene	127-18-4	[2] 0.056	[1] 5.6
U211	Carbon tetrachloride		Carbon tetrachloride	56-23-5	[2] 0.057	[1] 5.6
U214	Tallium(I)acetate	Table 2 in 268.42	Thallium	7440-28-0	[2] 0.14	NA
U215	Thallium(I)carbonate	Table 2 in 268.42	Thallium	7440-28-0	[2] 0.14	NA
U216	Thallium(I)chloride	Table 2 in 268.42	Thallium	7440-28-0	[2] 0.14	NA
U217	Thallium(I)nitrate	Table 2 in 268.42	Thallium	7440-28-0	[2] 0.14	NA
U220	Toluene		Toluene	108-88-3	[2] 0.080	[1] 28
U225	Tribromomethane (Bromoform)		Tribromomethane (Bromoform)	75-25-2	[2] 0.63	[1] 15
U226	1,1,1-Trichloroethane		1,1,1-Trichloroethane	71-55-6	[2] 0.054	[1] 5.6
U227	1,1,2-Trichloroethane		1,1,2-Trichloroethane	79-00-5	[2] 0.054	[1] 5.6

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TABLE CCW.—CONSTITUENT CONCENTRATIONS IN WASTES—Continued

Waste code	Commercial chemical name	See also	Regulated hazardous constituent	CAS No. for regulated hazardous constituent	Wastewaters concentration (mg/l)	Non-wastewaters concentration (mg/kg)
U228	Trichloroethylene		Trichloroethylene	79-01-6	[3] 0.054	[1] 5.6
U235	tris-(2,3-Dibromopropyl)-phosphate		tris-(2,3-Dibromopropyl)-phosphate	126-72-7	0.025	[1] 0.10
U239	Xylenes		Xylenes		[3] 0.32	[1] 28
U240	2,4-Dichlorophenoxyacetic acid		2,4-Dichlorophenoxyacetic acid	94-75-7	0.72	[1] 10
U243	Hexachloropropene		Hexachloropropene	1888-71-7	[2] 0.035	28
U247	Methoxychlor		Methoxychlor	72-43-5	[3] 0.25	[1] 0.18

[1] Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40 CFR Part 264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40 CFR Section 268.7.
[2] Based on analysis of composite samples.
[3] As analyzed using SW-846 Method 9010; sample size: 0.5-10; distillation time: one hour to one hour fifteen minutes.
NA—Not Applicable.

* * * * *

(c) Notwithstanding the prohibitions specified in paragraph (a) of this section, treatment and disposal facilities may demonstrate (and certify pursuant to § 268.7(b)(5)) compliance with the treatment standards for organic constituents specified in this section provided the following conditions are satisified:

(1) The treatment for the organic constituents were established based on incineration in units operated in accordance with the technical requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O, or based on combustion in fuel substitution units operating in accordance with applicable technical requirements;

(2) The organic constituents have been treated using the methods referenced in paragraph (c)(1) of this section; and

(3) The treatment or disposal facility has been unable to detect the organic constituents despite using its best good-faith efforts as defined by applicable Agency guidance or standards. Until such guidance or standards are developed, such good-faith efforts may be demonstrated where the treatment or disposal facility has detected the organic constituents at levels within an order of magnitude of the treatment standard specified in this section.

13. Appendix IV is added to part 268 to read as follows:

Appendix IV—Organometallic Lab Packs

Hazardous waste with the following EPA waste codes may be placed in an "organometallic" or "Appendix IV lab pack:"

P001, P002, P003, P004, P005, P006, P007, P008, P009, P013, P014, P015, P016, P017, P018, P020, P022, P023, P024, P025, P026, P027, P028, P031, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P047, P048, P049, P050, P051, P054, P056, P057, P058, P059, P060, P062, P063, P064, P065, P066, P067, P068, P069, P070, P071, P072, P073, P074, P075, P077, P081, P082, P084, P085, P087, P088, P089, P092, P093, P094, P095, P096, P097, P098, P099, P101, P102, P103, P104, P105, P108, P109, P110, P112, P113, P114, P115, P116, P118, P119, P120, P122, P123

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, U028, 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, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U134, U135, U136, U137, U136, U137, U138, U139, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, U152, U154, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, 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, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U204, U205, U206, U207, U208, U209, U210, U211, U213, U214, U215, U216, U217, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249, U328, U353, U359

F001, F002, F003, F004, F005, F006, F010, F020, F021, F023, F024, F026, F027, F028

K001, K002, K008, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K021, K022, K023, K024, K025, K026, K027, K028, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K046, K047, K048, K049, K050, K051, K052, K054, K060, K061, K064, K065, K066, K069, K071, K073, K083, K084, K085, K086, K087, K093, K094, K095, K096, K097, K098, K099, K101, K102, K103, K104, K105, K111, K112, K113, K114, K115, K116, K117, K118, K123, K124, K125, K126, K136

D001, D002, D003, D004, D005, D006, D007, D008, D010, D011, D012, D013, D014, D015, D016, D017

U032, U136, U144, U145, U146, U163, U214, U215, U216, U217

14. Appendix V is added to part 268 to read as follows:

Appendix V—Organic Lab Packs

Hazardous wastes with the following EPA Hazardous Waste Code No. may be placed in an "organic" or "Appendix V:"

P001, P002, P003, P004, P005, P006, P007, P008, P009, P013, P014, P015, P016, P017, P018, P020, P022, P023, P025, P024, P026, P027, P028, P031, P034, P036, P037, P038, P039, P040, P041, P042, P043, P044, P045, P046, P047, P048, P049, P050, P051, P054, P057, P058, P059, P060, P062, P063, P064, P064, P065, P066, P067, P068, P069, P070, P071, P072, P073, P074, P075, P077, P081, P082, P084, P085, P087, P088, P089, P092, P093, P094, P095, P096, P097, P098, P099, P101, P102, P103, P104, P105, P108, P109, P110, P111, P112, P113, P114, P115, P116, P118, P119, P120, P122, P123

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, U028, U029, U030, U031, U033, U034, U035, U036, U037, U038,

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U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U135, U137, U138, U139, U140, U141, U142, U143, U147, U148, U149, U150, 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, U190, U191, U192, U193, U194, U196, U197, U200, U201, U202, U203, U205, U206, U207, U208, U209, U210, U211, U213, U214, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249, U328, U353, U359

F001, F002, F003, F004, F005, F010, F020, F021, F023, F024, F026, F027, F028

K001, K009, K010, K011, K013, K014, K015, K016, K017, K018, K019, K020, K021, K022, K023, K024, K025, K026, K027, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K044, K045, K046, K047, K048, K049, K050, K051, K052, K054, K060, K065, K073, K083, K084, K085, K086, K087, K093, K094, K095, K096, K097, K098, K099, K101, K102, K103, K104, K105, K111, K112, K113, K114, K115, K116, K117, K118, K123, K124, K125, K126, K136

D001, D012, D013, D014, D015, D016, D017

15. Appendix VI is added to part 268, to read as follows:

Appendix VI—Recommended Technologies to Achieve Deactivation of Characteristics in Section 268.42

The treatment standard for many subcategories of D001, D002, and D003 wastes as well as for K044, K045, and K047 wastes is listed in 268.42 simply as "Deactivation to remove the characteristics of ignitability, corrosivity, and reactivity". EPA has determined that many technologies, when used alone or in combination, can achieve this standard. The following appendix presents a partial list of these technologies, utilizing the five letter technology codes established in 40 CFR 268.42 Table 1. Use of these specific technologies is not mandatory and does not preclude direct reuse, recovery, and/or the use of other pretreatment technologies provided deactivation is achieved and these alternative methods are not performed in units designated as land disposal.

Waste code/subcategory	Nonwastewaters	Wastewaters
D001 Ignitable Liquids based on 261.21(a)(1)—Low TOC Nonwastewater Subcategory (containing 1% to <10% TOC).	RORGS	n.a.
	INCIN	
	WETOX	
	CHOXD	
	BIODG	
D001 Ignitable Liquids based on 261.21(a)(1)—Ignitable Wastewater Subcategory (containing <1% TOC)	n.a.	RORGS
		INCIN
		WETOX
		CHOXD
		BIODG
D001 Compressed Gases based on 261.21(A)(3)	RCGAS	n.a.
	INCIN	
	FSUBS	
	ADGAS fb. INCIN	
	ADGAS fb. (CHOXD; or CHRED)	
D001 Ignitable Reactives based on 261.21(a)(2)	WTRRX	n.a.
	CHOXD	
	CHRED	
	STABL	
	INCIN	
D001 Ignitable Oxidizers based on 261.21(a)(4)	CHRED	CHRED
	INCIN	INCIN
D002 Acid Subcategory based on 261.22(a)(1) with pH less than or equal to 2	RCORR	NEUTR
	NEUTR	INCIN
	INCIN	
D002 Alkaline Subcategory based on 261.22(a)(1) with pH greater than or equal to 12.5	NEUTR	NEUTR
	INCIN	INCIN
D002 Other Corrosives based on 261.22(a)(2)	CHOXD	CHOXD
	CHRED	CHRED
	INCIN	INCIN
	STABL	
D003 Water Reactives based on 261.23(a) (2), (3), and (4)	INCIN	n.a.
	WTRRX	
	CHOXD	
	CHRED	
D003 Reactive Sulfides based on 261.23(a)(5)	CHOXD	CHOXD
	CHRED	CHRED
	INCIN	BIODG
	STABL	INCIN
D003 Explosives based on 261.23(a) (6), (7), and (8)	INCIN	INCIN
	CHOXD	CHOXD
	CHRED	CHRED
		BIODG
		CARBN
D003 Other Reactives based on 261.23(a)(1)	INCIN	INCIN
	CHOXD	CHOXD
	CHRED	CHRED
		BIODG
		CARBN

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Waste code/subcategory	Nonwastewaters	Wastewaters
K044 Wastewater treatment sludges from the manufacturing and processing of explosives	CHOXD	CHOXD
	CHRED	CHRED
	INCIN	BIODG
		CARBN
		INCIN
K045 Spent carbon from the treatment of wastewaters containing explosives	CHOXD	CHOXD
	CHRED	CHRED
	INCIN	BIODG
		CARBN
		INCIN
K047 Pink/red water from TNT operations	CHOXD	CHOXD
	CHRED	CHRED
	INCIN	BIODG
		CARBN
		INCIN

Note: "n.a." stands for "not applicable"; "fb." stands for "followed by".

16. Appendix VII is added to part 268, to read as follows:

APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRS [a]

[Comprehensive List]

Waste code	Waste category	Effective date
California list ...	Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/l or certain metals or compounds of these metals greater than or equal to the prohibition levels.	July 8, 1987.
California list ...	Liquid (aqueous) hazardous wastes having a pH less than or equal to 2.	July 8, 1987.
California list ...	Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1,000 mg/l but less than 10,000 mg/l.	July 8, 1987.
California list ...	Liquid hazardous waste containing PCBs greater than or equal to 50 ppm.	July 8, 1987.
California list ...	Other liquid and non-liquid hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg.	Nov. 8, 1988.
California list ...	Soil and debris HOCs not from CERCLA/RCRA corrective actions.	July 8, 1989.
California list ...	Soil and debris HOCs from CERCLA/RCRA corrective actions.	Nov. 8, 1990.
D001	All	Aug. 8, 1990.
D002	All	Aug. 8, 1990.
D003	All	Aug. 8, 1990.
D004	Inorganic solid debris.	May 8, 1992.
D004	Nonwastewater ...	May 8, 1992.
D004	Wastewater	Aug. 8, 1990.
D005	Inorganic solid debris.	May 8, 1992.
D005	All others	Aug. 8, 1990.
D006	Inorganic solid debris.	May 8, 1992.
D006	All others	Aug. 8, 1990.
D007	Inorganic solid debris.	May 8, 1992.
D007	All others	Aug. 8, 1990.
D008	Inorganic solid debris.	May 8, 1992.
D008	Lead acid batteries.	May 8, 1992.
D008	All others	Aug. 8, 1990.
D009	Inorganic solid debris.	May 8, 1992.
D009	High mercury non-wastewater.	May 8, 1992.
D009	Low mercury non-wastewater.	May 8, 1992.
D009	All others	Aug. 8, 1990.
D010	Inorganic solid debris.	May 8, 1992.
D010	All others	Aug. 8, 1990.
D011	Inorganic solid debris.	May 8, 1992.
D011	All others	Aug. 8, 1990.
D012	All	Aug. 8, 1990.
D013	All	Aug. 8, 1990.
D0014	All	Aug. 8, 1990.
D0015	All	Aug. 8, 1990.
D0016	All	Aug. 8, 1990.
D0017	All	Aug. 8, 1990.
F001-F005	All, except:	Nov. 8, 1986.
F001-F005	Small quantity generators, CERCLA/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids, and non CERCLA/RCRA corrective action soils with less than 1 percent total solvent constituents.	Nov. 8, 1988.
F001-F005	Soil and debris	Nov. 8, 1990.
F002 [b]	All	Aug. 8, 1990.
F005 [c]	All	Aug. 8, 1990.
F006	Wastewater	Aug. 8, 1990.
F006	Nonwastewater ...	Aug. 8, 1988.
F006 (cyanides).	Nonwastewater ...	July 8, 1989.
F007	All	July 8, 1989.
F008	All	July 8, 1989.
F009	All	July 8, 1989.
F010	Soil and debris	June 8, 1991.
F010	All others	June 8, 1989.
F011	All	July 8, 1989.
F012	All	July 8, 1989.
F019	All	Aug. 8, 1990.
F020	Soil and debris	Nov. 8, 1990.
F020	All others	Nov. 8, 1988.
F021	Soil and debris	Nov. 8, 1990.

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APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRs [a]—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
F021	All others	Nov. 8, 1988.
F022	Soil and debris	Nov. 8, 1990.
F022	All others	Nov. 8, 1988.
F023	Soil and debris	Nov. 8, 1990.
F023	All others	Nov. 8, 1988.
F024	Soil and debris	June 8, 1991.
F024 (metals)	Nonwastewater	Aug. 8, 1990.
F024 (dioxins/furans)	All	Aug. 8, 1990.
F024	All others	June 8, 1989.
F025	All	Aug. 8, 1990.
F026	Soil and debris	Nov. 8, 1990.
F026	All others	Nov. 8, 1988.
F027	Soil and debris	Nov. 8, 1990.
F027	All others	Nov. 8, 1988.
F028	Soil and debris	Nov. 8, 1990.
F028	All others	Nov. 8, 1988.
F039	Wastewater	Aug. 8, 1990.
F039	Nonwastewater	May. 8, 1992.
K001	Soil and debris	Aug. 8, 1990.
K001 (lead/organics)	All	Aug. 8, 1990.
K001	All others	Aug. 8, 1988.
K002	All	Aug. 8, 1990.
K003	All	Aug. 8, 1990.
K004	All	Aug. 8, 1990.
K005 [d]	All	Aug. 8, 1990.
K006	All	Aug. 8, 1990.
K007 [d]	All	Aug. 8, 1990.
K008	All	Aug. 8, 1990.
K009	Soil and debris	June 8, 1991.
K009	All others	June 8, 1989.
K010	Soil and debris	June 8, 1991.
K010	All others	June 8, 1989.
K011	Wastewater	Aug. 8, 1990.
K011	Nonwastewater	June 8, 1989.
K011	Soil and debris	June 8, 1991.
K013	Wastewater	Aug. 8, 1990.
K013	Nonwastewater	June 8, 1989.
K013	Soil and debris	June 8, 1991.
K014	Wastewater	Aug. 8, 1990.
K014	Nonwastewater	June 8, 1989.
K014	Soil and debris	June 8, 1991.
K015	Wastewater	Aug. 8, 1988.
K015	Nonwastewater	Aug. 8, 1990.
K016	Soil and debris	Aug. 8, 1990.
K016	All others	Aug. 8, 1988.
K017	All	Aug. 8, 1990.
K018	Soil and debris	Aug. 8, 1990.
K018	All others	Aug. 8, 1988.
K019	Soil and debris	Aug. 8, 1990.
K019	All others	Aug. 8, 1988.
K020	Soil and debris	Aug. 8, 1990.
K020	All others	Aug. 8, 1988.
K021 [e]	All	Aug. 8, 1990.
K022	Wastewater	Aug. 8, 1990.
K022	Nonwastewater	Aug. 8, 1988.
K022	Soil and debris	Aug. 8, 1990.
K023	Soil and debris	June 8, 1991.
K023	All others	June 8, 1989.
K024	Soil and debris	Aug. 8, 1990.
K024	All others	Aug. 8, 1988.
K025 [e]	All	Aug. 8, 1990.
K026	All	Aug. 8, 1990.
K027	Soil and debris	June 8, 1991.
K027	All others	June 8, 1989.
K028	Soil and debris	June 8, 1991.
K028 (metals)	Nonwastewater	Aug. 8, 1990.
K028	All others	June 8, 1989.
K029	Wastewater	Aug. 8, 1990.
K029	Nonwastewater	June 8, 1989.
K029	Soil and debris	June 8, 1991.
K030	Soil and debris	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRs [a]—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
K030	All others	Aug. 8, 1988.
K031	Wastewater	Aug. 8, 1990.
K031	Nonwastewater	May 8, 1992.
K032	All	Aug. 8, 1990.
K033	All	Aug. 8, 1990.
K034	All	Aug. 8, 1990.
K035	All	Aug. 8, 1990.
K036 [e]	All	Aug. 8, 1990.
K037	Soil and debris	Aug. 8, 1990.
K037	Wastewater	Aug. 8, 1990.
K037	All others	Aug. 8, 1988.
K038	Soil and debris	June 8, 1991.
K038	All others	June 8, 1989.
K039	Soil and debris	June 8, 1991.
K039	All others	June 8, 1989.
K040	Soil and debris	June 8, 1991.
K040	All others	June 8, 1989.
K041	All	Aug. 8, 1990.
K042	All	Aug. 8, 1990.
K043	Soil and debris	June 8, 1991.
K043	All others	June 8, 1989.
K044	All	Aug. 8, 1990.
K045	All	Aug. 8, 1990.
K046	Nonreactive nonwastewater	Aug. 8, 1988.
K046	All others	Aug. 8, 1990.
K047	All	Aug. 8, 1990.
K048	Wastewater	Aug. 8, 1990.
K048	Nonwastewater	Nov. 8, 1990.
K049	Wastewater	Aug. 8, 1990.
K049	Nonwastewater	Nov. 8, 1990.
K050	Wastewater	Aug. 8, 1990.
K050	Nonwastewater	Nov. 8, 1990.
K051	Wastewater	Aug. 8, 1990.
K051	Nonwastewater	Nov. 8, 1990.
K052	Wastewater	Aug. 8, 1990.
K052	Nonwastewater	Nov. 8, 1990.
K060 [e]	All	Aug. 8, 1990.
K061	Wastewater	Aug. 8, 1990.
K061	Nonwastewater	Aug. 8, 1988.
K062	All	Aug. 8, 1988.
K069	All	Aug. 8, 1990.
K073	All	Aug. 8, 1990.
K083	All	Aug. 8, 1990.
K084	Wastewater	Aug. 8, 1990.
K084	Nonwastewater	May 8, 1992.
K085	All	Aug. 8, 1990.
K086	All	Aug. 8, 1990.
K087	Soil and debris	Aug. 8, 1990.
K087	All others	Aug. 8, 1988.
K093	Soil and debris	June 8, 1991.
K093	All others	June 8, 1989.
K094	Soil and debris	June 8, 1991.
K094	All others	June 8, 1989.
K095	Wastewater	Aug. 8, 1990.
K095	Nonwastewater	June 8, 1989.
K095	Soil and debris	June 8, 1991.
K096	Wastewater	Aug. 8, 1990.
K096	Nonwastewater	June 8, 1989.
K096	Soil and debris	June 8, 1991.
K097	All	Aug. 8, 1990.
K098	All	Aug. 8, 1990.
K099	All	Aug. 8, 1988.
K100 [e]	All	Aug. 8, 1990.
K101	Wastewater	Aug. 8, 1988.
K101	Nonwastewater	May 8, 1992.
K102	Wastewater	Aug. 8, 1988.
K102	Nonwastewater	May 8, 1992.
K103	Soil and debris	Aug. 8, 1990.
K103	All others	Aug. 8, 1988.
K104	Soil and debris	Aug. 8, 1990.
K104	All others	Aug. 8, 1988.
K105	All	Aug. 8, 1990.

APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRs [a]—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
K106	High mercury nonwastewater	May 8, 1992.
K106	Low mercury nonwastewater	May. 8, 1992.
K106	All others	Aug. 8, 1990.
K113	Soil and debris	June 8, 1991.
K113	All others	June 8, 1989.
K114	Soil and debris	June 8, 1991.
K114	All others	June 8, 1989.
K115	Soil and debris	June 8, 1991.
K115	All others	June 8, 1989.
K116	Soil and debris	June 8, 1991.
K116	All others	June 8, 1989.
P001	All	Aug. 8, 1990.
P002	All	Aug. 8, 1990.
P003	All	Aug. 8, 1990.
P004	All	Aug. 8, 1990.
P005	All	Aug. 8, 1990.
P006	All	Aug. 8, 1990.
P007	All	Aug. 8, 1990.
P008	All	Aug. 8, 1990.
P009	All	Aug. 8, 1990.
P010	Wastewater	Aug. 8, 1990.
P010	Nonwastewater	May 8, 1992.
P011	Wastewater	Aug. 8, 1990.
P011	Nonwastewater	May 8, 1992.
P012	Wastewater	Aug. 8, 1990.
P012	Nonwastewater	May 8, 1992.
P013	All	Aug. 8, 1990.
P014	All	Aug. 8, 1990.
P015	All	Aug. 8, 1990.
P016	All	Aug. 8, 1990.
P017	All	Aug. 8, 1990.
P018	All	Aug. 8, 1990.
P020	All	Aug. 8, 1990.
P021	All	June 8, 1989.
P022	All	Aug. 8, 1990.
P023	All	Aug. 8, 1990.
P024	All	Aug. 8, 1990.
P026	All	Aug. 8, 1990.
P027	All	Aug. 8, 1990.
P028	All	Aug. 8, 1990.
P029	All	June 8, 1989.
P030	All	June 8, 1989.
P031	All	Aug. 8, 1990.
P033	All	Aug. 8, 1990.
P034	All	Aug. 8, 1990.
P036	Wastewater	Aug. 8, 1990.
P036	Nonwastewater	May 8, 1992.
P037	All	Aug. 8, 1990.
P038	Wastewater	Aug. 8, 1990.
P038	Nonwastewater	May 8, 1992.
P039	Soil and debris	June 8, 1991.
P039	All others	June 8, 1989.
P040	Soil and debris	June 8, 1991.
P040	All others	June 8, 1989.
P041	Soil and debris	June 8, 1991.
P041	All others	June 8, 1989.
P042	All	Aug. 8, 1990.
P043	Soil and debris	June 8, 1991.
P043	All others	June 8, 1989.
P044	Soil and debris	June 8, 1991.
P044	All others	June 8, 1989.
P045	All	Aug. 8, 1990.
P046	All	Aug. 8, 1990.
P047	All	Aug. 8, 1990.
P048	All	Aug. 8, 1990.
P049	All	Aug. 8, 1990.
P050	All	Aug. 8, 1990.
P051	All	Aug. 8, 1990.
P054	All	Aug. 8, 1990.
P056	All	Aug. 8, 1990.
P057	All	Aug. 8, 1990.

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APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRs [a]—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
P058	All	Aug. 8, 1990.
P059	All	Aug. 8, 1990.
P060	All	Aug. 8, 1990.
P062	Soil and debris	June 8, 1991.
P062	All others	June 8, 1989.
P063	All	June 8, 1989.
P064	All	Aug. 8, 1990.
P065	High mercury non-wastewater.	May 8, 1992.
P065	Low mercury non-wastewater.	May 8, 1992.
P065	All others	Aug. 8, 1990.
P066	All	Aug. 8, 1990.
P067	All	Aug. 8, 1990.
P068	All	Aug. 8, 1990.
P069	All	Aug. 8, 1990.
P070	All	Aug. 8, 1990.
P071	Soil and debris	June 8, 1991.
P071	All others	June 8, 1989.
P072	All	Aug. 8, 1990.
P073	All	Aug. 8, 1990.
P074	All	June 8, 1989.
P075	All	Aug. 8, 1990.
P076	All	Aug. 8, 1990.
P077	All	Aug. 8, 1990.
P078	All	Aug. 8, 1990.
P081	All	Aug. 8, 1990.
P082	All	Aug. 8, 1990.
P084	All	Aug. 8, 1990.
P085	Soil and debris	June 8, 1991.
P085	All others	June 8, 1989.
P087	All	May 8, 1992.
P088	All	Aug. 8, 1990.
P089	Soil and debris	June 8, 1991.
P089	All others	June 8, 1989.
P092	High mercury non-wastewater	May 8, 1992.
P092	Low mercury non-wastewater	May 8, 1992.
P092	All others	Aug. 8, 1990.
P093	Soil and debris	May 8, 1992.
P093	All others	Aug. 8, 1990.
P094	Soil and debris	June 8, 1991.
P094	All others	June 8, 1989.
P095	Soil and debris	May 8, 1992.
P095	All others	Aug. 8, 1990.
P096	All	Aug. 8, 1990.
P097	Soil and debris	June 8, 1991.
P097	All others	June 8, 1989.
P098	All	June 8, 1989.
P099 (silver)	Wastewater	Aug. 8, 1990.
P099 (cyanides).	Wastewater	June 8, 1989.
P099 (cyanides/silver).	Nonwastewater	June 8, 1989.
P101	All	Aug. 8, 1990.
P102	All	Aug. 8, 1990.
P103	All	Aug. 8, 1990.
P104 (silver)	Wastewater	Aug. 8, 1990.
P104 (cyanides).	Wastewater	June 8, 1989.
P104 (cyanides/silver).	Nonwastewater	June 8, 1989.
P105	All	Aug. 8, 1990.
P106	All	June 8, 1989.
P108	Soil and debris	May 8, 1992.
P108	All others	Aug. 8, 1990.
P109	Soil and debris	June 8, 1991
P109	All others	June 8, 1989.
P110	All	Aug. 8, 1990.
P111	Soil and debris	June 8, 1991.
P111	All others	June 8, 1989.
P112	All	Aug. 8, 1990.
P113	All	Aug. 8, 1990.
P114	All	Aug. 8, 1990.
P115	All	Aug. 8, 1990.
P116	Soil and debris	May 8, 1992.
P116	All others	Aug. 8, 1990.
P118	Soil and debris	May 8, 1992.
P118	All others	Aug. 8, 1990.
P119	All	Aug. 8, 1990.
P120	All	Aug. 8, 1990.
P121	All	June 8, 1989.
P122	All	Aug. 8, 1990.
P123	All	Aug. 8, 1990.
U001	All	Aug. 8, 1990.
U002	All	Aug. 8, 1990.
U003	Soil and debris	May 8, 1992.
U003	All others	Aug. 8, 1990.
U004	All	Aug. 8, 1990.
U005	All	Aug. 8, 1990.
U006	Soil and debris	May 8, 1992.
U006	All others	Aug. 8, 1990.
U007	Soil and debris	May 8, 1992.
U007	All others	Aug. 8, 1990.
U008	All	Aug. 8, 1990.
U009	All	Aug. 8, 1990.
U010	Soil and debris	May 8, 1992.
U010	All others	Aug. 8, 1990.
U011	Soil and debris	May 8, 1992.
U011	All others	Aug. 8, 1990.
U012	All	Aug. 8, 1990.
U014	Soil and debris	May 8, 1992.
U014	All others	Aug. 8, 1990.
U015	Soil and debris	May 8, 1992.
U015	All others	Aug. 8, 1990.
U016	All	Aug. 8, 1990.
U017	Soil and debris	May 8, 1992.
U017	All others	Aug. 8, 1990.
U018	All	Aug. 8, 1990.
U019	All	Aug. 8, 1990.
U020	Soil and debris	May 8, 1992.
U020	All others	Aug. 8, 1990.
U021	Soil and debris	May 8, 1992.
U021	All others	Aug. 8, 1990.
U022	All	Aug. 8, 1990.
U023	All	Aug. 8, 1990.
U024	All	Aug. 8, 1990.
U025	All	Aug. 8, 1990.
U026	Soil and debris	May 8, 1992.
U026	All others	Aug. 8, 1990.
U027	All	Aug. 8, 1990.
U028	Soil and debris	June 8, 1991.
U028	All others	June 8, 1989.
U029	All	Aug. 8, 1990.
U030	All	Aug. 8, 1990.
U031	All	Aug. 8, 1990.
U032	All	Aug. 8, 1990.
U033	Soil and debris	May 8, 1992.
U033	All others	Aug. 8, 1990.
U034	Soil and debris	May 8, 1992.
U034	All others	Aug. 8, 1990.
U035	Soil and debris	May 8, 1992.
U035	All others	Aug. 8, 1990.
U036	All	Aug. 8, 1990.
U037	All	Aug. 8, 1990.
U038	Soil and debris	May 8, 1992.
U038	All others	Aug. 8, 1990.
U039	All	Aug. 8, 1990.
U041	Soil and debris	May 8, 1992.
U041	All others	Aug. 8, 1990.
U042	Soil and debris	May 8, 1992.
U042	All others	Aug. 8, 1990.
U043	All	Aug. 8, 1990.
U044	All	Aug. 8, 1990.
U045	All	Aug. 8, 1990.
U046	Soil and debris	May 8, 1992.
U046	All others	Aug. 8, 1990.
U047	All	Aug. 8, 1990.
U048	All	Aug. 8, 1990.
U049	Soil and debris	May 8, 1992.
U049	All others	Aug. 8, 1990.
U050	All	Aug. 8, 1990.
U051	All	Aug. 8, 1990.
U052	All	Aug. 8, 1990.
U053	All	Aug. 8, 1990.
U055	All	Aug. 8, 1990.
U056	All	Aug. 8, 1990.
U057	All	Aug. 8, 1990.
U058	Soil and debris	June 8, 1992.
U058	All others	June 8, 1989.
U059	Soil and debris	May 8, 1992.
U059	All others	Aug. 8, 1990.
U060	Soil and debris	May 8, 1992.
U060	All others	Aug. 8, 1990.
U061	Soil and debris	May 8, 1992.
U061	All others	Aug. 8, 1990.
U062	Soil and debris	May 8, 1992.
U062	All others	Aug. 8, 1990.
U063	All	Aug. 8, 1990.
U064	All	Aug. 8, 1990.
U066	All	Aug. 8, 1990.
U067	All	Aug. 8, 1990.
U068	All	Aug. 8, 1990.
U069	Soil and debris	June 8, 1991.
U069	All others	June 8, 1989.
U070	All	Aug. 8, 1990.
U071	All	Aug. 8, 1990.
U072	All	Aug. 8, 1990.
U073	Soil and debris	May 8, 1992.
U073	All others	Aug. 8, 1990.
U074	Soil and debris	May 8, 1992.
U074	All others	Aug. 8, 1990.
U075	All	Aug. 8, 1990.
U076	All	Aug. 8, 1990.
U077	All	Aug. 8, 1990.
U078	All	Aug. 8, 1990.
U079	All	Aug. 8, 1990.
U080	All	Aug. 8, 1990.
U081	All	Aug. 8, 1990.
U082	All	Aug. 8, 1990.
U083	All	Aug. 8, 1990.
U084	All	Aug. 8, 1990.
U085	All	Aug. 8, 1990.
U086	All	Aug. 8, 1990.
U087	Soil and debris	June 8, 1991.
U087	All others	June 8, 1989.
U088	Soil and debris	June 8, 1991
U088	All others	June 8, 1989.
U089	All	Aug. 8, 1990.
U090	All	Aug. 8, 1990.
U091	Soil and Debris	May 8, 1992.
U091	All others	Aug. 8, 1990.
U092	Soil and debris	May 8, 1992.
U092	All others	Aug. 8, 1990.
U093	Soil and debris	May 8, 1992.
U093	All others	Aug. 8, 1990.
U094	All	Aug. 8, 1990.
U095	Soil and debris	May 8, 1992.
U095	All others	Aug. 8, 1990.
U096	All	Aug. 8, 1990.
U097	Soil and debris	May 8, 1992.
U097	All others	Aug. 8, 1990.
U098	All	Aug. 8, 1990.
U099	All	Aug. 8, 1990.
U101	All	Aug. 8, 1990.
U102	Soil and debris	June 8, 1991
U102	All others	June 8, 1989.
U103	All	Aug. 8, 1990.

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APPENDIX VII.—EFFECTIVE DATES OF SURFACE DISPOSED WASTES REGULATED IN THE LDRS [a]—Continued

[Comprehensive List]

Waste code	Waste category	Effective date
U105	All	Aug. 8, 1990.
U106	All	Aug. 8, 1990.
U107	Soil and debris	June 8, 1991.
U107	All others	June 8, 1989.
U108	All	Aug. 8, 1990.
U109	All	Aug. 8, 1990.
U110	Soil and debris	May 8, 1992.
U110	All others	Aug. 8, 1990.
U111	All	Aug. 8, 1990.
U112	All	Aug. 8, 1990.
U113	All	Aug. 8, 1990.
U114	Soil and debris	May 8, 1992.
U114	All others	Aug. 8, 1990.
U115	All	Aug. 8, 1990.
U116	Soil and debris	May 8, 1992.
U116	All others	Aug. 8, 1990.
U117	All	Aug. 8, 1990.
U118	All	Aug. 8, 1990.
U119	Soil and debris	May 8, 1992.
U119	All others	Aug. 8, 1990.
U120	All	Aug. 8, 1990.
U121	All	Aug. 8, 1990.
U122	All	Aug. 8, 1990.
U123	All	Aug. 8, 1990.
U124	All	Aug. 8, 1990.
U125	All	Aug. 8, 1990.
U126	All	Aug. 8, 1990.
U127	All	Aug. 8, 1990.
U128	All	Aug. 8, 1990.
U129	All	Aug. 8, 1990.
U130	Soil and debris	May 8, 1992.
U130	All others	Aug. 8, 1990.
U131	All	Aug. 8, 1990.
U132	Soil and debris	May 8, 1992.
U132	All others	Aug. 8, 1990.
U133	All	Aug. 8, 1990.
U134	All	Aug. 8, 1990.
U135	All	Aug. 8, 1990.
U136	Wastewater	Aug. 8, 1990.
U136	Nonwastewater	May 8, 1992.
U137	All	Aug. 8, 1990.
U138	All	Aug. 8, 1990.
U140	All	Aug. 8, 1990.
U141	All	Aug. 8, 1990.
U142	All	Aug. 8, 1990.
U143	Soil and debris	May 8, 1992.
U143	All others	Aug. 8, 1990.
U144	All	Aug. 8, 1990.
U145	All	Aug. 8, 1990.
U146	All	Aug. 8, 1990.
U147	All	Aug. 8, 1990.
U148	Soil and debris	May 8, 1992.
U148	All others	Aug. 8, 1990.
U149	Soil and debris	May 8, 1992.
U149	All others	Aug. 8, 1990.
U150	Soil and debris	May 8, 1992.
U150	All others	Aug. 8, 1990.
U151	High mercury nonwastewater.	May 8, 1992.
U151	Low mercury nonwastewater.	May 8, 1992.
U151	Soil and debris	May 8, 1992.
U151	All others	Aug. 8, 1990.
U152	All	Aug. 8, 1990.
U153	Soil and debris	May 8, 1992.
U153	All others	Aug. 8, 1990.
U154	All	Aug. 8, 1990.
U155	All	Aug. 8, 1990.
U156	Soil and debris	May 8, 1992.
U156	All others	Aug. 8, 1990.
U157	All	Aug. 8, 1990.
U158	All	Aug. 8, 1990.
U159	All	Aug. 8, 1990.
U160	All	Aug. 8, 1990.
U161	All	Aug. 8, 1990.
U162	All	Aug. 8, 1990.
U163	Soil and debris	May 8, 1992.
U163	All others	Aug. 8, 1990.
U164	Soil and debris	May 8, 1992.
U164	All others	Aug. 8, 1990.
U165	All	Aug. 8, 1990.
U166	All	Aug. 8, 1990.
U167	Soil and debris	May 8, 1992.
U167	All others	Aug. 8, 1990.
U168	Soil and debris	May 8, 1992.
U168	All others	Aug. 8, 1990.
U169	All	Aug. 8, 1990.
U170	All	Aug. 8, 1990.
U171	Soil and debris	May 8, 1992.
U171	All others	Aug. 8, 1990.
U172	All	Aug. 8, 1990.
U173	Soil and debris	May 8, 1992.
U173	All others	Aug. 8, 1990.
U174	All	Aug. 8, 1990.
U176	Soil and debris	May 8, 1992.
U176	All others	Aug. 8, 1990.
U177	Soil and debris	May 8, 1992.
U177	All others	Aug. 8, 1990.
U178	Soil and debris	May 8, 1992.
U178	All others	Aug. 8, 1990.
U179	All	Aug. 8, 1990.
U180	All	Aug. 8, 1990.
U181	All	Aug. 8, 1990.
U182	All	Aug. 8, 1990.
U183	All	Aug. 8, 1990.
U184	Soil and debris	May 8, 1992.
U184	All others	Aug. 8, 1990.
U185	All	Aug. 8, 1990.
U186	All	Aug. 8, 1990.
U187	All	Aug. 8, 1990.
U188	All	Aug. 8, 1990.
U189	All	Aug. 8, 1990.
U190	Soil and debris	June 8, 1991.
U190	All others	June 8, 1989.
U191	Soil and debris	May 8, 1992.
U191	All others	Aug. 8, 1990.
U192	All	Aug. 8, 1990.
U193	Soil and debris	May 8, 1992.
U193	All others	Aug. 8, 1990.
U194	Soil and debris	May 8, 1992.
U194	All others	Aug. 8, 1990.
U196	All	Aug. 8, 1990.
U197	All	Aug. 8, 1990.
U200	Soil and debris	May 8, 1992.
U200	All others	Aug. 8, 1990.
U201	All	Aug. 8, 1990.
U202	Soil and debris	May 8, 1992.
U202	All others	Aug. 8, 1990.
U203	All	Aug. 8, 1990.
U204	All	Aug. 8, 1990.
U205	All	Aug. 8, 1990.
U206	Soil and debris	May 8, 1992.
U206	All others	Aug. 8, 1990.
U207	All	Aug. 8, 1990.
U208	All	Aug. 8, 1990.
U209	All	Aug. 8, 1990.
U210	All	Aug. 8, 1990.
U211	All	Aug. 8, 1990.
U213	All	Aug. 8, 1990.
U214	All	Aug. 8, 1990.
U215	All	Aug. 8, 1990.
U216	All	Aug. 8, 1990.
U217	All	Aug. 8, 1990.
U218	Soil and debris	May 8, 1992.
U218	All others	Aug. 8, 1990.
U219	Soil and debris	May 8, 1992.
U219	All others	Aug. 8, 1990.
U220	All	Aug. 8, 1990.
U221	Soil and debris	June 8, 1991.
U221	All others	June 8, 1989.
U222	Soil and debris	May 8, 1992.
U222	All others	Aug. 8, 1990.
U223	Soil and debris	June 8, 1991.
U223	All others	June 8, 1989.
U225	All	Aug. 8, 1990.
U226	All	Aug. 8, 1990.
U227	All	Aug. 8, 1990.
U228	All	Aug. 8, 1990.
U234	Soil and debris	May 8, 1992.
U234	All others	Aug. 8, 1990.
U235	Soil and debris	June 8, 1991.
U235	All others	June 8, 1989.
U236	Soil and debris	May 8, 1992.
U236	All others	Aug. 8, 1990.
U237	Soil and debris	May 8, 1992.
U237	All others	Aug. 8, 1990.
U238	Soil and debris	May 8, 1992.
U238	All others	Aug. 8, 1990.
U239	All	Aug. 8, 1990.
U240	Soil and debris	May 8, 1992.
U240	All others	Aug. 8, 1990.
U243	All	Aug. 8, 1990.
U244	Soil and debris	May 8, 1992.
U244	All others	Aug. 8, 1990.
U246	All	Aug. 8, 1990.
U247	All	Aug. 8, 1990.
U248	All	Aug. 8, 1990.
U249	All	Aug. 8, 1990.

[a] This table does not include mixed radioactive wastes (from the First, Second, and Third Third rules) which are receiving a national capacity variance until May 8, 1992 for all applicable treatment technologies.

[b] Standards are being promulgated for 1,1,2-trichloroethane and 2-nitropropane for wastewaters and nonwastewaters.

[c] Standards are being promulgated for benzene and 2-ethoxyethanol for wastewaters and nonwastewaters.

[d] Treatment standards for nonwastewaters disposed of after June 8, 1989, were promulgated June 8, 1989.

[e] Treatment standards for nonwastewaters disposed of after August 17, 1988, were promulgated May 2, 1989.

Note: This table is provided for the convenience of the reader.

17. Appendix VIII is added to part 268, to read as follows:

APPENDIX VIII—NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES [a] Comprehensive List

Waste code	Waste category	Effective date
F001–F005	All spent F001–F005 solvent containing less than 1 percent total F001–F005 solvent constituents.	August 8, 1990.

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APPENDIX VIII—NATIONAL CAPACITY LDR VARIANCES FOR UIC WASTES [a] Comprehensive List—Continued

Waste code	Waste category	Effective date
California list	Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/l, or containing certain metals or compounds of these metals greater than or equal to the prohibition levels.	August 8, 1990.
California list	Liquid hazardous waste having a pH less than or equal to 2	August 8, 1990.
California list	Hazardous wastes containing HOCs in total concentrations less than 10,000 mg/l but greater than or equal to 1,000 mg/l.	August 8, 1990.
D002 [b]	All	May 8, 1992.
D003 (cyanides)	All	May 8, 1992.
D003 (sulfides)	All	May 8, 1992.
D003 (explosives, reactives)	All	May 8, 1992.
D007	All	May 8, 1992.
D009	High Mercury Nonwastewater	May 8, 1992.
D009	Low Mercury Nonwastewater	May 8, 1992.
F011	All	June 8, 1991.
F039	Wastewater	May 8, 1992.
K009	Wastewater	June 8, 1991.
K011	Nonwastewater	June 8, 1991.
K011	Wastewater	May 8, 1992.
K013	Nonwastewater	June 8, 1991.
K013	Wastewater	May 8, 1992.
K014	All	May 8, 1992.
K016 (dilute)	All	June 8, 1991.
K048	All	August 8, 1990.
K049	All	August 8, 1990.
K050	All	August 8, 1990.
K051	All	August 8, 1990.
K052	All	August 8, 1990.
K062	All	August 8, 1990.
K071	All	August 8, 1990.
K104	All	August 8, 1990.

[a] Wastes that are deep well disposed on-site receive a six-month variance, with restrictions effective in November 1990.
[b] Deepwell injected D002 liquids with a pH less than 2 must meet the California List treatment standards on August 8, 1990.
Note: This table is provided for the convenience of the reader.

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

1. The authority citation for part 270 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, and 6974.

Subpart D—Changes to Permit

2. Section 270.42, appendix I is amended by redesignating item B(1)(b) as B(1)(c), and adding item B(1)(b) as follows:

§ 270.42 Permit modification at the request of the permittee.

* * * * *

APPENDIX I TO SECTION 270.42—CLASSIFICATION OF PERMIT MODIFICATION

Modification	Class
* * * * *	
B. General Facility Standards	
1. * * *	
b. To incorporate changes associated with F039 (multi-source leachate) sampling or analysis methods....	1
* * * * *	

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
June 1, 1990	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) * * *

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

Effective	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)	[June 1, 1990 and page numbers of this document.]

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

1. The authority citation for part 302 continues to read as follows:

Authority: Sec. 102 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9602; secs. 311 and 501(a) of the Federal Water Pollution Control Act, 33 U.S.C. 1321 and 1361.

2. Section 302.4 is amended by adding the following entry in alphabetical order under the column "Hazardous Substance" and adding as the first footnote, footnote † to read as follows. Footnotes 1* and 4 are republished.

§ 302.4 Designation of Hazardous Substances.

* * * * *

Hazardous Substance	CASRN	Regulatory Synonyms	Statutory			Final RQ	
			RQ	Code†	RCRA Waste Number	Category	Pounds (Kg)
•	•	•	•	•	•	•	•
Multi Source Leachate			1*	4	F039	X	1 (0.454)
•	•	•	•	•	•	•	•

† Indicates the statutory source as defined by 1, 2, 3, and 4 below.

* * * * *

4—indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA Section 3001.
1*—indicates that the 1-pound RQ is a CERCLA statutory RQ.

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