action regarding the regulated activity or as requested by the Administrator. The requirements of this paragraph apply to solid wastes 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 40 CFR 261.2–261.6, or exempted from Subtitle C regulation, subsequent to the point of generation.

(8) 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 ordance with paragraph (a)(1) of this tion. The generator must also comply h the requirements in paragraphs 5) and (a)(6) of this section, and must mit the following certification, ich must be signed by an authorized resentative:

certify under penalty of law that I sonally have examined and am familiar h the waste and that the lab pack contains y the wastes specified in appendix IV to 268 or solid wastes not subject to ulation under 40 CFR part 261. I am aware there are significant penalties for mitting a false certification, including the sibility of fine or imprisonment.

9) If a generator is managing a lab k that contains organic wastes cified in Appendix V of this Part and shes to use the alternate treatment ndards under § 268.42, with each pment of waste the generator must mit a notice to the treatment facility ccordance with paragraph (a)(1) of s section. The generator also must nply with the requirements in agraphs (a)(5) and (a)(6) of this tion, and must submit the following tification which must be signed by an horized representative: I certify der penalty of law that I personally e examined and am familiar with the ste through analysis and testing or ough knowledge of the waste and t the lab pack contains only organic ste specified in Appendix V to Part or solid wastes not subject to ulation under 40 CFR Part 261. I am are that there are significant penalties submitting a false certification, luding the possibility of fine or prisonment.

10) Small quantity generators with ing agreements pursuant to 40 CFR .20(e) must comply with the licable notification and certification uirements of paragraph (a) of this tion for the initial shipment of the ste subject to the agreement. Such erators must retain on-site a copy of notification and certification, ether 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.

* * * * *

[FR Doc. 94–22492 Filed 9–16–94; 8:45 am]

BILLING CODE 6560–50–P

40 CFR Parts 148, 260, 261, 264, 265, 266, 268 and 271

[FRL–5028–9]

RIN 2050–AD89

Land Disposal Restrictions Phase II—Universal Treatment Standards, and Treatment Standards for Organic Toxicity Characteristic Wastes and Newly Listed Wastes

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: As part of the Agency's Land Disposal Restrictions (LDR) program, EPA is today promulgating treatment standards for the newly identified organic toxicity characteristic (TC) wastes (except those managed in Clean Water Act (CWA) systems, CWA-equivalent systems, or Class I Safe Drinking Water Act (SDWA) injection wells), and for all newly listed coke by-product and chlorotoluene production wastes. The required treatment standards for these wastes must be met before they are land disposed. EPA is also requiring ignitable characteristic wastes with a high total organic carbon (TOC) content and toxic characteristic pesticide wastes, that are being disposed in Class I nonhazardous waste injection wells, to either be injected into a well that is subject to a no-migration determination, or be treated by the designated LDR treatment method. Promulgation of these treatment standards for the newly identified and listed wastes and promulgation of the dilution prohibitions for high TOC ignitables and pesticides fulfills requirements of a proposed consent decree between EPA and the Environmental Defense Fund, and a settlement agreement between EPA, the Hazardous Waste Treatment Council, and a number of environmental groups including the Natural Resources Defense Council.

EPA is also making a major improvement in the Land Disposal Restrictions program in order to simplify and provide consistency in the requirements. EPA is establishing a single set of requirements, referred to as universal treatment standards, that apply to most hazardous wastes. EPA is also simplifying the Land Disposal Restrictions program by reducing paperwork for the regulated community, and improving guidance to make compliance easier. EPA is also publishing clarifying guidance regarding treatability variances, which largely restates previous Agency statements. Finally, EPA is modifying the hazardous waste recycling regulations which will allow streamlined regulatory decisions to be made regarding the regulation of certain types of recycling activities.

DATES: *Effective date:* The final rule is effective on December 19, 1994. Section 266.100 and Appendix VIII are effective September 19, 1994.

Applicability dates: For high TOC D001 (40 CFR 148.17) and halogenated pesticides wastes (40 CFR 148.17) disposed in Class I nonhazardous injection deep wells, the compliance date is September 19, 1995. For radioactive waste mixed with the newly listed or identified wastes, or soil and debris contaminated with such mixed wastes (40 CFR 268.38), the compliance date is September 19, 1996. Although the effective date of today's rule is December 19, 1994, facilities will be in compliance if they meet the universal treatment standards (UTS) before the 90-day period ends.

ADDRESSES: The official record for this rulemaking is identified as Docket Number F–94–CS2F–FFFFF, and is located in the EPA RCRA Docket, U.S. Environmental Protection Agency, Room 2616, 401 M Street, SW., Washington, DC 20460. The RCRA Docket is open from 9 am to 4 pm Monday through Friday, except for Federal holidays. The public must make an appointment to review docket materials by calling (202) 260–9327. The public may copy a maximum of 100 pages from any regulatory document at no cost. Additional copies cost $.15 per page. The mailing address is EPA RCRA Docket (5305), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at (800) 424–9346 (toll-free) or (703) 412–9810 locally. For technical information about mercury and radioactive mixed waste, contact Shaun McGarvey on (703) 308–8603; for technical information about lab packs and metal Universal Treatment Standards, contact Anita Cummings on (703) 308–8303; for technical information about organic Universal Treatment Standards, contact Lisa Jones

on (703) 308–8451; for technical information about Toxicity Characteristic wastes, contact Mary Cunningham on (703) 308–8453; for technical information about petroleum refining wastes, contact Jose Labiosa on (703) 308–8464; for other information, contact Richard Kinch on (703) 308–8414; of the Waste Treatment Branch, Office of Solid Waste (5302W), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, phone (703) 308–8434. For technical information on capacity analyses, contact Bengie Carroll of the Capacity Programs Branch, Office of Solid Waste (5302W), phone (703) 308–8440. For technical information on Hazardous Waste Recycling, contact Mitch Kidwell of the Regulation Development Branch, Office of Solid Waste (5304), phone (202) 260–8551.

SUPPLEMENTARY INFORMATION:

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ummary of the Statutory uirements of the 1984 Hazardous Solid Waste Amendments, and uirements of the 1993 Settlement eement With the Environmental nse Fund

he Hazardous and Solid Waste endments (HSWA) to the Resource servation and Recovery Act (RCRA), cted on November 8, 1984, largely nibit the land disposal of untreated rdous wastes. Once a hazardous te is prohibited from land disposal, statute provides only two options for l land disposal: meet the treatment dard for the waste prior to land osal, or dispose of the waste in a disposal unit that has been found tisfy the statutory no-migration test. o-migration unit is one from which e will be no migration of hazardous stituents for as long as the waste ains hazardous. RCRA sections 3004 (e), (g)(5).

he treatment standards may be ressed as either constituent centration levels or as specific hods of treatment. These standards t substantially diminish the toxicity he waste or substantially reduce the lihood of migration of hazardous stituents from the waste so that rt-term and long-term threats to an health and the environment are imized. RCRA section 3004(m)(1). purposes of the restrictions, land osal includes any placement of rdous waste in a landfill, surface oundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave. RCRA section 3004(k).

The land disposal restrictions are effective upon promulgation. RCRA section 3004(h)(1). However, the Administrator may grant a national capacity variance from the immediate effective date and establish a later effective date (not to exceed two years) based on the earliest date on which adequate alternative treatment, recovery, or disposal capacity which protects human health and the environment will be available. RCRA section 3004(h)(2). The Administrator may also grant a case-by-case extension of the effective date for up to one year, renewable once for up to one additional year, when an applicant successfully makes certain demonstrations. RCRA section 3004(h)(3). See 55 FR 22526 (June 1, 1990) for a more detailed discussion on national capacity variances and case-by-case extensions.

In addition, Congress prohibited the storage of any waste which is prohibited from land disposal unless such storage is to allow for the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal. RCRA section 3004(j). For storage up to one year, EPA has taken the position that the agency bears the burden of proving that such storage was not solely for the purpose of accumulation of quantities necessary to facilitate proper recovery, treatment or disposal. 40 CFR 268.50(b). For storage beyond one year, however, the burden of proof shifts to the generator or owner/operator of a treatment, storage or disposal facility to demonstrate that such storage was solely for the purpose of accumulation of quantities necessary to facilitate proper recovery, treatment or disposal. 40 CFR 268.50(c). The provision applies, of course, only to storage which is not also defined in section 3004(k) as land disposal.

EPA was required to promulgate land disposal prohibitions and treatment standards by May 8, 1990 for all wastes that were either listed or identified as hazardous at the time of the 1984 amendments, RCRA sections 3004 (d), (e), and (g), a task EPA completed within the statutory timeframes. EPA was also required to promulgate prohibitions and treatment standards for wastes identified or listed as hazardous after the date of the 1984 amendments within six months after the listing or identification takes effect. RCRA section 3004(g)(4).

The Agency did not meet this latter statutory deadline for all of the wastes identified or listed after the 1984 amendments. As a result, a suit was filed by the Environmental Defense Fund (EDF). EPA and EDF signed a consent decree (lodged with but not entered by the District Court) that establishes a schedule for adopting prohibitions and treatment standards for newly identified and listed wastes. (*EDF* v. *Reilly*, Civ. No. 89–0598, D.D.C.) This proposed consent decree was recently modified as a result of the court decision on the Third Third final rule (*Chemical Waste Management* v. *EPA*, 976 F.2d 2 (D.C. Cir. 1992), cert. denied 113 S. Ct. 1961 (1993) (*CWM* v. *EPA*)). Today's rule fulfills several provisions of the proposed consent decree. The rule establishes treatment standards for newly listed coke by-product and chlorotoluene production wastes, and for the D018–D043 TC wastes (TC wastes identified as hazardous because of the presence of organic hazardous constituents) when these wastes are managed in systems other than those wastewater treatment systems whose discharge is regulated under the Clean Water Act (CWA), by zero-dischargers that do not engage in CWA-equivalent treatment prior to land disposal, and by injection into other than underground injection control (UIC) Class I deep injection wells regulated under the Safe Drinking Water Act (SDWA). Soils contaminated with these newly identified and listed wastes are also covered by this rule.

Finally, this rule prohibits injection into deep wells of high Total Organic Carbon ignitable wastes (D001) and Toxic Characteristic organic pesticides (D012–D017) unless they are treated to meet applicable treatment standards, or the deep well has received a no-migration variance. This last prohibition is in partial fulfillment of the settlement agreement following the D.C. Circuit's decision in *CWM* v. *EPA*.

EPA is also modifying a number of the existing land disposal restrictions rules. Although not required by the settlements discussed above, these changes reflect EPA's updated technical knowledge, simplify implementation of the program, and provide greater programmatic consistency. In today's notice, EPA is establishing a set of treatment standards (called universal treatment standards) that apply to most hazardous wastes, changing requirements for land disposal of lab packs containing prohibited hazardous wastes, and simplifying paperwork requirements.

B. Pollution Prevention Benefits

EPA's progress over the years in improving environmental quality through its media-specific pollution

control programs has been substantial. Over the past two decades, standards for pollution control concentrated to a large extent on "end-of-pipe" treatment or land disposal of hazardous and nonhazardous wastes. Although none of the treatment standards in today's rule require waste minimization or recovery, these are viable options for facilities to choose to use to comply with universal treatment standards. For example, facilities may choose to reduce the generation of wastes and/or treat certain metal-containing wastes by using high temperature metal recovery (HTMR), which has been shown to be effective for treating many metal bearing wastes.

C. Relationship of Best Demonstrated Available Technology (BDAT) Treatment Standards to Initiatives To Strengthen Federal Controls Governing Hazardous Waste Combustion Devices

On May 18, 1993, EPA Administrator Browner announced additional steps that would be pursued to protect public health and the environment by further encouraging reduction in the amount of hazardous wastes generated in this country and strengthening federal controls governing hazardous waste incinerators and other combustion devices. With the announcement, the Draft Hazardous Waste Minimization and Combustion Strategy (also referred to as the Draft Strategy) was released, upon which the Agency has sought broad national dialogue. Among other things, the Draft Strategy called for a national review of the relative roles of hazardous waste combustion and source reduction in hazardous waste management.

Since release of the Draft Strategy, the Agency has pursued a wide variety of activities. For example, EPA released in May 1994 a draft technical report entitled "Combustion Emissions Technical Resource Document". This report provides EPA's preliminary technical analysis of best operating practices and achievable emission levels with regards to emissions of dioxin and particulate matter from existing hazardous waste incinerators, and boilers and industrial furnaces (BIFs) burning hazardous wastes, based on data already submitted to EPA. The report was also released to provide for early pre-proposal dialogue on the types of additional controls and emission limits that should be adopted for hazardous waste combustion units. In another action, the Agency announced its proposed permitting and public participation rule. This rule would amend EPA's RCRA regulations to provide earlier and more effective opportunities for public participation in the RCRA permitting process. The rule also proposes tighter standards for the interim period immediately after a facility trial burn is completed but before a final permit determination is made.

Today's rule provides the Agency with another opportunity to address the objectives of the Draft Strategy. In particular, this rule specifies a series of new treatment standards that must be met before hazardous wastes are land disposed. As in previous LDR rules, the standards for hazardous organic constituents are, in many cases, based on the performance of combustion technology. In the proposed rule, the Agency solicited comments and data on whether other treatment technologies, especially recycling technologies, can achieve these or comparable treatment levels. EPA also solicited comment on whether the levels should be modified so as to allow and encourage the use of non-combustion treatment technologies.

It remains EPA's primary objective in hazardous waste management to reduce the amount of hazardous waste that is generated so as to minimize the need to treat and dispose of hazardous waste. A wide range of waste minimization activities are underway, including development of the National Plan for Hazardous Waste Minimization released in draft on May 23, 1994 as part of the Draft Strategy. However, for those hazardous wastes that are still produced and are disposed, the waste must be treated (see RCRA section 3004(m)).

While the Agency has concerns with combustion devices that are not properly designed and operated, particularly if they do not fully control toxic metals and organics (including products of incomplete combustion (PICs)), the Agency also believes that combustion technologies, if properly designed and operated, do minimize threats to human health and the environment for many waste streams. Several commenters agree with the Agency on this point. In fact, these commenters (including environmental groups) argue that relaxing the treatment standards to reduce the amount of treatment otherwise achieved via combustion could actually increase threats to human health and the environment, and thus violate EPA's statutory requirements under 3004(m). In addition, it has also been argued that loosening the treatment standards will not necessarily result in less combustion because the regulated community may still choose to rely on combustion to meet the standards. Commenters also suggested that loosening the treatment standards will actually act as a disincentive to seek pollution prevention alternatives. This latter point seems to have merit in that based on some preliminary analysis of the land disposal restrictions program by the Agency, the existing treatment standards have raised the cost of hazardous waste management substantially and have been a factor in reducing the amount of hazardous waste generated.

To address those combustion facilities that are not operated properly, the Agency will continue its aggressive inspection and enforcement program to bring the facilities back into compliance with all requirements and to impose penalties. In addition, the Agency is actively engaged with all interested parties in discussions on upgrading combustion regulations. EPA is considering, as part of this upcoming rulemaking, revising the controls on dioxin and furan emissions, particulate matter, and toxic metals. In the course of the rulemaking, the public will have the opportunity to comment on the Agency's proposals. As noted earlier, EPA is already seeking public comment on its preparatory work for this rulemaking to upgrade combustion regulations through release of the Combustion Emissions Technical Resource Document, this past May.

Several commenters indicated that the LDR treatment standards should not be based on combustion performance because this will encourage combustion over other treatment alternatives. Although the Agency is willing to look at alternative technologies, such technologies must still achieve levels of performance that satisfy the dictates of RCRA section 3004(m). Also, we must have some assurance that any alternative treatment method is done safely. No information or data was provided by these commenters on the issues of the effectiveness or safety of the alternative treatment technologies or limits, or that such alternatives would be equally or more protective of human health and the environment. (As EPA has stated many times, the Agency specifies concentration levels as the treatment standards rather than mandated methods of treatment because this provides maximum flexibility in the selection of treatment technology that may be used.)

Several commenters also asserted that only combustion technologies can achieve the levels specified as treatment standards for organics. However, no treatability data were provided to support their general assertions. On the other hand, limited data were provided on specific alternative treatment technologies that can also achieve the treatment standards in today's rule.

Therefore, the Agency is not convinced that the treatment standards for organics in today's rule require modification to be achievable by technologies other than combustion, and such other technologies may be used to meet these standards.

D. Relationship of LDR Treatment Standards to Risk-based Treatment Standards

The principal objection to the proposed UTS was that the values do not reflect risk, that is, the standards are based on performance of a treatment technology rather than on assessment of ks to human health and the vironment posed by the waste. The bate over technology- versus risk- ed treatment standards has ntinued throughout the development he land disposal restrictions. EPA's imate policy preference is to establish k-based levels that truly minimize eats to both human health and the vironment. 55 FR at 6641 (Feb. 26, 90). Such standards would cap the ent of hazardous waste treatment. RA section 3004(m)(1). The ficulties involved in this task, wever, are formidable and very ntroversial. The technical issues clude assessing exposure pathways er than migration to groundwater, ing environmental risk into account, d developing adequate toxicological ormation for the hazardous nstituents controlled by the zardous waste program.

The Agency is currently working on a emaking that will define hazardous nstituent concentration levels below ich a waste is no longer designated der RCRA subtitle C as "hazardous." scussions concerning these levels are ing place in the Federal Advisory mmittee on the Hazardous Waste ntification Rule (HWIR). The HWIR mmittee is discussing issues and oviding recommendations for two emakings: as-generated waste and ntaminated media.

The HWIR Committee is made up of dustry, environmentalists, treaters and sposers, and state implementing icials. The HWIR Committee has gun discussions by focusing on ncentrations below which waste xtures and treatment residuals would longer be subject to the hazardous ste regulations ("exit criteria"), while o discussing whether there is a gulatory approach to bring under gulation clearly hazardous waste not w controlled by the hazardous waste gulations (an "entry" rule). In dition, EPA is working with the mmittee to consider whether risk- sed exit criteria or other risk-based values based on the same exposure modeling could also serve as minimize threat levels to potentially cap treatment standards for the land disposal restrictions.

In *Hazardous Waste Treatment Council* v. *EPA*, 886 F. 2d 355 (D.C. Cir. 1989), cert. denied 111 S. Ct 139 (1990), the court held that the statute can be read to allow either technology-based or risk-based standards, and further held that technology-based standards are permissible so long as they are not established "beyond the point at which there is no 'threat' to human health or the environment." *Id.* at 362. The court further held that the particular technology-based standards at issue were not established below this "minimize threat" level, notwithstanding that (in some cases) the standards were below Maximum Contaminant Levels used for drinking water under the Safe Drinking Water Act, and were below the RCRA characteristic level. *Id.* at 361–62. In the court's view, the RCRA section 3004(m) minimize threat standard was more stringent than that used to establish either drinking water standards or characteristic levels. EPA finds, for purposes of this rule, that none of the treatment standards are established below levels at which threats to human health and the environment are minimized. This finding stems from the Agency's inability at the present time, as explained above, to establish concentration levels for hazardous constituents which represent levels at which threats to human health and the environment are minimized. Unless the Agency determines risk-based concentration levels that achieve the "minimized threat" requirement for a particular wastestream, the Agency believes that BDAT treatment (as reflected by the UTS levels) fulfills the statutory charge.

E. Treatment Standards for Hazardous Soil

As stated in the September 14, 1993 proposal (58 FR 48124), EPA recognizes that the treatment standards promulgated for as-generated hazardous waste may not always be achievable or appropriate for soil contaminated with that waste. EPA therefore proposed less stringent alternative treatment standards that would specifically apply to hazardous soils. In addition, EPA proposed to codify the "contained-in" policy for contaminated media (see 58 FR 48127). Subsequent to the proposal, the Agency received a number of comments from the varied constituencies (industry, environmental, waste treatment and state) involved in the Hazardous Waste Identification Rule (HWIR) effort for addressing contaminated media, urging the Agency to await the results of that effort before developing soil-specific treatment standards. Thus, EPA has decided not to promulgate alternative treatment standards for hazardous soil and the codification of the contained-in policy as part of this rulemaking, but rather will address it as part of the HWIR effort for contaminated media. EPA announced this decision on November 12, 1993 (see 58 FR 59976) and again on March 8, 1994 (see 59 FR 10778).

The Hazardous Waste Identification Rule for Contaminated Media, which is being developed by EPA in concert with the States and with affected stakeholders, is intended to create a comprehensive regulatory framework within RCRA Subtitle C that will apply to the management of contaminated media that are managed as part of remediation activities. Through the public dialogue process, a conceptual framework has been developed for HWIR for media. As currently envisioned, the HWIR media rule will establish mandatory treatment requirements for soils (and possibly other media) that are highly contaminated, while less contaminated soils would be subject to management requirements of the overseeing regulatory agency. The HWIR media rule is expected to encourage national consistency in the management of higher risk media, while providing management flexibility for a significant volume of lower risk contaminated media, thereby facilitating more timely and less costly cleanups.

Although the HWIR rule for contaminated media is being developed on a different schedule than the LDR rules, EPA believes (and is supported by many commenters) that it is appropriate to address the issue of setting treatment standards for soils within the broader framework of the HWIR rule, since such treatment requirements are expected to be an integral part of that rule. In addition, EPA believes that the contained-in policy is one of the key issues that must be addressed in the development of a comprehensive regulatory framework for management of contaminated media.

In the meantime, hazardous soils are generally subject to the LDR treatment standards that apply to the hazardous wastes with which the soils are contaminated, including those addressed in today's rule.

The Agency has stated a presumption, however, that the treatment standards for as-generated wastes are generally inappropriate or unachievable for soils

contaminated with hazardous wastes, within the meaning of 40 CFR 268.44(a) (see 55 FR 8759–60, March 8, 1990). It has been the Agency's experience that contaminated soils are significantly different in their treatability characteristics from the wastes that have been evaluated in establishing the BDAT standards, and thus, will generally qualify for a treatability variance under 40 CFR 268.44. For guidance on treatability variances for soils, see the EPA Fact Sheet entitled "Regional Guide: Issuing Site-Specific Treatability Variances for Contaminated Soils and Debris from Land Disposal Restrictions (OSWER Publication 9839.3–08FS). For RCRA actions, the Regional Administrator was delegated the authority to deny or grant these variances in a non-rulemaking procedure under 40 CFR 268.44(h) on April 22, 1991. These variances may be granted by State agencies in States authorized for § 268.44. Variance authority for CERCLA actions is discussed in LDR Guides 6A (revised Sept. 1990) and 6B (OSWER 9347.3–06FS and 9347.3–06BFS).

As previously noted, EPA chose not to develop separate treatment standards for soils in this rulemaking, and currently plans to address treatment standards for contaminated soils in the context of the Hazardous Waste Identification Rule (HWIR) for contaminated media, which is currently under development. If, however, the HWIR Contaminated Media rule does not sufficiently address treatment standards for contaminated soils in a timely manner, the Agency may promulgate such standards in a separate rulemaking. Information on the HWIR Contaminated Media rule may be obtained by contacting Carolyn Loomis, at (703) 308–8626.

Until LDR standards specific to soils are promulgated, EPA believes that treatability variances will generally be appropriate when hazardous soils are managed as part of site remediation activities. The Agency recognizes, however, that in some cases obtaining a treatability variance as provided under § 268.44 could cause delays in implementing remedial actions. The Agency is currently considering whether changes to the existing variance or authorization procedures should be made as a means of expediting cleanup actions that are conducted under RCRA or other Federal or State authorities, or other cleanups initiated by responsible parties. Such changes, if necessary, will be addressed in a future rulemaking.

II. Summary of Rule

A. Treatment Standards for Newly Identified Organic Toxicity Characteristic (TC) Wastes

On March 29, 1990, EPA promulgated a rule that identified organic constituents (in addition to existing EP metals and pesticide constituents) and levels at which a waste is considered hazardous based on the characteristic of toxicity (55 FR 11798). Because these wastes were identified as hazardous after the enactment date of HSWA in 1984, they are "newly identified wastes" for purposes of the LDR program. Included are wastes identified with the codes D018 through D043 based on the toxicity characteristic leaching procedure (TCLP), i.e., TC wastes. EPA is establishing treatment standards for each of these constituents if they are managed in systems other than those regulated under the Clean Water Act (CWA), those engaging in CWA-equivalent treatment prior to land disposal, and those injected into Class I deep injection wells regulated under the Safe Drinking Water Act (SDWA). (For an explanation of these qualifications, see the May 24, 1993 Interim Final Rule (58 FR 29860).) In addition, because wastes exhibiting the toxicity characteristic (TC) can contain treatable levels of other hazardous constituents, EPA is establishing treatment standards for the underlying hazardous constituents, as defined in 268.2(i). These rules are consistent with the court's opinion in *Chemical Waste Management* v. *EPA*, 976 F.2d 2, 17–8 (D.C. Cir. 1992), cert. denied 113 U.S. 1961 (1993), which held that all hazardous constituents in characteristic wastes must meet the levels of performance satisfying the requirements in RCRA 3004(m) before land disposal, and that treatment standards cannot be achieved by dilution (provided, of course, that treatment standards are not established below the level at which threats to human health and the environment are minimized).

B. Prohibition of Dilution of High TOC Ignitable and of TC Pesticide Wastes Injected Into Class I Deep Wells

In its ruling on the Third Third LDR Rule, the D.C. Circuit Court of Appeals remanded the portion of the Agency's rule allowing treatment standards for characteristic wastes to be achieved by dilution. The Agency is continuing to develop a regulatory response to implement the court's ruling. As part of that response, EPA is today requiring that hazardous constituents in two types of characteristic wastes, high total organic carbon (TOC) ignitable liquids (D001), and halogenated pesticide wastes that exhibit the toxicity characteristic (D012–D017), be fully treated before those wastes are disposed unless the wastes are disposed in an injection well that has a no-migration variance.

The Agency believes that treatment of these particular wastestreams is warranted. (See Section VIII—Deep Well Injection Issues for further discussion.) The D001 wastes are ignitable with potentially high concentrations of hazardous constituents, and the pesticide wastes contain particularly toxic constituents. Further, the organics in D001 high TOC liquids can be recovered, destroyed, or used as a fuel and occur in only small volumes so that segregation and treatment should not prove difficult.

C. Treatment Standards for Newly Listed Wastes

EPA has promulgated a number of hazardous waste listings since the enactment of HSWA in 1984, referred to as "newly listed wastes" under the LDR program. This rule describes the treatment technologies (recycling is a type of treatment) identified as BDAT for several of these newly listed wastes, and establishes treatment standards based on these BDATs. Newly listed wastes included in today's rule are K141–K145, K147–K148, and K149–K151 (coke by-product production wastes and chlorotoluene wastes) (see 40 CFR 261.32 for a description of these wastes).

D. Universal Treatment Standards

Today's rule promulgates universal treatment standards (UTS) for organic, metal, and cyanide constituents—one set for wastewaters and a different set for nonwastewaters—that replace existing treatment standards for hazardous wastes. ("Replace" is something of a misnomer, as explained more fully below, since many of the standards actually remain at current levels, and the rule does not require treatment of hazardous constituents not already regulated under current standards.) Currently, facilities managing hazardous wastes must meet LDR treatment standards established for many different listed and characteristic hazardous waste codes before the waste may be land disposed. In some cases, a constituent regulated under the treatment standard for one waste was also regulated in another waste at different concentration levels. Today's rulemaking eliminates these differences in concentration limits for the same constituent to provide a better assessment of treatability, reduce

confusion, and ease compliance and enforcement. Promulgation of UTS does *not* change the constituents of concern regulated in listed wastes—that is, if only cadmium, lead and chromium have been regulated in a listed waste, only cadmium, lead and chromium are subject to regulation now that UTS are promulgated. However, the concentration levels for cadmium, lead and chromium now are numerically identical with UTS for those constituents.

E. Modifications to Hazardous Waste Recycling Regulations

The Agency is modifying the gulatory framework to the definition solid waste to allow environmentally neficial recycling operations to ntinue without the regulatory pediments imposed by full RCRA btitle C requirements. In turn, this ll allow EPA and the states to eamline their efforts and better focus operations that are part of the tion's waste disposal problem, rather an on those that are not, while the ency continues to look at the overall finition.

These modifications will broaden the CFR 261.2(e)(1)(iii) "closed-loop" cycling exclusion from the definition solid waste such that the residues of econdary process are excluded from ing a solid waste if they are reinserted o the process without prior clamation (and also similarly broaden e related 40 CFR 260.30(b) variance r materials that are reclaimed prior to insertion). These provisions will put condary recovery operations that cycle residues which they generated the same regulatory footing as imary recovery operations. The odifications are based, in part, on two urt opinions (*American Petroleum stitute* v. *EPA*, 906 F.2d 726 (D.C. Cir. 90) (*API*) and *American Mining ongress* v. *EPA*, 907 F. 2d 1179 (D.C. r. 1990) (*AMC II*)) which indicate that e Agency has some discretion to nsider the manner in which a condary material is managed in termining RCRA jurisdiction (i.e., CRA jurisdiction may be determined, least in part, by consideration of hether the material is part of the waste anagement problem, as indicated by e potential for the material to pose a zard to human health and the vironment when recycled).

I. Improvements to the Existing Land sposal Restrictions Program

Background

"Our goal is to make the entire federal overnment both less expensive and more efficient . . . we intend to redesign, to reinvent, to reinvigorate the entire national government."

President Bill Clinton Remarks Announcing the National Performance Review, March 3, 1993

"We are searching for ways to change—to work better and smarter so that the Agency can deliver high quality results at a reduced cost. Our aim is to treat citizens as customers, improve the service and delivery of our programs, and eliminate waste and inefficiency."

From "Creating A U.S. Environmental Protection Agency that Works Better And Costs Less" (EPA's National Performance Review Phase I Report)

In the past several years, the EPA has embarked on major efforts to improve the quality of its work in protecting human health and the environment. Coincident with this emphasis on improvement in the way its work is done, the Agency is striving to help reinvent government, in part by streamlining its organization and its work in order to be more efficient and save public resources. In that spirit, a major part of today's rule is designed to improve the quality and efficiency in the Land Disposal Restrictions Program. The measures promulgated today to improve the Program received widespread support from commenters when they were proposed.

The universal treatment standards, described in detail in the next section, greatly simplify both compliance and enforcement with the LDRs, without sacrificing protection of the environment or human health. In particular, the rule replaces the myriad constituent concentration levels in the LDR treatment standards for most hazardous wastes with a uniform set of constituent levels. Thus, the treatment standard concentration for a constituent in waste A will be the same concentration as for that constituent in waste B. As a result, hazardous waste generators and treaters should be able to save money and effort in treating hazardous wastes. These facilities will be able to operate more efficiently by consolidating treatment activities. One facility, for example, estimated an annual savings of $750,000 from not having to campaign treat their wastes with varying limits. The consistency provided by universal treatment standards will make it easier to comply with the LDRs. Likewise, the universal treatment standards will make the job of enforcement easier for state governments. With universal treatment standards in place, it will also be easier and quicker for EPA to set standards for hazardous wastes identified in the future (assuming those standards are feasible and appropriate for newly identified and listed wastes). The end result for the regulated community, states, and the EPA will be to save resources for other pressing tasks.

While establishment of universal treatment standards is the primary improvement, other improvements are also included in today's rule. In particular, the Agency is:

- Consolidating three separate tables containing treatment standards into a single consolidated table;
- Reducing the information required on notification forms;
- Simplifying the regulations for treatment of lab packs;
- Providing easy-to-read flowcharts and a simple guide to paperwork requirements in order to make the rule's requirements clearer and easier to implement.

Although today's rule takes significant steps in improving the Land Disposal Restrictions program, the Agency recognizes that further, in fact continuing, improvement is necessary. Some of the universal treatment standards (such as cyanide) will need to be reassessed upon completion of Agency efforts to improve the analytic test method. HWIR will need to be integrated into the Land Disposal Restrictions. The Agency is also on a firm track of pursuing other avenues for continuous quality improvement in the program. Ideas and suggestions for improvements have, and will, come from: (1) Advance Notices of Proposed Rulemaking published by EPA in order to acquire as much information as possible from the public about treatment options; (2) communications between EPA and its customers representing environmental groups, generators, and treaters; and, (3) the LDR Program evaluation that is currently being conducted, which was initiated by a public roundtable discussion with a large number of customers. Consequently, the Agency will continue to take advantage of opportunities to streamline and improve the LDR program.

B. Universal Treatment Standards

The EPA is promulgating a single universal treatment standard (UTS) for each constituent in nonwastewater form and a single UTS for each constituent in wastewater form, regardless of the hazardous waste containing the constituent.

1. Identification of Wastes to Which Universal Treatment Standards Apply

The universal treatment standards apply to all listed and characteristic

wastes for which treatment standards have been promulgated, with two exceptions. The first exception is the TC metal wastes (D004–D011). These metal wastes will be addressed in the future Phase IV LDR rule. (It should be noted that the mineral processing wastes which were formerly excluded from RCRA Subtitle C regulation under the Bevill Amendment are considered to be newly identified and will also be addressed in Phase IV.) The second exception is those for which the treatment standard is a specified method of treatment. Most of these wastes must continue to be treated using those required technologies. For a small number of wastes with previously specified methods of treatment, the universal standards are an alternative, i.e. either use of the specified method or the universal standard will satisfy the LDR requirement. For those few situations where a mixture of wastes may be subject to different standards for the same constituent, the more stringent standard continues to apply. See § 268.41(b).

Although the proposed rule excluded F024 from the UTS, EPA is applying UTS to F024 in today's rule. The existing standards, which were unique among standards set for F- or K-listed wastes, incorporated numerical treatment standards and also mandated a specific technology—incineration. The original F024 numerical standards for metals were also exceptionally low, reflecting the fact that F024 contains only low levels of metals.

However, comments from Dow Freeport indicated that the low F024 metal limit needlessly prevented them from co-treating wastes, a process that could save the facility $750,000/year, and that application of UTS solved this problem without diminishing the extent of treatment. EPA agrees, and is applying UTS to F024 in this rule while continuing to require incineration.

UTS apply to underlying hazardous constituents in characteristic wastes that are subject to LDRs. Apparent confusion in several comments leads the Agency to clarify that UTS will apply to the F039 waste code, the code for multi-source leachate. EPA used the F039 levels in the May 1993 Interim Final Rule as treatment standards for underlying hazardous constituents in certain decharacterized D001 and D002 wastes (58 FR 29885). Consequently, UTS levels and F039 standards are identical, with the exception of those few constituents regulated in F039 but not in UTS. This means that the Interim Final Rule requirement that underlying hazardous constituents in certain D001 and D002 wastes meet F039 levels is now one and the same thing with the requirement that underlying hazardous constituents meet UTS. (The term "underlying hazardous constituents" is defined at 268.2(i)).

2. Differences in Universal Treatment Standards and Previous Treatment Standards

In most cases (59%), UTS are the same as the previous treatment standards. Thirty three percent of the standards went up or down within a factor of ten of the original standard, while 8% underwent larger changes (3% of the total number of UTS becoming significantly more stringent). The following table lists the differences between the UTS and previous standards.

TABLE 3.—COMPARISON OF UNIVERSAL TREATMENT STANDARDS TO PREVIOUSLY PROMULGATED TREATMENT STANDARDS

Parameter	Wastewater forms	Nonwastewater forms
Total Number of Constituent/Waste Code Combinations	938	924
Number of Combinations Unchanged by the Universal Treatment Standards	677	416
Number of Combinations for which the Universal Treatment Standards are Slightly Less Stringent[1]	138	209
Number of Combinations for which the Universal Treatment Standards are Slightly More Stringent[1]	76	199
Number of Combinations for which the Universal Treatment Standards are Significantly Less Stringent[2] ..	17	80
Number of Combinations for which the Universal Treatment Standards are Significantly More Stringent[2] ..	30	20

[1] The change is less than a factor of ten greater or less than the previously promulgated standard.

[2] The change is a factor of ten or more greater or less than the previously promulgated standard.

This numerical comparison somewhat exaggerates the degree of change. The changes in numerical values for many of the organic constituents reflect adjustments in the limits of analytic detection. Actual treatment will consequently likely continue to destroy or remove organics to nondetectable levels. It also is important to note that even in those cases where numerical limits have changed, the technology basis has not. Treatment technology used to comply with the previous standards should also be able to comply with UTS. Again, because most treatment technologies cannot be so precisely calibrated as to achieve, for instance, 3.5 ppm rather than 2.7 ppm, the likely result is that the same amount of treatment will occur. The main impact of UTS will be in simplifying compliance.

EPA also notes that very few of the commenters who complained about treatment standards being unachievable provided data to support their claims. Because most of the wastes subject to UTS are already subject to LDR treatment requirements, there should be data documenting treatment performance of these wastes that commenters could have submitted. EPA believes, therefore, that the absence of substantiating data cannot be attributable to commenters' inability to generate treatment data. (The situation differs from the state of affairs at the beginning of the land disposal restrictions program when there was little existing treatment data to draw upon, because many hazardous wastes were being disposed untreated, and there was little time to generate such data.)

For discussion of comparison between the UTS and previous standards for

nonwastewater metal constituents, see section III.B.5.a. of this preamble.

3. Universal Treatment Standards for Organic Hazardous Constituents

EPA is today promulgating UTS for nonwastewater and wastewater forms of organic hazardous constituents, as found in the two tables in this section.

a. Analyte Combinations

Motivated by concern for analytical feasibility, EPA proposed that several groups or pairs of analytically similar organic compounds be regulated as the sum of their concentrations rather than as individual analytes. Commenters pported these proposals as a nplification of analytical procedures, rticularly the proposed total PCB ndards for arochlors. Thus, today's e regulates each of these groups or irs collectively by setting wastewater d nonwastewater numbers presenting their sums rather than dividual concentrations. Specific alytes to be regulated with one astewater and nonwastewater number e PCBs (arochlors), xylenes, nzo(b)fluoranthene/ nzo(k)fluoranthene and phenylamine/diphenylnitrosamine.

PCBs: Today's approach for PCBs is nsistent with the regulations of other A offices, such as those promulgated rsuant to the Toxic Substance Control t (TSCA). This approach will also minate analytical difficulties in antifying each of the individual ochlors.

The "Total PCB" standards include ven arochlors that represent hundreds isomers of polychlorinated biphenyls. rlier LDR regulations addressed dividual arochlors and required cognition of a gas chromatograph ttern which is often difficult to fferentiate. Furthermore, regulation of dividual arochlors may be difficult for astes subject to degradation or eatment. EPA recommends SW–846 ethods 8080 or 8081 (which use a gas romatograph/electron capture tector) for measurement of total PCBs.

Xylenes: Similarly, today's rule gulates the sum of several xylene omer analytes in both wastewaters and nwastewaters. The three xylenes cluded on the BDAT list of hazardous nstituents are ortho-, meta-, and para- lene. Meta- and para-isomers co-elute gas chromatograph analysis. Two ethods exist in SW–846 for the easurement of total xylenes: 8020 and 40. Method 8020 detects xylenes ing a photoionization detector and 40 uses a mass spectrometer. Total lenes concentration is determined om the addition of the ortho-xylene concentration and the meta-/para-xylene concentration.

Benzo(b)fluoranthene/ Benzo(k)fluoranthene and Diphenylamine/ Diphenylnitrosamine: EPA is also regulating two pairs of analytically problematic constituents, benzo(b)fluoranthene/ benzo(k)fluoranthene and diphenylamine/diphenylnitrosamine with a single wastewater and nonwastewater number for each pair.

b. Organics—Nonwastewaters

i. The Universal Treatment Standards Promulgated in Today's Rule

EPA is promulgating UTS for organics in nonwastewaters as proposed with the exception of the standards for m- and p-cresols. These are the only organic constituents for which commenters provided data supporting changes to the proposed UTS. Although organic nonwastewater UTS differ in some cases from the previously promulgated standards, the same technology basis, combustion, can meet the limits. In the previous standards as well as the UTS, the organic standards are based on a detection level in a combustion residue (adjusted upward by a variability factor accounting for analytic and process variability). Differences between UTS and previous standards reflect a more consistent assessment of achievable detection levels for various constituents in combustion residues, and continue to be achievable using BDAT, combustion. Because the essential technical issue at the heart of these adjustments is the value of the detection limit, most of these changes reflect analytical artifacts rather than absolute differences in the quantities of toxics available for release following land disposal.

ii. Modifications to Universal Treatment Standards Made in Response to Comments

A petroleum refiner involved in building a biological treatment system submitted data on organic nonwastewaters, and indicated their concern about the lower treatment standards for certain organic constituents that were proposed as UTS. The Agency evaluated the commenter's data and found, in some cases, the commenter was requesting that UTS levels be set at levels higher than the maximum levels in their untreated wastes. Furthermore, the commenter's data did not represent proper monitoring. The Agency was able to determine from their data, however, that one limit, the proposed m- and p-cresol limit, should be raised from 3.2 mg/kg to 5.6 mg/kg. This adjustment is based on other factors described below.

The proposed UTS for m- and p-cresol was 3.2 mg/kg, which differed from the proposed UTS for o-cresol, which was 5.6 mg/kg. Today's rule promulgates 5.6 mg/kg for both o-cresol and m- and p-cresol. The proposed limits for cresols were based on a detection limit of 2 mg/kg for o-cresol and 1 mg/kg for m- and p-cresol from an incinerator ash study used to develop nonwastewater standards in the Third Third rulemaking. The differences in detection limits occurred because EPA used different treatment tests to set the limits for o- versus m- and p-cresol. Examination of the same test runs revealed that where o-cresol had a detection level of 2 mg/kg, the detection level for m- and p-cresol was also 2 mg/kg. In addition, where the detection level for m- and p-cresol was 1 mg/kg, the detection level for o-cresol was also 1 mg/kg. Upon further review of other data, the Agency observed that within a test, o-cresol and m- and p-cresols had the same detection levels. The numbers for o-cresol and m- plus p-cresol promulgated in today's rule were calculated with the same detection limit, as justified by the data review, and the same recovery factor. The resulting identical treatment standards reflect the fact that incineration treats both of these isomer groups to the same level, within the existing analytical constraints.

iii. Use of Alternative Treatment Technologies to Combustion

In establishing numerical treatment standards, the Agency allows the use of any technology (other than impermissible dilution) to comply with the limits. Some previous standards, namely those for petroleum refining wastes, were based on combustion as well as thermal desorption and solvent extraction. Under UTS, organic nonwastewater standards are based on and achievable by combustion. As for other technologies, EPA assessed whether the changes in limits disrupted commitments made to use these other technologies. With regard to thermal desorption, EPA examined comments on the proposed levels by three vendors of thermal desorption units (Seaview Thermal Systems (STS), Separation and Recovery Systems, Inc. (SRS), and Ecova (formerly Waste Tech Services)), BDAT Background Development Documents for treatment standards applicable to petroleum wastes, the Marathon delisting petition, and other available literature.

These data demonstrate the achievability of UTS by thermal

desorption for petroleum refining wastes. This was an expected result, given the comments on the Phase I LDR rule which addressed F037 and F038 petroleum refining wastes. In these comments, a thermal desorption company called for limits lower than today's UTS limits (these data reflected lower detection levels, not necessarily better treatment than today's UTS). Also important in the use of thermal desorption are the operating conditions: raising the temperature, and/or the detention time increases the amount of hazardous organic constituents desorbed.

As for solvent extraction, the data used for development of the K048–K052 treatment standards achieved UTS levels for about half of the demonstration runs. Operating conditions, such as solvent selection, solvent to waste ratios, detention time, and number of treatment passes significantly affect treatment results, and the agency believes these parameters can be adjusted to comply with the UTS. There may, however, be other factors which result in this technology not being selected, and based on information available to the Agency, no petroleum refining facilities are utilizing solvent extraction.

EPA requested comments on the achievability of the proposed UTS for petroleum refining wastes when treated via noncombustion technologies. (See 58 FR 48106–48107.) EPA also requested comments on whether the industry has invested in non-combustion technologies, including those designated as BDAT in previous rules that cannot meet the UTS. In particular, EPA requested information on the type of treatment, performance data, and an explanation of why existing treatment could not be adjusted and operated more efficiently to comply with the UTS. EPA also pointed out it was willing to revise the proposed UTS, if data indicated that appropriate noncombustion technologies could achieve slightly higher levels than those proposed for UTS.

Only one commenter, Valero, Inc., submitted comments with regard to a contractual agreement for the construction of a full scale bioslurry reactor and data from a bench scale treatability study. None of the other petroleum refining commenters indicated they had invested in noncombustion technologies. Valero, Inc., and two remediation companies, Retec Technologies and OHM Corporation, submitted data on biotreatment of organic constituents. They reported treatment efficiencies from 40 to 60 percent for some PNAs and questioned whether the proposed treatment standards can be routinely achieved by biotreatment technologies. EPA does not generally consider such treatment efficiencies adequate for organic constituents. As indicated previously, facilities can use any technology other than impermissible dilution to comply with the treatment standards. If design and operating conditions can be adjusted to meet the limits, this could be full compliance. If not, the technology may still be appropriate for remediation wastes, for which standards are currently being revised in the development of HWIR.

UNIVERSAL TREATMENT STANDARDS FOR ORGANIC HAZARDOUS CONSTITUENTS

Regulated constituent—common name	CAS [1] No.	Nonwastewater standard; concentration in mg/kg [2] unless noted as "mg/l TCLP"
Acenaphthylene	208–96–8	3.4
Acenaphthene	83–32–9	3.4
Acetone	67–64–1	160
Acetonitrile	75–05–8	1.8
Acetophenone	96–86–2	9.7
2-Acetylaminofluorene	53–96–3	140
Acrolein	107–02–8	NA
Acrylamide	79–06–1	23
Acrylonitrile	107–13–1	84
Aldrin	309–00–2	0.066
4-Aminobiphenyl	92–67–1	NA
Aniline	62–53–3	14
Anthracene	120–12–7	3.4
Aramite	140–57–8	NA
alpha-BHC	319–84–6	0.066
beta-BHC	319–85–7	0.066
delta-BHC	319–86–8	0.066
gamma-BHC	58–89–9	0.066
Benzene	71–43–2	10
Benz(a)anthracene	56–55–3	3.4
Benzal chloride	98–87–3	6.0
Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)	205–99–2	6.8
Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)	207–08–9	6.8
Benzo(g,h,i)perylene	191–24–2	1.8
Benzo(a)pyrene	50–32–8	3.4
Bromodichloromethane	75–27–4	15
Methyl bromide (Bromomethane)	74–83–9	15
4-Bromophenyl phenyl ether	101–55–3	15
n-Butyl alcohol	71–36–3	2.6
Butyl benzyl phthalate	85–68–7	28
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88–85–7	2.5
Carbon disulfide	75–15–0	[3]
Carbon tetrachloride	56–23–5	6.0
Chlordane (alpha and gamma isomers)	57–74–9	0.26
p-Chloroaniline	106–47–8	16
Chlorobenzene	108–90–7	6.0

UNIVERSAL TREATMENT STANDARDS FOR ORGANIC HAZARDOUS CONSTITUENTS—Continued

Regulated constituent—common name	CAS[1] No.	Nonwastewater standard; concentration in mg/kg[2] unless noted as "mg/l TCLP"
Chlorobenzilate	510–15–6	NA
2-Chloro-1,3-butadiene	126–99–8	0.28
Chlorodibromomethane	124–48–1	15
Chloroethane	75–00–3	6.0
bis(2-Chloroethoxy)methane	111–91–1	7.2
bis(2-Chloroethyl)ether	111–44–4	6.0
Chloroform	67–66–3	6.0
bis(2-Chloroisopropyl)ether	108–60–1	7.2
p-Chloro-m-cresol	59–50–7	14
2-Chloroethyl vinyl ether	110–75–8	NA
romethane (Methyl chloride)	74–87–3	30
hloronaphthalene	91–8–7	5.6
hlorophenol	95–57–8	5.7
hloropropylene	107–05–1	30
rsene	218–01–9	3.4
resol	95–48–7	5.6
resol (difficult to distinguish from p-cresol)	108–39–4	5.6
esol (difficult to distinguish from m-cresol)	106–44–5	5.6
ohexanone	108–94–1	[4]
-Dibromo-3-chloropropane	96–12–8	15
lene dibromide (1,2-Dibromoethane)	106–93–4	15
omomethane	74–95–3	15
D (2,4-Dichlorophenoxyacetic acid)	94–75–7	10
-DDD	53–19–0	0.087
-DDD	72–54–8	0.087
-DDE	3424–82–6	0.087
-DDE	72–55–9	0.087
-DDT	789–02–6	0.087
-DDT	50–29–3	0.087
nz (a,h) anthracene	53–70–3	8.2
nz (a,e) pyrene	192–65–4	NA
ichlorobenzene	541–73–1	6.0
chlorobenzene	95–50–1	6.0
chlorobenzene	106–46–7	6.0
lorodifluoromethane	75–71–8	7.2
Dichloroethane	75–34–3	6.0
Dichloroethane	107–06–2	6.0
Dichloroethylene	75–35–4	6.0
s-1,2-Dichloroethylene	156–60–5	30
Dichlorophenol	120–83–2	14
Dichlorophenol	87–65–0	14
Dichloropropane	78–87–5	18
,3-Dichloropropylene	10061–01–5	18
s-1,3-Dichloropropylene	10061–02–6	18
drin	60–57–1	0.13
hyl phthalate	84–66–2	28
Dimethyl phenol	105–67–9	14
ethyl phthalate	131–11–3	28
-butyl phthalate	84–74–2	28
Dinitrobenzene	100–25–4	2.3
Dinitro-o-cresol	534–52–1	160
Dinitrophenol	51–28–5	160
Dinitrotoluene	121–14–2	140
Dinitrotoluene	606–20–2	28
-octyl phthalate	117–84–0	28
methylaminoazobenzene	60–11–7	NA
-propylnitrosamine	621–64–7	14
Dioxane	123–91–1	170
henylamine (difficult to distinguish from diphenylnitrosamine)	122–39–4	13
henylnitrosamine (difficult to distinguish from diphenylamine)	86–30–6	13
Diphenylhydrazine	122–66–7	NA
lfoton	298–04–4	6.2
osulfan I	939–98–8	0.066
osulfan II	33213–6–5	0.13
osulfan sulfate	1–31–07–8	0.13
rin	72–20–8	0.13
rin aldehyde	7421–93–4	0.13
l acetate	141–78–6	33

UNIVERSAL TREATMENT STANDARDS FOR ORGANIC HAZARDOUS CONSTITUENTS—Continued

Regulated constituent—common name	CAS [1] No.	Nonwastewater standard; concentration in mg/kg [2] unless noted as "mg/l TCLP"
Ethyl cyanide (Propanenitrile)	107–12–0	360
Ethyl benzene	100–41–4	10
Ethyl ether	60–29–7	160
bis (2-Ethylhexyl) phthalate	117–81–7	28
Ethyl methacrylate	97–63–2	160
Ethylene oxide	75–21–8	NA
Famphur	52–85–7	15
Fluoranthene	206–44–0	3.4
Fluorene	86–73–7	3.4
Heptachlor	76–44–8	0.066
Heptachlor epoxide	1024–57–3	0.066
Hexachlorobenzene	118–74–1	10
Hexachlorobutadiene	87–68–3	5.6
Hexachlorocyclopentadiene	77–47–4	2.4
HxCDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.001
HxCDFs (All Hexachlorodibenzofurans)	NA	0.001
Hexachloroethane	67–72–1	30
Hexachloropropylene	1888–71–7	30
Indeno(1,2,3-c,d)pyrene	193–39–5	3.4
Iodomethane	74–88–4	65
Isobutyl alcohol	78–83–1	170
Isodrin	465–73–6	0.066
Isosafrole	120–58–1	2.6
Kepone	143–50–8	0.13
Methacrylonitrile	126–98–7	84
Methanol	67–56–1	([5])
Methapyrilene	91–80–5	1.5
Methoxychlor	72–43–5	0.18
3-Methylcholanthrene	56–49–5	15
4,4-Methylene bis(2-chloroaniline)	101–14–4	30
Methylene chloride	75–09–2	30
Methyl ethyl ketone	78–93–3	36
Methyl isobutyl ketone	108–10–1	33
Methyl methacrylate	80–62–6	160
Methyl methansulfonate	66–27–3	NA
Methyl parathion	298–00–0	4.6
Naphthalene	91–20–3	5.6
2-Naphthylamine	91–59–8	NA
o-Nitroaniline	88–74–4	14
p-Nitroaniline	100–01–6	28
Nitrobenzene	98–95–3	14
5-Nitro-o-toluidine	99–55–8	28
o-Nitrophenol	88–75–5	13
p-Nitrophenol	100–02–7	29
N-Nitrosodiethylamine	55–18–5	28
N-Nitrosodimethylamine	62–75–9	2.3
N-Nitroso-di-n-butylamine	924–16–3	17
N-Nitrosomethylethylamine	10595–95–6	2.3
N-Nitrosomorpholine	59–89–2	2.3
N-Nitrosopiperidine	100–75–4	35
N-Nitrosopyrrolidine	930–55–2	35
Parathion	56–38–2	4.6
Total PCBs (sum of all PCB isomers, or all Arochlors)	1336–36–3	10
Pentachlorobenzene	608–93–5	10
PeCDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.001
PeCDFs (All Pentachlorodibenzofurans)	NA	0.001
Pentachloroethane	76–01–7	6.0
Pentachloronitrobenzene	82–68–8	4.8
Pentachlorophenol	87–86–5	7.4
Phenacetin	62–44–2	16
Phenanthrene	85–01–8	5.6
Phenol	108–95–2	6.2
Phorate	298–02–2	4.6
Phthalic acid	100–21–0	28
Phthalic anhydride	85–44–9	28
Pronamide	23950–58–5	1.5
Pyrene	129–00–0	8.2
Pyridine	110–86–1	16

UNIVERSAL TREATMENT STANDARDS FOR ORGANIC HAZARDOUS CONSTITUENTS—Continued

Regulated constituent—common name	CAS [1] No.	Nonwastewater standard; concentration in mg/kg [2] unless noted as "mg/l TCLP"
Safrole	94–59–7	22
Silvex(2,4,5-TP)	93–72–1	7.9
2,4,5-T(2,4,5-Trichlorophenoxyacetic acid)	93–76–5	7.9
1,2,4,5-Tetrachlorobenzene	95–94–3	14
TCDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.001
TCDFs (All Tetrachlorodibenzofurans)	NA	0.001
1,1,1,2-Tetrachloroethane	630–20–6	6.0
1,1,2,2-Tetrachloroethane	79–34–6	6.0
Tetrachloroethylene	127–18–4	6.0
2,3,4,6-Tetrachlorophenol	58–90–2	7.4
bene	108–88–3	10
aphene	8001–35–2	2.6
moform (Tribromomethane)	75–25–2	15
4-Trichlorobenzene	120–82–1	19
1-Trichloroethane	71–55–6	6.0
2-Trichloroethane	79–00–5	6.0
hloroethylene	79–01–6	6.0
hloromonofluoromethane	75–69–4	30
5-Trichlorophenol	95–95–4	7.4
6-Trichlorophenol	88–06–2	7.4
3-Trichloropropane	96–18–4	30
2-Trichloro-1,2,2,-trifluoroethane	76–13–1	30
(2,3-Dibromopropyl) phosphate	126–72–7	0.10
yl chloride	75–01–4	6.0
enes-mixed isomers (sum of o-, m-, p-xylene concentrations)	1330–20–7	30

[1] CAS means Chemical Abstract Services. When the waste code and/or regulated constituents are described as a combination of a chemical it's salts and/or esters, the CAS number is given for the parent compound only.
[2] All concentration standards for nonwastewaters are based on analysis of grab samples.
[3] 4.8 mg/l TCLP.
[4] 0.75 mg/l TCLP.
[5] 0.75 mg/l TCLP.
Note: NA means not applicable.

Organics—Wastewaters

The Universal Treatment Standards promulgated in Today's Rule

The set of wastewater UTS proposed September 1993 was virtually identical to the F039 wastewater standards promulgated in the Third Third Rule. Applying UTS to F- and K-listed wastes changes organic constituent wastewater standards in a handful of codes (F024, K001, K011/13/14, K015, K040, K038, K036, K037, K060, K099, K103/104, and U051). Commenters raised specific concerns with three of the organic wastewater treatment standards, and EPA is revising the proposed standards for two of the three constituents: the wastewater standard proposed for carbon disulfide will change from 0.014 mg/l to 3.8 mg/l and the proposed wastewater universal treatment standard for 1,4-dioxane has been withdrawn. Changes to the treatment standards for these two constituents is explained in the following section. The third constituent is acetonitrile. Monsanto, Dupont, Cytec and other acrylonitrile producers, together with the Chemical Manufacturing Association's Acrylonitrile Group, objected to EPA extending the UTS to acrylonitrile production wastes K011, K013 and K014. Their comments stated that the acetonitrile wastewater UTS was unachievably low in acrylonitrile wastes. The Agency is promulgating an acetonitrile UTS of 5.6 based on steam stripping performance data. This level also appears achievable by WAO (wet air oxidation) followed by PACT@ (a combination of powdered activated carbon treatment and activated sludge).

ii. Treatment Standard Modification Made in Response to Comments

Carbon Disulfide. In response to data submitted by the Chemical Manufacturer's Association's Carbon Disulfide Task Force, EPA is promulgating a treatment standard of 3.8 mg/l based on data submitted by several facilities which generate high concentrations of carbon disulfide in wastewaters. The proposed wastewater treatment standard (0.014 mg/l) was based on one data point for biological treatment. After receiving substantially more treatment data representative of more significant influent concentrations, EPA is promulgating a carbon disulfide wastewater number of 3.8 mg/l, based on the performance of activated sludge at one of the facilities generating carbon disulfide.

1,4-Dioxane. Eastman Chemical reported that serious analytical problems, namely wide variation in detection limits, precluded reliable and accurate quantification of 1,4-dioxane. After reviewing detection limit data, EPA decided to withdraw the wastewater treatment standard for 1,4-dioxane pending technical resolution in a later rule. This decision changes the treatment standard for U108 (1,4-dioxane) wastewaters. Formerly the wastewater treatment standard was 0.12 mg/l; today's rule promulgates a method of treatment as a standard for U108 wastewaters, namely wet air oxidation or chemical oxidation followed by carbon adsorption or incineration.

UNIVERSAL TREATMENT STANDARDS FOR ORGANICS

Regulated constituent—Common name	CAS [1] No.	Wastewater standard Concentration in mg/l [2]
Acenaphthylene	208–96–8	0.059
Acenaphthene	83–32–9	0.059
Acetone	67–64–1	0.28
Acetonitrile	75–05–8	5.6
Acetophenone	96–86–2	0.010
2-Acetylaminofluorene	53–96–3	0.059
Acrolein	107–02–8	0.29
Acrylamide	79–06–1	19
Acrylonitrile	107–13–1	0.24
Aldrin	309–00–2	0.021
4-Aminobiphenyl	92–67–1	0.13
Aniline	62–53–3	0.81
Anthracene	120–12–7	0.059
Aramite	140–57–8	0.36
alpha-BHC	319–84–6	0.00014
beta-BHC	319–85–7	0.00014
delta-BHC	319–86–8	0.023
gamma-BHC	58–89–9	0.0017
Benzene	71–43–2	0.14
Benz(a)anthracene	56–55–3	0.059
Benzal chloride	98–87–3	0.055
Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)	205–99–2	0.11
Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)	207–08–9	0.11
Benzo(g,h,i)perylene	191–24–2	0.0055
Benzo(a)pyrene	50–32–8	0.061
Bromodichloromethane	75–27–4	0.35
Methyl bromide (Bromomethane)	74–83–9	0.11
4-Bromophenyl phenyl ether	101–55–3	0.055
n-Butyl alcohol	71–36–3	5.6
Butyl benzyl phthalate	85–68–7	0.017
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88–85–7	0.066
Carbon disulfide	75–15	03.8
Carbon tetrachloride	56–23–5	0.057
Chlordane (alpha and gamma isomers)	57–74–9	0.0033
p-Chloroaniline	106–47–8	0.46
Chlorobenzene	108–90–7	0.057
Chlorobenzilate	510–15–6	0.10
2-Chloro-1,3-butadiene	126–99–8	0.057
Chlorodibromomethane	124–48–1	0.057
Chloroethane	75–00–3	0.27
bis(2-Chloroethoxy)methane	111–91–1	0.036
bis(2-Chloroethyl)ether	111–44–4	0.033
Chloroform	67–66–3	0.046
bis(2-Chloroisopropyl)ether	108–60–1	0.055
4-Chloro-m-cresol	59–50–7	0.018
2-Chloroethyl vinyl ether	110–75–8	0.062
Chloromethane (Methyl chloride)	74–87–3	0.19
2-Chloronaphthalene	91–8–7	0.055
2-Chlorophenol	95–57–8	0.044
1-Chloropropylene	107–05–1	0.036
Chrysene	218–01–9	0.059
o-Cresol	95–48–7	0.11
m-Cresol (difficult to distinguish from p-cresol)	108–39–4	0.77
p-Cresol (difficult to distinguish from m-cresol)	106–44–5	0.77
Cyclohexanone	108–94–1	0.36
1,2-Dibromo-3-chloropropane	96–12–8	0.11
Ethylene dibromide (1,2-Dibromoethane)	106–93–4	0.028
Dibromomethane	74–95–3	0.11
2,4-D (2,4-Dichlorophenoxyacetic acid)	94–75–7	0.72
4,4'-DDD	53–19–0	0.023
4,4'-DDD	72–54–8	0.023
4,4'-DDE	3424–82–6	0.031
4,4'-DDE	72–55–9	0.031
4,4'-DDT	789–02–6	0.0039
4,4'-DDT	50–29–3	0.0039
Dibenz(a,h)anthracene	53–70–3	0.055
Dibenz(a,e)pyrene	192–65–4	0.061
1,2-Dichlorobenzene	541–73–1	0.036
1,3-Dichlorobenzene	95–50–1	0.088
1,4-Dichlorobenzene	106–46–7	0.090

UNIVERSAL TREATMENT STANDARDS FOR ORGANICS—Continued

Regulated constituent—Common name	CAS [1] No.	Wastewater standard Concentration in mg/l [2]
Dichlorodifluoromethane	75–71–8	0.23
1,1-Dichloroethane	75–34–3	0.059
1,2-Dichloroethane	107–06–2	0.21
1,1-Dichloroethylene	75–35–4	0.025
trans-1,2-Dichloroethylene	156–60–5	0.054
2,4-Dichlorophenol	120–83–2	0.044
2,6-Dichlorophenol	87–65–0	0.044
1,2-Dichloropropane	78–87–5	0.85
cis-1,3-Dichloropropylene	10061–01–5	0.036
trans-1,3-Dichloropropylene	10061–02–6	0.036
Dieldrin	60–57–1	0.017
Diethyl phthalate	84–66–2	0.20
-Dimethyl phenol	105–67–9	0.036
ethyl phthalate	131–11–3	0.047
n-butyl phthalate	84–74–2	0.057
-Dinitrobenzene	100–25–4	0.32
-Dinitro-o-cresol	534–52–1	0.28
-Dinitrophenol	51–28–5	0.12
-Dinitrotoluene	121–14–2	0.32
-Dinitrotoluene	606–20–2	0.55
n-octyl phthalate	117–84–0	0.017
imethylaminoazobenzene	60–11–7	0.13
n-propylnitrosamine	621–64–7	0.40
henylamine (difficult to distinguish from diphenylnitrosamine)	122–39–4	0.92
henylnitrosamine (difficult to distinguish from diphenylamine)	86–30–6	0.92
-Diphenylhydrazine	122–66–7	0.087
ulfoton	298–04–4	0.017
dosulfan I	939–98–8	0.023
dosulfan II	33213–6–5	0.029
dosulfan sulfate	1–31–07–8	0.029
drin	72–20–8	0.0028
drin aldehyde	7421–93–4	0.025
yl acetate	141–78–6	0.34
yl cyanide (Propanenitrile)	107–12–0	0.24
yl benzene	100–41–4	0.057
yl ether	60–29–7	0.12
(2-Ethylhexyl) phthalate	117–81–7	0.28
yl methacrylate	97–63–2	0.14
ylene oxide	75–21–8	0.12
mphur	52–85–7	0.017
oranthene	206–44–0	0.068
orene	86–73–7	0.059
ptachlor	76–44–8	0.0012
ptachlor epoxide	1024–57–3	0.016
xachlorobenzene	118–74–1	0.055
xachlorobutadiene	87–68–3	0.055
xachlorocyclopentadiene	77–47–4	0.057
CDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.000063
CDFs (All Hexachlorodibenzofurans)	NA	0.000063
xachloroethane	67–72–1	0.055
xachloropropylene	1888–71–7	0.035
leno (1,2,3-c,d) pyrene	193–39–5	0.0055
lomethane	74–88–4	0.19
butyl alcohol	78–83–1	5.6
drin	465–73–6	0.021
safrole	120–58–1	0.081
pone	143–50–8	0.0011
thacrylonitrile	126–98–7	0.24
thanol	67–56	15.6
thapyrilene	91–80–5	0.081
thoxychlor	72–43–5	0.25
Methylcholanthrene	56–49–5	0.0055
-Methylene bis(2-chloroaniline)	101–14–4	0.50
thylene chloride	75–09–2	0.089
thyl ethyl ketone	78–93–3	0.28
thyl isobutyl ketone	108–10–1	0.14
thyl methacrylate	80–62–6	0.14
thyl methansulfonate	66–27–3	0.018
thyl parathion	298–00–0	0.014
phthalene	91–20–3	0.059

UNIVERSAL TREATMENT STANDARDS FOR ORGANICS—Continued

Regulated constituent—Common name	CAS [1] No.	Wastewater standard Concentration in mg/l [2]
2-Naphthylamine	91–59–8	0.52
o-Nitroaniline	88–74–4	0.27
p-Nitroaniline	100–01–6	0.028
Nitrobenzene	98–95–3	0.068
5-Nitro-o-toluidine	99–55–8	0.32
o-Nitrophenol	88–75–5	0.028
p-Nitrophenol	100–02–7	0.12
N-Nitrosodiethylamine	55–18–5	0.40
N-Nitrosodimethylamine	62–75–9	0.40
N-Nitroso-di-n-butylamine	924–16–3	0.40
N-Nitrosomethylethylamine	10595–95–6	0.40
N-Nitrosomorpholine	59–89–2	0.40
Nitrosopiperidine	100–75–4	0.013
Nitrosopyrrolidine	930–55–2	0.013
rathion	56–38–2	0.014
tal PCBs (sum of all PCB isomers, or all Arochlors)	1336–36–3	0.10
ntachlorobenzene	608–93–5	0.055
CDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.000063
CDFs (All Pentachlorodibenzofurans)	NA	0.000035
ntachloroethane	76–01–7	0.055
ntachloronitrobenzene	82–68–8	0.055
ntachlorophenol	87–86–5	0.089
enacetin	62–44–2	0.081
enanthrene	85–01–8	0.059
enol	108–95–2	0.039
orate	298–02–2	0.021
thalic acid	100–21–0	0.055
thalic anhydride	85–44–9	0.055
onamide	23950–58–5	0.093
rene	129–00–0	0.067
ridine	110–86–1	0.014
frole	94–59–7	0.081
vex (2,4,5-TP)	93–72–1	0.72
,5-T (2,4,5-Trichlorophenoxyacetic acid)	93–76–5	0.72
2,4,5-Tetrachlorobenzene	95–94–3	0.055
CDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.000063
CDFs (All Tetrachlorodibenzofurans)	NA	0.000063
,1,2-Tetrachloroethane	630–20–6	0.057
,2,2-Tetrachloroethane	79–34–6	0.057
trachloroethylene	127–18–4	0.056
3,4,6-Tetrachlorophenol	58–90–2	0.030
luene	108–88–3	0.080
xaphene	8001–35–2	0.0095
omoform (Tribromomethane)	75–25–2	0.63
2,4-Trichlorobenzene	120–82–1	0.055
,1-Trichloroethane	71–55–6	0.054
,2-Trichloroethane	79–00–5	0.054
chloroethylene	79–01–6	0.054
chloromonofluoromethane	75–69–4	0.020
,5-Trichlorophenol	95–95–4	0.18
,6-Trichlorophenol	88–06–2	0.035
2,3-Trichloropropane	96–18–4	0.85
,2-Trichloro-1,2,2-trifluoroethane	76–13–1	0.057
s-(2,3-Dibromopropyl) phosphate	126–72–7	0.11
nyl chloride	75–01–4	0.27
lenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)	1330–20–7	0.32

[1] CAS means Chemical Abstract Services. When the waste code and/or regulated constituents are described as a combination of a chemical h its salts and/or esters, the CAS number is given for the parent compound only.
[2] Concentration standards for wastewaters are expressed in mg/l are based on analysis of composite samples.
Note: NA means not applicable.

Universal Treatment Standards for etal Hazardous Constituents

EPA is promulgating UTS for both the nwastewater and wastewater forms of ch of the 14 BDAT list metal nstituents. The standards are found in the table "Universal Treatment Standards for Metal Constituents" at the end of this preamble section. These UTS will replace the existing metal constituent treatment standards for all listed wastes, and will constitute applicable levels for underlying hazardous metal constituents in ignitable, corrosive and TC organic wastes. They do not apply to wastes exhibiting the toxicity characteristic due to metal constituents, i.e., waste codes

D004–D012, nor do they replace the treatment standards promulgated in the Third Third rule for EP metals. Wastecodes D004–D012 will be addressed in an upcoming rulemaking.

a. Nonwastewaters

The nonwastewater UTS for 12 of the 14 metal constituents are based on the performance of high temperature metal recovery (HTMR) or stabilization. The remaining two metals are arsenic for which the standard is based on vitrification, and mercury, which standard requires recovery by roasting or retorting for certain highly concentrated mercury wastes. As always, when the Agency develops concentration-based treatment standards, the use of other technologies to achieve those standards is allowed.

The following table presents a comparison of the previously promulgated standards with the UTS.

COMPARISON OF UTS NONWASTEWATER TCLP CONCENTRATIONS VERSUS PREVIOUS STANDARDS FOR METALS

	Final UTS NWW standards (TCLP)	Previous standards being replaced	
		Old level	Waste codes
Antimony	2.1	2.1	K061
		0.23	K021, F039
Arsenic	5.0	5.6	K031, K084, K101, K102, P010, P011, P036, P038, U136
		5.0	F039
		0.055	K061
Barium	7.6	52	F039, P013
		7.6	K061
Beryllium	0.014	0.014	K061
Cadmium	0.19	0.19	K061
		0.14	K069
		0.066	F006, F007, F008, F009, F011, F012, F039, K100
Chromium	0.86	5.2	F006, F007, F008, F009, F011, F012, F019, F039, K006 (hydrated), K061, K100
		1.7	K015, K048, K049, K050, K051, K052
		0.33	K061
		0.094	K002, K003, K004, K005, K006, K007, K008, K062, K086, U032
		0.073	K028
Lead	0.37	0.51	F006, F007, F008, F009, F011, F012, F039, K001, K087, K100, U051, U144, U145, U146, P110
		0.37	K002, K003, K004, K005, K006, K007, K008, K061, K062, K086
		0.24	K069
		0.18	K046
		0.021	K028
Mercury	0.20 for retort residues 0.025 for other residues.	0.20	K106, U151, P065, P092 (for RMERC residues)
		0.025	K071, K106, U151, P065, P092 (low mercury wastes), F039
		0.009	K061
Nickel	5.0	5.0	K061
		0.32	F006, F007, F008, F009, F011, F012, F039, K115, K061 (stabilization)
		0.2	K015, K048, K049, K050, K051, K052
		0.088	K028, K083
Selenium	0.16	5.7	F039, P103, P114, U204, U205
		0.16	K061
Silver	0.30	0.30	K061
		0.072	F006, F007, F008, F009, F011, F012, P099, P104
Thallium	0.078	0.078	K061
Vanadium	0.23	0.23	K061
Zinc	5.3	5.3	K061

Note: Constituents are actually regulated only if the treatment standard specifically requires it (for listed wastes, or constituents are reasonably expected to be present (underlying hazardous constituents in characteristic wastes).

Commenters objected to the proposed levels and provided treatment data for only two metal limits, chromium and mercury. The Agency revised the proposed treatment standards for chromium and mercury as described later in this section. For the other UTS metal constituents the Agency promulgated standards as proposed.

For four of these metals beryllium, thallium, vanadium and zinc, the previous standards limited the metal at the level, which was proposed and promulgated for UTS.

For four other metals, antimony, cadmium, nickel and silver, the Agency proposed and promulgated the UTS level at the highest of the previous standards. This occurred based on the best data for the most difficult to treat wastes. Commenters did not submit new data supporting lower limits for these constituents. While the limits for some waste codes are raised, EPA considered the following factors:

(1) A broader assessment of the treatment data;

(2) Some of the low/previous metal standards simply reflected low levels in the untreated wastes;

(3) Regulation of other metals for a waste code, namely those that are present in significantly high concentrations, will control design and operations of the treatment technology.

For the remaining four metals, arsenic, barium, lead and selenium, the Agency did not propose or promulgate the UTS at the highest previous standard. Commenters did not submit data on these metals. The justification

for rejecting lower levels are the same as those presented for antimony, cadmium, nickel and silver in the preceeding discussion. For these metals, EPA did not choose the highest previous standard; rather, the standard for the most difficult to treat waste was selected and it achieved a lower standard than the highest previous standard.

In addition to the above consideration, the Agency considered matrix effects. In setting the nonwastewater metal limits, EPA has examined the most difficult to treat wastes; therefore, if a matrix relationship exists, other wastes should more easily meet the limits. If there exists a waste that can not meet the limits, the Agency has a treatability variance process to address those instances. It appears that HTMR is matrix independent, consistently achieving the same level of treatment performance as measured in the residuals, regardless of the influent matrix composition. With regard to matrix effects on stabilization, adjustments to the type and quantity of stabilizing agents can greatly compensate for matrix effects.

The UTS standard for chromium (Total) was proposed to be 0.33 mg/l in the TCLP extract based upon the K061–HTMR treatment standard data. One commenter (Occidental Chemical), objected to the proposed limits and supplied stabilization data for chromium. They indicated through 85 data points that they could achieve a level of 0.58 mg/kg. The Agency evaluated treatability data from various sources, including Occidental Chemical and previously promulgated waste codes. These evaluations compared analyses of performance data between untreated and treated concentrations of metal waste. From this treatability data the Agency selected the most difficult to treat waste. It was determined that the waste criteria selected was submitted by Cyanokem for F006 during the promulgation of the Third Third rule (June 1, 1990). This waste was a composition of stripping liquids, plating operations, pelletizing operations, and clean out wastes from plating tanks. The data sets involving the most difficult to treat waste were used to calculate the limit of 0.86 mg/l TCLP. The other data sets, including those from the comments, generally achieved the 0.86 mg/l TCLP. The treatment results that did not meet the levels may be due to treatment being designed to only meet the characteristic levels. It is the Agency's belief that with the use of a more effective stabilization process, a lower level could be achieved; as demonstrated by the fact that a more difficult to treat waste attained the level of 0.86 mg/l TCLP. Therefore, the Agency is promulgating the treatment standard of 0.86 mg/l TCLP.

EPA proposed UTS for low mercury subcategory nonwastewaters (containing less than 260 mg/kg total mercury) at 0.009 mg/l TCLP. Many commenters expressed concern over this standard. EPA has reconsidered the proposed UTS for mercury and is promulgating standards as follows: 0.200 mg/l TCLP for low subcategory retort residues, and 0.025 mg/l TCLP for other low subcategory nonwastewaters. (The existing treatment standard for high subcategory mercury nonwastewaters (concentration greater than 260 mg/kg) is already RMERC, i.e., recovery of mercury by retorting or roasting. This treatment standard is unaffected by today's rule.) Comments and EPA's responses are summarized below.

Several commenters expressed the belief that the current treatment standards for K106, D009, and K071 wastes should remain in effect. These commenters submitted data from the analysis of retorted mercury waste to support the claim that the proposed UTS for mercury is not achievable by retorting, the recognized BDAT for K106 and D009 wastes. These data consisted of total and TCLP analyses of 109 residue samples from retorted K106 and D009 wastes. Although 23 of these samples contained greater than 260 mg/kg total mercury and would therefore require further retorting, of the remaining 86 samples, 18 contained greater than 0.009 mg/l mercury by TCLP, the proposed UTS for mercury nonwastewaters. All 86 samples contained less than 0.15 mg/l mercury by TCLP. These data support the commenters' position that the proposed UTS for mercury is not achievable by properly operated BDAT treatment technology (e.g., RMERC).

Further examination of available data has convinced the Agency that the proposed nonwastewater standard was too low. The basis for the proposed UTS for metal nonwastewaters, which was data from the treatment of K061 by high temperature metal recovery (HTMR), is not appropriate for mercury wastes. K061 waste does not typically contain large quantities of mercury and HTMR facilities do not accept wastes containing high concentrations of mercury. EPA has therefore decided not to promulgate the proposed nonwastewater standards, and instead to apply the existing treatment standards for K071, K106, P065, P092, and U151 as the UTS for mercury nonwastewaters. This is appropriate, since mercury is the most significant constituent in these wastes, and BDAT for these wastes is particularly directed to treating mercury. The Agency continues to believe that the revised limits for mercury and 12 other metal constituents in K061 provide adequate assurance that BDAT will occur for K061. Thus, the universal treatment standards for low subcategory mercury wastes will be 0.20 mg/l mercury by TCLP for retort residue nonwastewaters, and 0.025 mg/l mercury by TCLP for other low subcategory nonwastewaters.

The following table is a compilation of the final metal universal standards for nonwastewaters.

UNIVERSAL TREATMENT STANDARDS FOR METAL[1] HAZARDOUS CONSTITUENTS

[Nonwastewaters]

Regulated constituent	Maximum for any single grab sample TCLP (mg/l)
Antimony	2.1
Arsenic	5.0
Barium	7.6
Beryllium	0.014
Cadmium	0.19
Chromium (Total)	0.86
Lead	0.37
Mercury—retort residues	0.20
Mercury—not retort residues	0.025
Nickel	5.0
Selenium	0.16
Silver	0.30
Thallium	0.078
Vanadium	0.23
Zinc	5.3

[1] Treatment standards for cyanide wastes are discussed in the next preamble section.

b. Wastewaters

The metal UTS for wastewaters are based on chemical precipitation as BDAT. Depending on the initial concentration of metal constituents in the wastewater, operating conditions such as retention time, flocculating agents, reagent concentrations such as iron to affect solubility of other metals, and mixing may need to be adjusted to comply with the standards.

The following table presents the UTS metal wastewater limits, and the previous limits. Changes to the proposed metal standards occurred in two areas: use of Office of Water Metal Finishing limits, and an adjustment of the proposed vanadium limit. These changes are explained following the table.

COMPARISON OF UTS WASTEWATER CONCENTRATIONS VERSUS PREVIOUS STANDARDS FOR METALS

	Final UTS	Previous standards	
		Old level	Waste codes
Antimony	1.9	.....	K061
		0.60	K021
		1.9	F039
Arsenic	1.4	0.79	K031, K084, K101, K102, P010, P011, P012, P036, P038, U136
		1.4	F039
			K061
Barium	1.2	1.2	F039, P013
			K061
Beryllium	0.82	0.82	F039, K061
Cadmium	0.69	6.4	K028
		0.20	F039
		0.24	K101, K102
		1.6	F006, K061, K069, K100
romium	2.77	0.32	F006, F007, F008, F009, F011, F012, F019, K015, K061, K062, K086, K100, U032
		0.2	F037, F038, K048, K049, K050, K051, K052
		0.37	F039
		0.9	K002, K003, K004, K005, K006, K007, K008
		0.35	F024, K022, K028
ad	0.69	0.040	F006, F007, F008, F009, F011, F012, K062, U144, U145, U146, P110
		3.4	K002, K003, K004, K005, K006, K007, K008
		0.17	K101, K102
		0.28	F039
		0.51	K061, K069, K100
		0.037	K001, F037, F038, K028, K046, K048, K049, K050, K051, K052, K086, K087, U051
rcury	0.15	0.030	K071, K106, P065, P092, U151
		0.082	K101, K102
		0.15	F039
kel	3.98	0.55	F039
		0.44	F006, F007, F008, F009, F011, F012, K015, K061, K062, P074
		0.32	P073
		0.47	F024, K022, K028, K083, K115
lenium	0.82	0.82	F039
		1.0	P103, P114, U204, U205
ver	0.43	0.29	F039, P099, P104
allium	1.4	0.14	P113, P114, P115, U214, U215, U216, U217
		1.4	F039
nadium	4.3	0.042	F039
		28	P119, P120
nc	2.61	1.0	F039

In the proposal, EPA solicited mments on changing the limits for dmium, chromium, lead, nickel, ver, and zinc to those used in the fice of Water's Metal Finishing fluent Guidelines. These standards presented a more comprehensive tabase, addressed many more cilities, and represented the most fficult to treat waste. Although none the commenters submitted data, they ommenters) supported the use of the etal Finishing standards as the UTS astewater treatment numbers. We are opting the metal wastewater limits ed for the Effluent Guidelines for the etal Finishers Point Source category r cadmium, chromium, lead, nickel, ver and zinc for the reasons outlined ove.

The Agency received comments, but data, that the proposed vanadium nit of 0.042 was unachievably low. At e proposed level, vanadium would be e most stringent regulated metal. With little data supporting the proposed level, the Agency tried to follow up with commenters and other sources to obtain data. Wastewater with significant vanadium is rare, and EPA's efforts yielded limited data supporting a level of 4.3 mg/l. This level is within the range of other metal limits, and is achievable, based on the data availability. While the Agency would have preferred having more data for vanadium, the UTS is set at 4.3 mg/l. If the few facilities that have significant vanadium wastewaters can not meet this limit, EPA's treatability variance process is available. Also, the Agency would be willing to reassess this limit in a future rule, if data are submitted which supports a change in this standard.

For all other metal wastewater UTS—antimony, arsenic, barium, beryllium, mercury, selenium and thallium—EPA is promulgating limits as proposed. The data used for UTS reflect, for each of these metals, the best data available. With the possibility of more wastewaters being treated to comply with LDR standards—particularly characteristic wastewaters that heretofore have been decharacterized and whose underlying hazardous constituents may not have been treated, EPA has made a determined effort in this rulemaking to base treatment standards on the best data available, which data reflects a wide variety of wastewaters. Although the UTS are in some cases higher than existing limits, EPA believes that these existing lower limits, in many cases, reflected low levels of metals in untreated wastes. In addition, wastewater standards, to date, have not had direct effect on many wastes, because most hazardous wastewaters are either treated in tanks and discharged, managed in § 3005(j)(ii) impoundments, injected into Class I hazardous deep wells which have received no-migration variances, or

decharacterized, and so are not subject to these lower standards.

The following table is a compilation of final metal universal treatment standards for wastewaters.

UNIVERSAL TREATMENT STANDARDS FOR METAL[1] HAZARDOUS CONSTITUENTS

[Wastewaters]

Regulated constituent	Maximum for any single grab sample (mg/l)
Antimony	1.9
Arsenic	1.4
Barium	1.2
Beryllium	0.82
Cadmium	0.69
Chromium (Total)	2.77
Lead	0.69
Mercury	0.15
Nickel	3.98
Selenium	0.82
Silver	0.43
Thallium	1.4
Vanadium	4.3
Zinc	2.61

[1] Treatment standards for cyanide wastes are discussed in the next preamble section.

6. Universal Treatment Standards for Cyanide Wastes

For the nonwastewater forms of cyanide wastes, EPA is promulgating the UTS as proposed: 590 mg/kg (total cyanide) and 30 mg/kg (amenable cyanide). For wastewaters, EPA is promulgating the UTS: 1.2 mg/l (total cyanide) and 0.86 mg/l (amenable cyanide). These wastewater standards differ from those that were proposed (see section b of the cyanide UTS discussion below). The cyanide wastewater and nonwastewater UTS are based on the treatment of wastewaters via alkaline chlorination.

EPA is also codifying in 40 CFR 268.40 that compliance with the cyanide nonwastewater UTS requires the use of EPA SW–846, Test Methods 9010 and 9012, along with a specified sample size of 10 grams, and a distillation time of 75 minutes. Most commenters, in particular those from the hazardous waste treatment industry, welcomed and supported this part of EPA's proposal. These kind of provisions eliminate variabilities that can result from the analyses of different sample sizes and distillation times. A detailed discussion of these treatment standards follows.

a. Cyanide Nonwastewaters

EPA proposed three options for cyanide in nonwastewater forms (a standard based on total and amenable cyanide concentrations, a standard based on TCLP concentrations, and a standard that specifies treatment methods) at 58 FR 48104. EPA is promulgating the first option.

EPA is discussing in this preamble only the major comments on the first option. Please see the Response to Comments Document in the docket for this rule for EPA's responses to all the comments received on the proposed three options.

EPA requested comments on its rationale for setting a common cyanide UTS for all nonwastewater forms of cyanide. Two primary issues were emphasized in the proposal: (1) the establishment of a cyanide UTS that is less stringent for wastes that contain little to no cyanide; and, (2) standardized sample size and distillation time for compliance monitoring.

EPA believes that by basing a universal treatment on the cyanide matrix that is most difficult to treat, the universal treatment standard will indeed be uniformly achievable. EPA has determined that electroplating wastes with high concentrations of iron represent the most difficult to treat of all the cyanide wastes. The available performance data for treating electroplating wastes support the establishment of a UTS of 590 mg/kg (total cyanide) and 30 mg/kg (amenable cyanide).

EPA noted that although other cyanide wastes were required to meet lower treatment standards, the establishment of this higher UTS was not likely to discourage effective treatment of these other wastes. Examples of the other wastes of concern include multi-source leachate, pigments, petroleum, coking, ink solvents and organo-nitrogen wastes. These wastes generally have very little cyanide in the untreated waste, have cyanide along with organic constituents which are routinely incinerated, or have cyanide in a free form which is easier to treat by conventional treatment methods (alkaline chlorination). Because these wastes are routinely treated by incineration or a cyanide destruction technology, EPA believes further subcategorization of the cyanide UTS standard is not warranted at this time. (Put another way, the Agency does not believe as a practical matter that more cyanide will be land disposed as a result of UTS, and therefore that the interest in simplified standards warrants against further subcategorization of cyanide wastes.)

The majority of the commenters supported EPA's proposed rationale for developing a cyanide UTS and believe EPA's proposed approach is appropriate for setting UTS. Two commenters, however, urged EPA to withdraw the proposed UTS and to promulgate instead a lower cyanide UTS, as described below.

The first commenter believes that EPA should set two categories of cyanide UTS: (1) organic, which would include all those cyanide wastes with regulated organics; and, (2) inorganic, which include all cyanide wastes with regulated metals. For organics, they suggested a UTS of 30 mg/kg (total cyanide) and 1.8 mg/kg (amenable cyanide). For inorganics, the commenter suggested a UTS of 400 mg/kg (total cyanide) based on rejecting three data points used to calculate the 590 mg/kg limits.

The other commenter believes that it is inappropriate for EPA to raise the standards for all nonwastewater forms of cyanide wastes. They said that existing treatment technologies can treat cyanide wastes to levels below the proposed UTS, and they asked EPA to promulgate lower cyanide levels such as those promulgated for nonwastewater forms of F011 and F012.

EPA is not persuaded by these comments. First, a separate lower treatment standard for cyanide in organic wastes is currently unnecessary because combustion of these wastes to comply with organic treatment standards effectively destroys cyanides. Second, EPA believes that the three data points queried in CyanoKem's comment are in fact representative. None of these three data points fail a statistical Outlier test. Furthermore, the description of the design and operating conditions make it appear that treatment was conducted properly. Third, the limit for F011 and F012 (which had a treatment standard for cyanide below the UTS) has not been previously subject to the 1 hour and 15 minute distillation time and 10 gram sample requirements, which can greatly influence results and are required conditions for the UTS.

CyanoKem's comment, in fact, amounts to a request that EPA reopen the technology basis for the cyanide standard, an issue not opened for public comment. The treatment standards for cyanide are based on performance of alkaline chlorination technology. 54 FR at 26610–611 (June 23, 1989). CyanoKem has upgraded that technology with certain proprietary modifications. 56 FR at 12355 (March 25, 1991). EPA has already indicated that this adapted technology is not, and need not serve as the basis for the treatment standard. *Id.*

In any case, EPA does not believe that this is an appropriate time to undertake

major changes to the cyanide standards. This is because the cyanide analytic method, although improved by the changes in this rule which are the best available at the present time, continues to have shortcomings. EPA is working to develop a different analytic method. It may be that after the new method is developed, further investigation of cyanide standards will be warranted.

UNIVERSAL TREATMENT STANDARDS FOR CYANIDE [1]

[Nonwastewaters]

Regulated constituent	Maximum for any single composite sample (mg/kg)
nide (Total)	590
nide (Amenable)	30

Cyanide nonwastewaters are analyzed g SW–846 Method 9010 or 9012, sample 10 grams, distillation time, one hour and inutes.

yanide Wastewaters

PA is promulgating 1.2 mg/l (total nide) and 0.86 mg/l (amenable nide) as UTS for wastewater forms of nide wastes. In the proposed rule, A pointed out that a total cyanide centration of 1.9 mg/l, regardless of cess waste type, is widely used in tewater discharge regulations—nely those for the Metal Finishing ustry and the Organic Chemicals, stics and Synthetic Fibers (OCPSF) ustry; however, the concentration of mg/l was a typographical error. The ncy intended to propose a centration 1.2 mg/l of total cyanide. e 1.2 mg/l level is supported by A's OCPSF regulations and the kground information in the record to proposed rule supporting the posed total cyanide UTS applicable yanide wastewaters.) The majority of mmenters from the pharmaceutical waste treatment industry mmented on the proposed UTS nide for wastewaters assuming a ndard of 1.2 mg/l total cyanide level s proposed.

Commenters pointed out that the posed level of 1.2 mg/l (total nide) is not always applied to PSF discharges. EPA has authorized mit writers or control authorities to mpt a source from OCPSF's total nide (discharge) limit, and to blish a Best Professional Judgement PJ") amenable cyanide limit. The BPJ it must be based on a determination t the cyanide limits are not ievable due to elevated levels of non-enable cyanide that result from the voidable complexing of cyanide at the process source (40 CFR 414.11(g), 414.91, and 414.101). As with the CWA regulations, EPA provides facilities with a RCRA treatability variance process in the 40 CFR 268.44 regulations that would allow a facility to achieve an alternate treatment standard (see discussion of treatability variance at section XII of this preamble). EPA believes that this provision provides a mechanism for establishing an alternative cyanide limit for OCPSF facilities in appropriate cases.

These commenters also reported that CWA regulations for the Pharmaceutical Industry specify cyanide limitations as high as 33.5 mg/l total cyanide. EPA looked into these concerns; in particular, whether the proposed standard of 1.2 mg/l can be achieved universally. Treatment performance data, however, were not submitted by the commenters. Contrary to the commenters' arguments, the literature and the performance data on cyanide treatment clearly show that cyanide wastewaters are treatable to 1.2 mg/l total cyanide. While the CWA cyanide limit is 33.5 mg/l for the pharmaceutical industry, that limit was established in 1983 and is currently being investigated for possible revision. Data were obtained from these ongoing efforts, confirming that pharmaceutical wastes can achieve the 1.2 mg/l cyanide level.

Other commenters emphasized that because EPA's proposed universal wastewater standard of 1.2 mg/l total CN could not be routinely met by cyanide destruction technologies available at their site, EPA should only set a treatment level of 0.86 mg/l (amenable cyanide). Another commenter added that in the Third Third rule (see 55 FR 22550–22553, June 1, 1990), EPA already set a level of 0.86 mg/l for amenable cyanide in characteristic wastewaters which is routinely met by their modified wastewater treatment system. The proposed UTS treatment standard of 0.86 mg/l (amenable cyanide) is based on the treatment of complex-iron wastewaters from the electroplating industry by alkaline chlorination (a cyanide destruction technology, and BDAT). The commenter urged EPA to set this level as the sole cyanide UTS.

In the first place, the Agency views the issue of requiring treatment for both total and amenable CN to be settled in past rules, and did not intend to reopen it. See 54 FR at 26609 (June 23, 1989). If further response is deemed necessary, EPA remains unpersuaded by these arguments. Clean Water Act effluent limitations could technically be met by adding ferro-sulfate or other sulfate reagents to wastewaters. These chemical reagents do not destroy cyanides in the effluent wastewater but instead, they leave behind iron-cyanide complexes or thiocyanates. By requiring compliance for both amenable and total cyanide, facilities must pursue treatment practices that can effectively destroy cyanides. EPA is thus promulgating 1.2 mg/l (total cyanide) and 0.86 mg/l (amenable cyanide) as UTS for wastewater forms of cyanide wastes.

EPA had previously reserved the treatment standard for total cyanide in wastewater forms of D003 reactive cyanide wastes. In today's rule, EPA is applying the UTS of 1.2 mg/l to this waste. EPA sees no reason that the limit is not generally achievable, and commenters supplied no reasons.

UNIVERSAL TREATMENT STANDARD FOR CYANIDE

[Wastewaters]

Regulated constituent	Maximum for any single composite sample (mg/l)
Cyanide (Total)	1.2
Cyanide (Amenable)	0.86

C. Consolidation of Equivalent Technology-Specific Combustion Standards

Another improvement to the existing Land Disposal Restrictions program that is being made in today's rule is the simplification of two equivalent technology-specific combustion standards in: Table 1—Technology Codes and Description of Technology-Based Standards in 40 CFR 268.42. The Agency is consolidating the descriptions of INCIN (incineration) and FSUBS (fuel substitution), by combining them into one term, CMBST (combustion). The definition of CMBST, as stated in § 268.42 Table 1, is: "combustion in incinerators, boilers, or industrial furnaces operated in accordance with the applicable requirements of 40 CFR part 264 subpart O, and part 266, subpart H." (Because the Part 265 interim status standards for incinerators are largely nonsubstantive, EPA does not view facilities operating pursuant to these standards to be performing BDAT treatment. This is not true of boilers and industrial furnaces, where the interim status standards are nearly as stringent as those for permitted units.)

This definition includes a specific reference to boilers and industrial furnaces in order to clarify that combustion in these units is (and always has been) allowed as a means of complying with FSUBS. The Agency is also clarifying that any future

regulations, such as potential emission limits on metals or halogenated organic content, established in part 264 subpart O, and part 266 subpart H, shall also apply automatically to the standard of CMBST (or INCIN) in part 268. The consolidation of INCIN with FSUBS to read CMBST does not represent any change to the promulgated standards and additional notice and comment was, therefore, not required.

All of the K-, U-, and P-listed wastes that have technology-specific standards contain chemicals that are very difficult to quantify in treatment residues. The chemicals representing the waste codes for which the Agency has promulgated MBST as a standard are, for the most rt, thermally labile and are expected be destroyed relatively easily in any pe of combustion unit. EPA originally t up the two separate standards of CIN and FSUBS (Final Rule for Third ird Wastes, June 1, 1990), because the gency did not have in place the erating requirements for boilers and dustrial furnaces (i.e., the quirements for FSUBS). See 52 FR at 021 (May 6, 1987). Because these quirements have been promulgated 6 FR 7134 (February 21, 1991), both ts of standards should assure equally ficient combustion of hazardous aste. For the same reason, there is no ed to distinguish between the types of its that are allowed to handle each ecific waste code. (EPA is, however, tively reviewing current regulations r combustion units to assure the rules' otectiveness, and may propose more ringent standards for such units. See PA's Draft Combustion Strategy of May , 1993).

As a result of today's action the andards for the following waste codes e modified to read "CMBST":

) Two treatment subcategories of D001 wastes

) Six source-specific wastes listed in § 261.32: K027, K039, K113, K114, K115, K116

) Seventeen wastes listed in § 261.33(e): P001, P003, P005, P009, P040, P041, P043, P044, P062, P068, P081, P085, P088, P102, P105, P109, P112

) Forty-one wastes listed in § 261.33(f): U008, U016, U023, U053, U055, U056, U057, U058, U064, U085, U086, U087, U089, U090, U094, U096, U098, U099, U103, U109, U113, U122, U123, U124, U125, U126, U133, U147, U154, U160, U166, U182, U186, U197, U201, U213, U221, U248, U328, U353, U359

Other technology-specific standards d/or numerical standards that have en promulgated for the above listed codes remain unchanged. In particular, the promulgated standards of CHRED and CHOXD (i.e., chemical reduction and chemical oxidation) remain unchanged as alternatives to CMBST for fourteen of the above U and P waste codes. These standards were established because the chemicals represented by these wastes hydrolyze relatively rapidly (i.e., react with water) and both of the technologies represented by these standards are typically performed under aqueous conditions. These waste codes include: P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, U160.

Today's rule does not affect the existing standards for waste codes where INCIN was specified, but FSUBS was not. For those waste codes, the standard remains identified as INCIN, rather than CMBST.

The Agency is further investigating potential modifications to the presentation in 40 CFR 268.40 of all of the technology-specific standards in order to simplify and clarify the promulgated treatment standards, and may propose additional changes in the future.

D. Incorporation of Newly Listed Wastes Into Lab Packs and Changes to Appendices

On June 1, 1990 (55 FR 22629), EPA promulgated alternative treatment standards under 40 CFR 268.42(c) for waste codes listed in 40 CFR 268 Appendix IV and V that are placed in lab packs. These alternative standards are legally constructed, in part, as "specified methods of treatment" because of physical difficulties in measuring compliance with numerical standards for these multi-coded waste forms (i.e., compliance is complicated by the fact that many lab packs are comprised of hundreds of small containers, each with different organic or organo-metallic chemicals in them, making it difficult to accurately sample treatment residues for those organics). In the January, 1991, correction notice and again in the May 30, 1991, Advance Notice of Proposed Rulemaking (56 FR 24453), the Agency requested comment on potential improvements to these alternative standards.

EPA's original intent in establishing two separate appendices was to distinguish between those lab packs containing organo-metallics (Appendix IV) and those containing only organics (Appendix V). As such, lab packs containing organo-metallics (Appendix IV) were expected to need stabilization after performing the specified method of treatment, INCIN (i.e., incineration), while Appendix V lab packs only needed to be incinerated. However, under 40 CFR 268.42(c)(4), all treatment residues of either type of lab pack also had to comply with the standards for the extraction procedure (EP) for metals, i.e., D004, D005, D006, D007, D008, D010, and D011. (D009 is not included in this list because most mercury-bearing wastes were excluded from the use of the alternative standards in both of these Appendices.) As such, if metals were concentrated in the residues from the incineration of an Appendix V lab pack and the resultant residues then exhibited one of the characteristics for EP metals, these residues would also have had to be stabilized to comply with the appropriate treatment standard for metals. In such a case, there was no practical difference between Appendix IV and Appendix V lab packs in terms of the treatment that was needed.

The majority of the comments received from the regulated community supported the Agency's proposed approach. In this final rule EPA is, therefore, replacing Appendix IV and Appendix V with a new Appendix IV. In order to simplify the new Appendix IV it only contains those wastes excluded from lab packs. The following wastes are excluded from lab packs (and appear in new Appendix IV) for the purpose of using the alternative lab pack treatment standard in 40 CFR 268.42(c): D009, F019, K003, K004, K005, K006, K062, K071, K100, K106, P010, P011, P012, P076, P078, U134, U151.

In today's rule, EPA is also stating that the alternative treatment standard for lab packs applies to the following additional waste codes that were previously not included in Appendix IV or V: wastes for which treatment standards were promulgated in the LDR Phase I rule August 1, 1992 (57 FR 37194), and wastes (including TC organic wastes) for which treatment standards are promulgated in this final rule. Today's rule does not list these as excluded waste codes in the new Appendix IV.

As a matter of clarification, the alternative treatment standard for lab packs is INCIN. This required combustion technology combined with the requirements of 40 CFR 268.42(c)(4) (ash residues are treated to meet the characteristic metals treatment standards), will ensure that all underlying hazardous constituents present in characteristic wastes (other than those excluded in the new Appendix IV), will be treated. The use of this alternative lab pack standard negates the requirement to monitor for, or comply with, the UTS for underlying hazardous organic constituents.

For reasons outlined in the June 1, 1990 final rule, mercury wastes were excluded from this alternative standard for lab packs. Mercury is considered a "volatile metal" which may lead to excessive air emissions in some combustion devices when present in large quantities. Mercury is also very difficult to stabilize if present in ash residues in large quantities. Commenters did not provide any justifiable technical reason for EPA to modify its position with respect to mercury wastes, and thus these wastes shall remain excluded from this alternative lab pack treatment standard.

Changes in the LDR Program in sponse to the LDR Roundtable

EPA convened a roundtable meeting January 12–14, 1993 to discuss the R program. The purpose of the ndtable was for EPA to hear ggestions on improvements to the R program from persons who plement it. Participants included presentatives of hazardous waste nerators, treaters, and disposers; blic interest groups; state vironmental agencies; EPA regional ices; and other federal agencies. EPA oday promulgating several ommendations made by roundtable rticipants. The Agency is nsolidating the three existing atment standard tables into one table, d is simplifying notification uirements and reducing paperwork, discussed below. In addition, as cussed in an earlier section of this eamble, the Agency is omulgating universal treatment ndards. Furthermore, the Agency is mmitted to continue to identify ways LDR program can be simplified. ditional opportunities for such eamlining will be explored in future R rulemakings.

Consolidated Treatment Table

Several of the groups present at the R roundtable expressed an interest in ving a consolidated treatment ndard table in the regulations. rticipants stated that the existing stem of three separate tables at 40 CFR 8.41–268.43 was too complex and rdensome. In its September 14, 1993 tice, EPA proposed a single nsolidated table of treatment ndards. Comments on the table were vorable.

Today, EPA is replacing the three sting treatment standard tables with consolidated table, called reatment Standards for Hazardous aste" and placing it at § 268.40 along th much of the text found currently §§ 268.41–268.43. Section 268.42 continues to describe the technology codes, to regulate California list PCBs and HOCs, to set out exemptions from the required methods, and to provide procedures for equivalency determinations. The numerical treatment standards in the consolidated table are identical to the UTS promulgated in today's rule with the exception of characteristic metal wastes.

Reformatting §§ 268.40–268.43 also corrects a confusing aspect of the way the Code of Federal Regulations (CFR) has appeared for some time. The "No Land Disposal" treatment standards that have appeared at § 268.43 will be deleted from the regulations and should no longer appear in the CFR. These treatment standards have not been in effect since 1990, when the LDR Third Third rule set treatment standards for these wastes that were expressed as either methods of treatment or numerical standards that now appear in the consolidated treatment standard table § 268.40. It was only a drafting oversight that made these "No Land Disposal" standards continue to appear in the regulations, and today's rule corrects this mistake.

2. Simplified LDR Notification Requirements

Comments on LDR notification requirements at the roundtable ranged from suggestions that EPA should eliminate notifications altogether to suggestions that EPA modify or delete data items on the notification. In response, EPA proposed to eliminate the requirement at 40 CFR 268.7(a)(1)(ii) and at 268.9(d)(1) that the notification include treatment standards or references to those standards. It was argued that such a simplification makes particular sense in conjunction with EPA's proposal to consolidate the treatment standard tables. Commenters on this issue all supported this proposed simplification. EPA is thus dropping the treatment standard or reference to the treatment standard from the LDR notification in this final rule.

Today's action does not eliminate the existing requirement to identify the constituents in F001–F005 spent solvent wastes, F039 wastes, or the underlying hazardous constituents in D001, D002, and in TC organic wastes, unless the generator/treater is going to monitor for all hazardous constituents in the waste. However, the regulatory language is made clearer, and there is no longer any requirement that the corresponding constituent level be included with the constituents identified on the LDR notification for these wastes.

IV. Treatment Standards for Toxicity Characteristic Waste

A. Introduction—Content and Scope

EPA is promulgating treatment standards for the newly identified toxicity characteristic (TC) organic wastes (D018–D043) as proposed. These are identical to the UTS in today's rule. The UTS apply to the underlying hazardous constituents in the TC waste as well as the individual constituent responsible for the TC designation. Underlying hazardous constituents are any constituents in § 268.48 which are reasonably expected to be present at levels above the UTS at the point of generation of the TC waste. (See definition at § 268.2(i).) Although the intent of today's regulations is to require treating all underlying hazardous constituents present plus the TC constituent, today's rule calls for generators to monitor only the TC constituent and those underlying hazardous constituents "reasonably expected to be present" in their waste at its point of generation. Today's rule is promulgating the compliance monitoring provisions that were proposed. Section X of this preamble (Compliance Monitoring and Notification) discusses them in detail.

Several commenters suggested that EPA promulgate alternative standards of incineration (INCIN), fuel substitution (FSUBS) and recovery of organics (RORGS) for these wastes. These commenters pointed to the Interim Final Rule of May 24, 1993 (58 FR 29867) where EPA extended the use of these methods of treatment to all D001 wastes disposed outside CWA or CWA-equivalent impoundments or Safe Drinking Water Act regulated Class I underground injection wells. EPA is not adopting this approach in today's rule for TC organic wastes. First, EPA does not believe that methods of treatment intended to address organic constituents will always adequately address any underlying metal constituents present in these wastes. In addition, the Agency has not yet been able to completely evaluate the appropriateness of requiring specified treatment technologies for TC wastes and other wastes.

1. Waste Management Systems Affected by Today's Rule

In terms of waste management systems, today's rule applies to those TC wastes which are managed in systems other than: (1) wastewater treatment systems which include surface impoundments whose ultimate discharge is subject to the Clean Water Act (CWA); (2) zero dischargers who,

before permanent land disposal of the wastewater, treat the wastewaters in a CWA-equivalent wastewater treatment system; or, (3) Class I underground injection wells subject to the Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) program. CWA-equivalent treatment means biological treatment for organics, reduction of hexavalent chromium, precipitation/sedimentation for metals, alkaline chlorination or ferrous sulfate precipitation of cyanide (to the extent these constituents are present in the untreated influent to wastewater treatment systems), or treatment that the facility can show performs as well or better than these enumerated technologies. See § 268.37(a), 58 FR at 29885 (May 24, 1993). Organic TC wastes managed in these types of systems will be regulated in the next RCRR rule.

Additionally, "decharacterizing" the TC wastes regulated under this rule by rendering them noncharacteristic does not remove them from the scope of these regulations. *Chemical Waste Management* v. *EPA*, 976 F. 2d at 14–15. Consequently today's final rule will apply to some injection practices, in particular, those involving Class V injection wells. These typically are wells injecting nonhazardous wastes above or into underground sources of drinking water. (If, however, the TC wastes injected into non-Class I wells were to be treated by CWA-equivalent means before injection, today's treatment standards would not apply. This is an example of the type of zero dischargers referred to above.)

2. Categories of TC Wastes Affected by Today's Rule

The following TC wastes are subject to UTS: (1) all wastes identified as D018 through D043 (described in the proposed rule as "new organic constituents); (2) D012 through D017 organic pesticide wastes whose TCLP extract composition meets the concentration criteria of 40 CFR 261.24, Table A but whose EP extract composition does not; (3) D012 through D017 pesticide wastes whose TCLP extract composition meets the concentration criteria of 40 CFR 261.24 Table A, as does the EP extract composition, and (4) soil and debris contaminated with the preceeding three sets of wastes. The first two categories are newly identified wastes, i.e. wastes not yet identified as hazardous at the time of the 1984 amendments and therefore not covered by the original statutory schedule. (The March 29, 1990 rule extended the list of chemicals defined as TC and changed the extraction step to a more sensitive procedure which may potentially identify more pesticide wastes than did the EP.) For soil contaminated with the TC wastes, the variance process is available (see discussion in the Background section of this rule under the heading "E. Treatment Standards for Hazardous Soil").

As noted in the proposed rule, regulating land disposal of newly identified TC wastes by addressing underlying hazardous constituents is the same approach as EPA adopted in the recent interim final rule for ignitable (D001) and corrosive (D002) characteristic wastes, promulgated on May 10, 1993 (published on May 24, 1993, 58 FR 29860) in response to the court's decision in *Chemical Waste Management* v. *EPA*, 976 F. 2d 2. That case vacated and remanded certain Agency regulations (commonly referred to as the Third Third rule) establishing prohibitions and treatment standards for characteristic wastes, and also established rules as to when the prohibitions and standards would not apply. A summary of the court's decision, an overview of the interim final rule published on May 24, 1993, and a discussion of how the Agency proposed to apply this approach to the TC wastes can be found in the text of the proposed rule at 58 FR 48092.

Today's rule regulates underlying hazardous constituents in the D018–D043 as well as in newly identified D012–D017 and in the rest of the universe of D012–D017 wastes. (The definition of "underlying hazardous constituents" is contained at 268.2(i) in this rule.) For those D012–D017 nonwastewaters originally regulated in the Third Third rule, today's rule changes the numerical value of the previously applicable treatment standards to the UTS.

3. Soil Contaminated by Underground Storage Tanks

Soil which is contaminated with petroleum and is managed during corrective action of releases from a RCRA Subtitle I underground storage tank (UST) is not subject to the treatment standards promulgated today for the TC organic wastes (D018–D043). Such soil that fails the TC for one or more of the newly identified organic wastes (D018–D043) has been temporarily deferred from regulation as a hazardous waste (55 FR 26986). In addition, the Agency has proposed to permanently exempt UST petroleum-contaminated soils from the TC rule (58 FR 8504). However, any Subtitle I petroleum-contaminated soil identified as D001 through D017 would not be subject to the deferral and would be subject to all applicable RCRA land disposal restriction requirements.

The Agency reminds the regulated community that any soil contaminated by a release from a hazardous substance UST (Subtitle I) as well as from all non-Subtitle I USTs (including petroleum tanks) will continue to be subject to applicable RCRA hazardous waste requirements, including the land disposal restrictions. Likewise, petroleum-contaminated soils from non-UST sources that exhibit a hazardous characteristic are also subject to applicable Subtitle C requirements.

4. Metal TC Wastes Are Not Affected by Today's Rule

Today's rule does not affect TC metal wastes at all; this rule leaves the Third Third final treatment standards (which apply to EP metals) in place. Furthermore, today's rule does not affect the mineral processing wastes which were formerly exempt from Subtitle C regulation under the Bevill Amendment but which recently lost that exemption. Included in that set of wastes are wastes from the remediation of historic manufactured gas plant or coal gasification sites. EPA will address TC metal wastes and the former Bevill mineral processing wastes in a future rulemaking.

B. Background

1. Legal and Policy Basis for Today's TC Standards

Today's rule applies the UTS to underlying hazardous constituents in D012–D043 wastewaters and nonwastewaters. Commenters' principal objection to the proposed standards for TC wastes was that the September 1992 Circuit Court decision did not authorize EPA to regulate underlying hazardous constituents in TC wastes.

Most of these comments asserted that organic TC wastes were fundamentally different from ignitable or corrosive wastes and therefore EPA's decision to apply the standards promulgated in the May 24, 1993 Interim Final Rule for ignitable and corrosive wastes was inappropriate. These commenters said that TC wastes were unlikely to pose a threat to human health and the environment once treatment removed the single constituent, partly because such treatment would remove other similar hazardous components of the waste. None of these commenters submitted process data demonstrating these claims. On the other hand, some commenters argued that merely deactivating characteristic wastes might

well leave hazardous components intact.

The Agency is regulating in this rule underlying hazardous constituents in TC wastes when they are managed in non-CWA/non-CWA equivalent/non-Class I injection well waste management systems. If, as commenters assert, treatment of the TC constituent effectively treats underlying hazardous constituents, then regulating the underlying hazardous constituent poses no further burden. Additionally, EPA believes that the compliance monitoring provisions requiring the generator to address only those underlying nstituents "reasonably expected to be esent in the wastes" relieves nerators and treaters from an undue gulatory burden.

Several commenters objected that ending the requirement to treat derlying hazardous constituents from itable and corrosive wastes, as omulgated in the May 24, 1993 erim Final Rule, to TC wastes was necessary. The numerical treatment ndard for the constituent present at TC level, the commenters reasoned, eets RCRA's section 3004(m) inimize threat" requirement. EPA is t persuaded by such reasoning. 55 FR 542, 22652 (June 1, 1990); Chemical aste Management, 976 F.2d at 14; WTC III, 886 F. 2d at 362. The TC el identifies wastes that are clearly zardous, and does not evaluate esence of underlying hazardous nstituents, non-groundwater exposure thways, or adverse environmental ects.

Ongoing Management Practices for Wastes

The proposed rule solicited comments d data on volumes of TC wastes naged in Class V injection wells, and waste management practices ployed prior to such injection. EPA ceived little substantive comment and nsequently has no basis for changing proposed approach.

The proposed rule also solicited formation about industrial generation tterns in order to allow the Agency to sess the potential for source reduction recycling for these TC wastes in light their wide diversity. However, EPA ceived no comments describing rrent industry practices upon which Agency could act.

The Agency is to consider portunities for source reduction and cycling of these wastes, and ways eatment standards could reflect such es of waste minimization. The gency notes that the subtitle C rules nerally, and the LDR rules in rticular, have already resulted in substantial volumes of hazardous waste no longer being generated, because these rules impose waste management costs on hazardous waste generators, and thus create a financial incentive to generate less waste.

Finally, several commenters expressed concerns about achievability of UTS for underlying hazardous constituents in complex matrices and about the appropriateness of numerical standards based on incineration. See the discussion of UTS in section III.A of this preamble for more information on these comments.

C. Treatment Standards for New TC Organic Constituents (D018–D043)

1. Nonwastewaters

The Agency is also promulgating concentration-based treatment standards for TC organic constituents in nonwastewaters, that are identical to the levels promulgated as UTS in a separate section of this preamble. These standards are based on treatment data that were used to establish UTS for these same constituents in listed wastes. These standards are primarily based on incineration data and are presented at the end of this section.

EPA believes that a variety of treatment technologies, combustion and non-combustion, can achieve these treatment standards. EPA reiterates that any technology that does not constitute impermissible dilution can be used to meet these concentration levels.

BDAT STANDARDS FOR TC ORGANIC WASTES

[Nonwastewaters]

Code	Regulated constituent	Maximum for any single grab sample. Total composition (mg/kg)
D018	Benzene	10
D019	Carbon tetrachloride	6.0
D020	Chlordane	0.26
D021	Chlorobenzene	6.0
D022	Chloroform	6.0
D023	o-Cresol	5.6
D024	m-Cresol	[1] 5.6
D025	p-Cresol	[1] 5.6
D026	Cresol	5.6
D027	1,4-Dichlorobenzene	6.0
D028	1,2-Dichloroethane	6.0
D029	1,1-Dichloroethylene	6.0
D030	2,4-Dinitrotoluene	140
D031	Heptachlor	0.066
D031	Heptachlor epoxide	0.066
D032	Hexachlorobenzene	10
D033	Hexachloro-1,3-butadiene.	5.6
D034	Hexachloroethane	30
D035	Methyl ethyl ketone	36
D036	Nitrobenzene	14
D037	Pentachlorophenol	7.4
D038	Pyridine	16
D039	Tetrachloroethylene	6.0
D040	Trichloroethylene	6.0
D041	2,4,5-Trichlorophenol	7.4
D042	2,4,6-Trichlorophenol	7.4
D043	Vinyl Chloride	6.0

[1] m- and p-cresol are regulated together as the sum of their concentrations.

2. Wastewaters

The Agency is today promulgating concentration-based treatment standards for the TC organic constituents in wastewaters, that are identical to the levels promulgated as UTS in a separate part of today's rule. These standards were based on existing treatment data that were used to establish UTS for these same constituents in the broad array of listed wastes. Today's standards are based on data representing a variety of wastewater treatment units and are presented at the end of this section.

These wastewater treatment standards apply to newly identified TC wastewaters that are managed in systems other than those regulated under the CWA, those regulated under the SDWA that inject TC wastewaters into Class I injection wells, and those zero discharge facilities that engage in CWA-equivalent treatment prior to land disposal. The treatment standards promulgated today for newly identified TC organic (D018–D043) wastewaters require treatment to meet the UTS for the TC constituent and for the underlying hazardous constituents in the TC waste as generated.

BDAT STANDARDS FOR TC ORGANICS

[Wastewaters]

Constituent	Maximum for any single grab sample. Total composition (mg/l)
D018—Benzene	0.14
D019—Carbon tetrachloride	0.057
D020—Chlordane	0.0033
D021—Chlorobenzene	0.057
D022—Chloroform	0.046
D023—o-Cresol	0.11
D024—m-Cresol	0.77

BDAT STANDARDS FOR TC ORGANICS—Continued

[Wastewaters]

Constituent	Maximum for any single grab sample. Total composition (mg/l)
D025—p-Cresol	0.77
D026—Cresol	0.88
D027—1,4-Dichlorobenzene	0.09
D028—1,2-Dichloroethane	0.21
D029—1,1-Dichloroethylene	0.025
D030—2,4-Dinitrotoluene	0.32
D031—Heptachlor	0.0012
D031—Heptachlor epoxide	0.016
D032—Hexachlorobenzene	0.055
D033—Hexachloro-1,3-butadiene	0.055
D034—Hexachaloroethane	0.055
D035—Methyl ethyl ketone	0.28
D036—Nitrobenzene	0.068
D037—Pentachlorophenol	0.089
D038—Pyridine	0.014
D039—Tetrachloroethylene	0.056
D040—Trichloroethylene	0.054
D041—2,4,5-Trichlorophenol	0.18
D042—2,4,6-Trichlorophenol	0.035
D043—Vinyl Chloride	0.27

3. 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 exhibit any of the hazardous waste characteristics identified in subpart C of 40 CFR Part 261. Since the hazardous portions of the mixed waste are subject to RCRA, the land disposal restrictions apply. 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. Therefore, any radioactive waste mixed with organic TC wastes that are managed in non-CWA/non-CWA-equivalent/non-Class I SDWA facilities must meet the treatment standards being promulgated today for the TC wastes.

The standards that were proposed for the TC wastes were also proposed for TC radioactive mixed wastes. Prior to this proposal, however, the Department of Energy (DOE) had expressed some concerns about meeting certain treatment standards and stated that they were collecting data from their facilities on mixed TC wastes. EPA stated in the proposed rule that, for the most part, the low concentrations of radioactive compounds should not interfere with the treatability of the hazardous constituents in the waste, and requested data on instances when the radioactivity prevented the waste from meeting the LDR treatment standard.

One commenter suggested that EPA postpone its decision on appropriate methods for treating mixed waste until information currently being collected profiling commercially generated low-level radioactive mixed waste has been submitted and reviewed by EPA. This commenter claimed that the results of this profile contradict EPA's statement that radioactive material concentrations in mixed waste are low and should not interfere with the treatment of the mixed waste. Another commenter expressed the belief that the presence of radioactive components within the limits of operator exposure and safety should not interfere with the treatment of hazardous constituents in waste.

Neither commenter submitted any data or other supporting information to substantiate their assertions regarding the treatability of radioactive mixed waste; therefore, EPA has decided to promulgate the standards for newly identified TC radioactive mixed wastes as proposed. However, if data is submitted to EPA indicating that the presence of radioactive components prevents a waste from meeting the LDR treatment standards, the Agency will evaluate the data and amend the standards as appropriate. The Agency's variance provisions of 40 CFR 268.44 can also be used to obtain alternate limits in the meantime.

D. Treatment Standards for Pesticide Wastes Exhibiting the Toxicity Characteristic

D012—Endrin
D013—Lindane
D014—Methoxychlor
D015—Toxaphene
D016—2,4-D
D017—2,4,5-TP (Silvex)

The Agency is promulgating treatment standards for these wastes essentially as proposed with the additional requirement that underlying hazardous constituents be treated in nonwastewater forms of these wastes. Today's standards apply to all D012–D017 wastes managed in non-CWA/non-CWA-equivalent/non-Class I injection well waste management facilities. These are the toxic pesticide wastes which are identified as toxic following application of the TCLP. The TCLP is more sensitive than the EP analysis, possibly bringing more wastes into the toxicity characteristic category than did the EP.

1. Newly Identified Pesticide Nonwastewaters

EPA is today regulating newly identified D012–D017 nonwastewaters plus D012–D017 nonwastewaters regulated earlier in the Third Third rule. Treatment standards for both sets of D012–D017 nonwastewaters include the UTS value for the TC constituents plus UTS values for underlying hazardous constituents. The changes between the Third Third standards and today's rule are that the numerical value of the toxaphene nonwastewater standard rises from 1.3 to 2.6 and the standard for D013, lindane, incorporates numbers for the four BHC isomers. (It should be noted that EPA determined that the amount of D012–D017 waste subject to the treatment standards is very small. 55 FR at 22634, 22646. Based on this determination, it is very unlikely that newly identified D012–D017 are being generated.)

Today's rule also prohibits dilution of D012–D017 nonwastewaters injected into Class I deep injection wells. Consequently, these pesticide wastes must be treated to meet the treatment standards before they can permissibly be injected into such units, unless that unit has been granted a no-migration determination. Section VIII of this preamble discusses this and other deepwell injection issues presented in today's rule in more detail.

BDAT STANDARDS FOR PESTICIDES

[Nonwastewaters]

Code	Regulated constituent	Maximum for any single grab sample. Total composition (mg/kg)
D012	Endrin	0.13
D012	Endrin aldehyde	0.13
D013	alpha-BHC	0.066
D013	beta-BHC	0.066
D013	gamma-BHC	0.066
D013	delta-BHC	0.066
D014	Methoxychlor	0.18
D015	Toxaphene	2.6
D016	2,4-D	10
D017	2,4,5-TP (Silvex)	7.9

2. Pesticide Wastewaters

EPA set treatment standards expressed as required methods of treatment for the EP toxic pesticide wastewaters in the Third Third final rule (55 FR 22554). Today's rule extends these treatment standards to those pesticide wastewaters covered in today's rule. (See 268.40)

E. Exemptions for De Minimis Losses of Commercial Chemical Product or Chemical Intermediates That Exhibit the Toxicity Characteristic (TC), and for TC Laboratory Wastes Discharged to CWA Wastewater Treatment Systems

In the Interim Final Rule published May 24, 1993, EPA established *de minimis* exemptions for commercial chemical product or chemical intermediates that are ignitable or corrosive hazardous wastes and that contained underlying hazardous constituents (58 FR 29875). The Agency proposed in Phase II to extend the exemptions in 40 CFR 268.1 to mmercial chemical products or mical intermediates that are TC anic wastes when disposed (58 FR 18). Commenters expressed support this approach.

his action is necessary to avoid ations where minor leaks of organic commercial chemical products or mical intermediates to a wastewater tment system would potentially ger all of the potential consequences reating all underlying hazardous stituents that might be in the waste. EPA noted in originally determining t the mixture rule should not apply such situations, such small losses are practical matter unavoidable; ponsible management involves nneling these minor losses to a tralized wastewater tem. In addition, there is a natural entive to minimize the losses ause the materials would otherwise commercial chemical products or ermediates (46 FR 56583, Nov. 17, 1). Moreover, allowing *de minimis* ses of TC materials to trigger all of LDR treatment consequences would anomalously stringent because *de nimis* losses of listed wastes (i.e., the mmercial chemical products listed in 61.33), which tend to be more ncentrated (see generally 58 FR at 875), would not be regulated because he exception to the mixture rule nd at § 261.3(a)(iv)(D).

his same type of exception is needed TC laboratory wastes that are mmingled with other plant stewaters under designated cumstances: TC laboratory wastes taining underlying hazardous stituents from laboratory operations, t are mixed with other plant stewaters at facilities whose ultimate charge is subject to regulation under CWA (including wastewaters at ilities which have eliminated the charge of wastewater), provided that annualized flow of laboratory stewater into the facility's headwork es not exceed one part per million (the same condition that applies to the existing exemption in § 261.3(a)(2)(iv)(E)).

Thus *de minimis* losses of commercial chemical product or chemical intermediates that are TC organic wastes, and TC organic laboratory wastes discharged to CWA wastewater treatment systems, are not subject to the requirements of 40 CFR 268. *De minimis* losses are those occurring from normal material handling, minor leaks of equipment tanks or containers, and similar small but, for practical purposes, unavoidable losses. See § 261.3(a)(2)(iv)(D) and 268.1(e)(4) as promulgated at 58 FR 29884 (May 24, 1993). The definition of *de minimis* loss is the same as EPA used in the May 24, 1993 rule. This definition mirrors the parallel language in § 261.3(a)(iv)(D) except that it also includes discharges from safety showers and rinsing and cleaning of personal safety equipment and rinsate from empty containers or from containers that are rendered empty by that rinsing. When the § 268.1(e)(4) definition was originally promulgated in the May 24, 1993 rule, it seemed unlikely that ignitable or corrosive wastes would be generated from safety showers or rinsate. The Agency believes it is more likely that TC wastes could be generated in such a manner, therefore, the definition is being expanded to include this language in this rule.

EPA also notes that the characteristic commercial chemical products exempted under this rule and the May, 1993 rule are not limited to products in which a particular chemical is "the commercially pure grade of the chemical, any technical grades of the chemical, and all formulations in which the chemical is the sole active ingredient." (See § 261.33(d) comment). Rather, the exemption extends to *de minimis* losses (as defined) of in-process materials such as intermediates and materials that would be products if they were not inadvertently discarded. 55 FR at 2869 (Jan. 31, 1991). The citation in the comment to § 261.33(d), quoted above, is necessary to define the scope of the listing, but as just explained, does not apply to losses of characteristic materials.

V. Treatment Standards for Newly Listed Wastes

A. Treatment Standards for Coke By-product Production Wastes

K141—Process residues from the recovery of coal tar, including but not limited to tar collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087, decanter tank tar sludge from coking operations.

K142—Tar storage tank residues from the production of coke from coal or the recovery of coke by-products produced from coal.

K143—Process residues from the recovery of light oil, including but not limited to those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.

K144—Wastewater treatment sludges from light oil refining, including but not limited to intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.

K145—Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal.

K147—Tar storage tank residues from coal tar refining.

K148—Residues from coal tar distillation, including but not limited to still bottoms.

EPA is promulgating the treatment standards that were proposed for coke by-product production wastes. These treatment standards also apply to soil and debris contaminated with these wastes, although a variance process is available for such soils (see discussion on variances in the Background section of this rule under the heading "E. Treatment Standards for Hazardous Soil"). The preamble of the proposed rule describes the generation and characteristics of the newly listed wastes in greater detail (58 FR 48119). Today's standards are concentration-based limits for wastewaters and nonwastewaters, numerically identical to the UTS promulgated elsewhere in this rule for the nine constituents regulated in these wastes.

The American Coke and Coal Chemicals Institute requested that EPA allow the use of these wastes as fuels in blast furnaces and other applications where coke, coal and coal tar are used as fuels. The commenters were requesting EPA to extend the existing recycling exclusion—which allows these wastes to be combined with coal feedstock residue as it is charged to the coke oven, added to the coal recovery process or mixed with coal tar before this coal tar is sold as a product or further refined. Extending this exclusion

is beyond the scope of this regulation; it was not included in the September proposal as an option for managing these wastes. The Definition of Solid Waste Task Force is examining the broad range of these types of issues.

The other comments received concerning the proposed treatment standards for coke products' wastes came from the waste treatment industry. Several waste treatment companies supported applying universal standards to these waste streams and the UTS concept in general. However, one commenter provided data in support of extending the standards originally applied to K087 to these wastes. EPA evaluated these data but found no reason not to apply UTS to these wastes. EPA's evaluation of these data is presented in the Background Document for these wastes. In separate comments, two waste treatment companies objected to the benzene nonwastewater standards as unnecessarily high and pointed out that their facilities could achieve benzene limits below that proposed in the UTS. EPA does not believe these data really reflect better treatment. Rather, the commenters appear to have generated a waste matrix in which benzene is detectable at lower levels. EPA is promulgating the benzene nonwastewater standard as proposed, believing that it reflects an appropriate and broader assessment of benzene detection limits in combustion residues.

BDAT STANDARDS FOR K141, K142, K143, K144, K145, K147, AND K148

[Nonwastewaters]

Constituent	Maximum for any single grab sample. Total composition (mg/kg)	Constituents regulated for waste codes						
		K141	K142	K143	K144	K145	K147	K148
Benzene	10	X	X	X	X	X	X	
Benz(a)anthracene	3.4	X	X	X	X	X	X	X
Benzo(a)pyrene	3.4	X	X	X	X	X	X	X
Benzo(b)fluoranthene	[1] 6.8	X	X	X	X		X	X
Benzo(k)fluoranthene	[1] 6.8	X	X	X	X		X	X
Chrysene	3.4	X	X	X	X	X	X	X
Dibenz(a,h)anthracene	8.2	X	X		X	X	X	X
Indeno(1,2,3-cd)pyrene	3.4	X	X				X	X
Naphthalene	5.6					X		

[1] This standard represents the sum of the concentrations for each of this pair of constituents.

BDAT STANDARDS FOR K141, K142, K143, K144, K145, K147, AND K148

[Wastewaters]

Constituent	Maximum for any single grab sample. Total composition (mg/l)	Constituents regulated for waste codes						
		K141	K142	K143	K144	K145	K147	K148
Benzene	0.14	X	X	X	X	X	X	
Benz(a)anthracene	0.059	X	X	X	X	X	X	
Benzo(a)pyrene	0.061	X	X	X	X	X	X	X
Benzo(b)fluoranthene	[1] 0.11	X	X	X	X		X	X
Benzo(k)fluoranthene	[1] 0.11	X	X	X	X		X	X
Chrysene	0.059	X	X	X	X	X	X	X
Dibenz(a,h)anthracene	0.055	X	X		X	X	X	X
Indeno(1,2,3-cd)pyrene	0.0055	X	X				X	X
Naphthalene	0.059					X		

[1] This standard represents the sum of the concentrations for each of this pair of constituents.

B. Treatment Standards for Chlorotoluenes

K149—Distillation bottoms from the production of alpha (methyl) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups. (This waste does not include still bottoms from the distillation of benzyl chloride.)

K150—Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha (methyl) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups.

1—Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha (methyl) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides and compounds with mixtures of these functional groups.

EPA is promulgating the treatment standards that were proposed for chlorotoluene wastes. The preamble of the proposed rule describes the generation and characteristics in greater detail (58 FR 48121). Today's standards are concentration-based limits for wastewaters and nonwastewaters, numerically identical to the UTS promulgated elsewhere in this rule for the thirteen constituents regulated in these wastes.

Comments received concerning the proposed treatment standards for chlorotoluene wastes came from the waste treatment industry; they were similar to those received concerning the treatment standards for coking wastes. Several waste treatment companies supported applying universal standards to these waste streams and the UTS concept in general. Two waste treatment companies objected to the benzene nonwastewater standards as unnecessarily high and pointed out that their facilities could achieve benzene limits below that proposed in the UTS. EPA, however, believes that the UTS for benzene nonwastewaters reflects an appropriate and broad assessment of benzene detection levels in combustion residues.

BDAT STANDARDS FOR K149, K150, AND K151

[Nonwastewaters]

Constituent	Maximum for any single grab sample. Total composition (mg/kg)	Constituents regulated for waste codes		
		K149	K150	K151
zene	10			X
bon tetrachloride	6.0		X	X
oroform	6.0	X	X	X
oromethane	30	X	X	
orobenzene	6.0	X		
-Dichlorobenzene	6.0	X	X	
achlorobenzene	10	X	X	X
tachlorobenzene	10	X	X	X
,4,5-Tetrachlorobenzene	14	X	X	X
,2,2-Tetrachloroethane	6.0		X	
rachloroethylene	6.0		X	X
,4-Trichlorobenzene	19		X	
uene	10	X		X

BDAT STANDARDS FOR K149, K150, AND K151

[Wastewaters]

Constituent	Maximum for any single grab sample. Total composition (mg/l)	Constituents regulated for waste codes		
		K149	K150	K151
zene	0.14			X
bon tetrachloride	0.057		X	X
oroform	0.046	X	X	X
oromethane	0.19	X	X	
orobenzene	0.057	X		
-Dichlorobenzene	0.090	X	X	
achlorobenzene	0.055	X	X	X
tachlorobenzene	0.055	X	X	X
,4,5-Tetrachlorobenzene	0.055	X	X	X
,2,2-Tetrachloroethane	0.057		X	
rachloroethylene	0.056		X	X

BDAT STANDARDS FOR K149, K150, AND K151—Continued

[Wastewaters]

Constituent	Maximum for any single grab sample. Total composition (mg/l)	Constituents regulated for waste codes		
		K149	K150	K151
1,2,4-Trichlorobenzene	0.055		X	
Toluene	0.080	X		X

VI. Debris Contaminated With Newly Listed or Identified Wastes

Debris contaminated with the hazardous wastes included in today's rule must be treated prior to land disposal. The hazardous debris may be treated to meet the treatment standards promulgated today for the constituents which are contaminating the debris, or it may be treated to meet the alternative debris standards promulgated in the LDR for Newly Listed Wastes and Hazardous Debris (57 FR 37194, August 18, 1992).

A. Debris Treated To Meet the Phase II Treatment Standards

Debris that is treated to meet the treatment standards promulgated in today's rule for newly listed wastes would remain subject to the hazardous waste management regulations (subtitle C) for as long as the debris "contains" the hazardous waste (see 57 FR 37625–26, August 18, 1992). On the other hand, debris that is treated to meet the treatment standards promulgated in today's rule for newly identified TC organic wastes, including any underlying hazardous constituents the generator reasonably expects to be present in the waste, could be disposed in a nonhazardous waste (subtitle D) landfill because the characteristic identifying the waste as hazardous is removed through meeting the LDR treatment standards.

B. Debris Treated To Meet the Alternative Debris Treatment Standards

The alternative treatment standards require the use of specific technologies from one or more of the following categories: extraction technologies, destruction technologies, or immobilization. Treatment must be performed in accordance with specified performance standards found in the regulations at 40 CFR 268.45. If one of the extraction or destruction technologies is used, and the debris does not display any characteristic of hazardous waste, then EPA would consider the treated debris to no longer contain hazardous waste. Such treated debris could, therefore, be reused, returned to the natural environment, or disposed in a nonhazardous waste (subtitle D) facility. Nondebris residuals generated from the treatment of debris contaminated with listed wastes would still be hazardous wastes by virtue of the derived-from rule and would be subject to the hazardous waste management system, including the treatment standards for newly listed wastes in today's rule.

VII. Response to Comments Regarding Exclusion of Hazardous Debris That Has Been Treated by Immobilization Technologies

A. Background

The final Phase I Land Disposal Restrictions (LDR) rule promulgated on June 30, 1992 (57 FR 37194, August 18, 1992), excludes from Subtitle C control hazardous debris that is treated using an extraction or destruction technology provided the treated debris meets the performance standards specified in § 268.45 Table 1. Our basis for doing this is that the debris no longer contains the hazardous waste. On the other hand, hazardous debris treated by an immobilization technology is still subject to the hazardous waste regulations because the Agency has insufficient data or information to support that such treated debris would not leach Appendix VIII constituents over time in a manner that would be protective to human health and the environment. In our proposal to the Phase I LDR rule, the Agency solicited comment on whether immobilized hazardous debris should be excluded from Subtitle C control. While the Agency received favorable comments on excluding such treated debris from the hazardous waste regulations, no information or data was provided to support such a position. Therefore, the final rule requires that immobilized hazardous debris continue to be managed as a hazardous waste.

The Agency decided to revisit the issue of whether immobilized hazardous debris, if treated in certain ways or is treated to meet certain limits, should be excluded from Subtitle C control. As a result, since the promulgation of the Phase I LDR rule, the Agency has undertaken a number of activities.

B. Roundtable Discussion

In an attempt to gather information on the issue, the Agency sponsored a roundtable discussion on August 3, 1992. Participants at the meeting included persons who commented on the Phase I LDR rule, debris treatment vendors, hazardous waste treaters and disposers, state officials, and officials from the Department of Energy (see Docket for specific list of attendees). Representatives from the environmental interest groups were also invited but were unable to attend. The purpose of the meeting was to gather information and discuss various regulatory approaches that would allow the Agency to exclude immobilized hazardous debris from Subtitle C control. While no specific data was gathered, there was a general discussion on the types of standards that could be applied such as design and operating standards, leach test, structural integrity test, permeability test for encapsulating material, so as to exclude immobilized hazardous debris from hazardous waste control. Additionally, the following points were also made by one or more participants at the roundtable.

- A number of the attendees indicated that even if immobilized hazardous debris were excluded from hazardous waste control, it would continue to be managed as a hazardous waste due to CERCLA liability concerns.
- There was some question whether a specific exclusion for immobilized hazardous debris was necessary or whether the Hazardous Waste Identification Rule (HWIR) may be a more appropriate mechanism for addressing this issue.
- A representative from the glass industry suggested that glass cullet and vitreous materials should have a separate treatment standard. He indicated that the glass matrix would

not leach lead at a higher rate than would an immobilized product—that is, it made little sense to grind up the glass material and then to stabilize it when the original matrix is just as sound.

While no consensus was reached, the following principles were generally arrived at by most of the participants at the meeting.

Microencapsulation: Participants at the meeting seem to believe that using a leach test may be more appropriate to demonstrate effective microencapsulation immobilization over an approach of developing design and operating standards. It was noted that treatment of hazardous debris is very waste and debris specific; if one could define design and operating standards that were generally applicable, they would likely be too burdensome in many cases.

Macroencapsulation/Sealing: The participants seem to indicate that the binding requirement in the TCLP leach test made it inappropriate for predicting performance of macroencapsulation/sealing immobilization technologies. These technologies rely on an impermeable coating applied to the outside of the debris. Rather, the participants suggested a structural test to determine whether the given debris/technology combination was sufficient to maintain the coating or a permeability test for the coating media. While the participants conceptually believed that such an approach was workable, no one was able to suggest a specific test or standard. In addition, it was felt by some of the participants that the development of such a test could be difficult to develop.

While no data or information was provided at the meeting, it was indicated that if such information was submitted to the Agency, the Agency could consider such information in making its decision.

C. EPA Investigations

In addition to the above roundtable discussions, EPA has also been reviewing the literature and talking to vendors in an effort to obtain sufficient information on how to propose standards that could allow the exclusion of immobilized hazardous debris. At the time the Phase II LDR rule was proposed, no useful insights had been gained on how to specify design and operating standards that would ensure that immobilized hazardous debris was nonhazardous; the reason for this was the paucity of experience in immobilizing hazardous debris. Nevertheless, the Agency expressed interest in pursuing this area and specifically sought assistance from the regulated community on this issue.

D. Specific Questions for Which Comments Were Solicited

While the Agency had a better sense of the types of standards that may be appropriate for excluding immobilized hazardous debris from Subtitle C control at the time of the Phase II proposal, the Agency still did not have the data to propose specific exclusions. For microencapsulation in particular, if a leach test were the most appropriate mechanism for determining whether such treated debris is nonhazardous, the Agency expressed the belief that HWIR may be the most appropriate rulemaking to address this issue. The Agency had a series of studies underway, was evaluating comments, but was not in a position to determine what such levels were at that time. With respect to macroencapsulation/sealing, additional data or information needed to be gathered before the Agency would be in a position to exclude this type of immobilized hazardous debris. To assist the Agency in this effort, we specifically solicited comment on the following questions:

Microencapsulation:

- Is the use of a leach test for excluding immobilized hazardous debris more appropriate than specification of design and operating standards?
- Is exclusion of immobilized hazardous debris using design and operating standards workable?

Macroencapsulation/Sealing:

- What type of structural or other test could be used?
- What type of criteria should be applied in determining whether such debris is nonhazardous?

The Agency is also considering allowing stabilization for soils containing low levels of organic constituents, and solicited comment on whether similar stabilization techniques or tests to ensure the effectiveness of such stabilization would be appropriate for excluding debris from Subtitle C control.

In addition, the Agency specifically solicited comment on any available data or information to demonstrate that immobilized hazardous debris (if treated properly) would not pose a substantial hazard to human health and the environment, stating that if such information were submitted to the Agency, the Agency would exclude such debris from Subtitle C control.

E. Comments Received and Conclusions

Microencapsulation: One commenter stated that specifying design and operating standards is appropriate for excluding immobilized hazardous debris from subtitle C, asserting that nothing is gained in performing a leach test on hazardous debris. Other commenters suggested that EPA consider a combination of a structural test combined with a leaching test conducted on a representative intact sample of the encapsulated waste. None of these commenters submitted any supporting information to substantiate these conflicting claims. However, the commenters did agree that if a leach test is used, the TCLP as it is now defined is inappropriate for immobilized debris.

Macroencapsulation/Sealing: Several commenters claimed that the TCLP test is inappropriate for immobilized material because the size reduction required by the test protocol destroys the encapsulant, thereby defeating the purpose of the technology. These commenters suggested that EPA instead consider a combination of a structural test (a 50 psi standard was suggested) combined with a leaching test conducted on a representative intact sample of the encapsulated waste. These commenters did not submit any data to verify that a 50 psi standard would insure the integrity of the immobilized waste, and although some commenters recommended that a new leach test protocol be developed, they did not suggest any specific protocols for a leach test on the intact debris waste.

Exclusion of Immobilized Debris from Subtitle C Regulation: Several commenters maintained that debris treated with an immobilization technology should be excluded from Subtitle C regulation. However, these commenters did not submit any supporting data to verify this claim.

Two commenters claimed that a careful reading of 40 CFR 268.7(b) indicates that waste which is treated using a specified treatment technology is not subject to further testing to exit Subtitle C and claimed that the rules for debris treated in accordance with the alternative treatment standards specified in 40 CFR 268.45 should be the same. Their interpretation of this section of the CFR is incorrect. With regard to wastes for which technologies have been specified as the treatment standard, 40 CFR 268.7(b) contains the wording of the certification stating that the waste has been treated in accordance with § 268.42; this certification must be signed before the waste may be land disposed. 40 CFR 268.7(b) does not say that this waste is no longer subject to subtitle C regulation.

One commenter suggested that, at a minimum, EPA should establish health

based numerical standards for exclusion of hazardous debris from subtitle C. This commenter made no suggestion as to what test method should be used. The issue of basing LDR standards on the basis of risk rather than technology performance is addressed in Section III A 2 a of this rule, "Risk-based Universal Treatment Standards."

Finally, one commenter suggested that EPA allow the use of stainless steel as an encapsulant, claiming that its performance would be superior to that of other encapsulants, such as polymeric organics, which allegedly fail due to the radiation effects to their chemical bonds.

Conclusions: Although commenters were in general agreement on a number of issues (e.g. inappropriateness of the TCLP for debris, use of a 50 psi structural test as a performance standard, use of a leach test performed on intact debris), no supporting data or other information was submitted to support their claims and requests. Therefore, the Agency is not promulgating any modifications to the debris rule at this time. The Agency is evaluating exclusions as part of the HWIR process and will reassess appropriate action on debris if HWIR does not adequately address debris.

VIII. Deep Well Injection Issues

A. Prohibition of Dilution of High TOC Ignitable and of TC Pesticide Wastes Injected Into Class I Deep Wells

Today's rule prohibits the disposal of two types of waste into deep-well injection via Class I Underground Injection Control (UIC) wells unless the wastes first meet the land disposal restrictions promulgated in today's rule for these wastes, or the wastes are injected into a well that is subject to a no-migration determination. These wastes are nonwastewaters exhibiting the characteristic of ignitability at the point of generation and containing greater than 10 percent Total Organic Carbon ("high TOC ignitable liquids subcategory") and also TC toxic halogenated pesticide wastes (DO12–D017). Thus, EPA is promulgating, as proposed, regulations excluding these two wastes from the portion of the rule at 40 CFR 268.1(c)(3) that allows a waste to be injected into a Class I deep injection well if the waste no longer exhibits a characteristic at the point of injection. Today's rule also includes a one-year capacity variance for these injected waste streams.

For D001 High TOC ignitables, the treatment standard is expressed as methods of treatment that must be used prior to land disposal: combustion (i.e. incineration or fuel substitution) or recovery of organics. The preamble to the proposed rule stated that high TOC ignitable nonwastewaters contain high concentrations of organics that can either be recovered directly for reuse, or can be burned in combustion devices. These wastes are not injected in significant volumes, so that redirection of the wastes to treatment technologies will not have significant impact on well operators. 58 FR 48118–48119. EPA received no information to the contrary from commenters.

The treatment standards for TC pesticide wastewaters are also expressed as methods of treatment: biodegradation or incineration. On the other hand, the treatment standards for EP pesticide nonwastewaters are expressed as levels that may be achieved by using any treatment technology, other than impermissible dilution. (The Third Third rule had already disqualified these wastes from the exception that allowed dilution of characteristic wastes that were to be managed in Clean Water Act treatment systems including surface land disposal units, § 268.3(b) and 55 FR 22657.)

As discussed at length in the preamble to the proposed rule, the Agency's initial reading of the D.C. Circuit Court's decision is that wastes that are characteristically hazardous at the point of generation must typically be treated to destroy or remove hazardous constituents before land disposal, or be disposed of in a no-migration unit. 976 F.2d at 24. This is certainly a permissible interpretation of the opinion. Furthermore, the decision encompasses underground injection wells, specifically Class I deep wells, since they are permanent land disposal units. 976 F.2d at 25. Thus, under this reading of the court's opinion, these ignitable and pesticide wastes would have to be treated to remove hazardous constituents before injection.

EPA's decision to prohibit injection of these untreated wastes, however, is based not only on its initial interpretation of the Chemical Waste Management opinion (which, as noted below, may still evolve), but also on the particular wastes involved here. The wastes at issue are ignitable wastes with potentially very high concentrations of hazardous constituents, and pesticide wastes containing very toxic constituents.

Treatment is also warranted to reduce the amounts of these toxic wastes being land disposed. RCRA section 1003(a)(6) ("statutory goal of minimizing the . . . land disposal of hazardous waste by encouraging . . . properly conducted recycling and reuse, and treatment"); *Steel Manufacturers' Association* v. *EPA*, _____ F.3d _____, (D.C. Cir. July 9, 1994) ("We conclude that minimizing the overall volume of slag that is to be disposed is by itself, a sufficient justification for the zinc treatment standard . . .") (slip op. at 13). Finally, only small volumes of these wastes are injected, and segregation of the wastes should not prove to be unduly difficult. For all of these reasons, the Agency believes it appropriate to prohibit injection of these wastes at this time, unless the wastes are treated to satisfy section 3004(m) or are disposed in a no-migration unit. In this regard, the Agency emphasizes that no-migration petitions for Class I nonhazardous wells receiving decharacterized wastes may be submitted to EPA or the Authorized States for evaluation at this time. The petitions may encompass not only the pesticide and high-TOC ignitable wastes prohibited in this rule, but other types of decharacterized wastes (which are not yet prohibited but are scheduled to be addressed in Phase III) as well.

Most comments to the proposed rule requested independent consideration of Class I injection wells, because they believed that underground injection differs from other forms of land disposal, such as landfills and impoundments. Other comments questioned EPA's interpretation of the Third Third court decision and the Agency's belief that treatment of these waste streams should be the preferred management approach for them. These commenters indicated that aggregation of waste streams meets the minimize threat standard and expressed their opinion that segregation of these wastes for treatment poses substantial risks to the environment and that underground injection is an inherently safer waste management practice. The Agency intends to consider all the above arguments (e.g., risks posed by wastes going to deep well injection) in the identification of alternatives for land disposal standards. The Agency will continue to investigate any and all information received concerning these comments, and intends to address land disposal standards for underground injection of characteristic wastes in a comprehensive manner in the Phase III rulemaking. Until these treatment standards become effective one year from the date of publication of this rule, they may continue to be injected into Class I injection wells without prior treatment.

B. Request for Comment on Petition From Chemical Manufacturer's Association Regarding Deep Well Injection of Ignitable and Corrosive Characteristic Wastes

The proposed rule solicited comments on a request from the Chemical Manufacturer's Association (CMA) that EPA develop separate treatment standards intended for those wastes disposed in Class I deep injection wells. CMA requested a separate set of treatment standards for ignitable and corrosive wastes managed by deep well injection that, in view of the unique cumstances of deep well injection, eet the statutory "minimize threats" ndard. Many comments received by A-urged the Agency to develop so-lled UIC-specific treatment standards light of this petition. However, EPA ceived virtually no technical formation to support these comments. Therefore, the Agency is not issuing a al response to CMA's request in day's rule. EPA continues to solicit formation necessary to enable EPA to on this petition in the future. These quests are documented in the lemaking docket for today's rule. In rticular, the Agency particularly quests data concerning waste lumes, waste transport, injection stem integrity or the fate of disposed llutants throughout the course of the jection procedure.

. Modifications to Hazardous Waste ecycling Regulations

Introduction

Today's rulemaking finalizes the oposed changes to the hazardous aste recycling regulations, thus ghtly broadening the scope of an isting exclusion (and related riance). This modification of the gulatory framework will allow for vironmentally beneficial recycling to cur without unnecessary regulatory nsequences.

EPA wishes to note that the changes the definition of solid waste being omulgated today are narrow in scope d will have minor impact. A more oad-ranged evaluation of the gulations applicable to the recycling hazardous waste is being conducted EPA's Definition of Solid Waste Task rce. This Task Force has been ministering a public dialogue process examine the overall impacts of the RA program on recycling, and will nsider broader changes to the finition of solid waste as part of that ocess.

B. Modification of the Existing "Closed-loop" Recycling Exclusion and Related Case-specific Variance

1. "Closed-loop" Recycling Exclusion and Related Variance

In the January 4, 1985 final rule, the Agency promulgated an exclusion from the definition of solid waste at § 261.2(e)(1)(iii) for secondary materials that are recycled in a "closed-loop," (i.e., returned to the original production process in which the material was generated (see preamble discussion at 50 FR 639)). To be considered such a "closed-loop" process, three conditions must be met. First, the secondary material must be returned to the original process without undergoing significant alteration or reprocessing (i.e., it must be returned without first being reclaimed. See 261.2(e)(3) and Table 1). Second, the production process to which the unreclaimed materials is returned must be a primary production process (i.e., a process that uses raw materials as the majority of its feedstock, as opposed to a secondary process that uses spent materials or scrap metal as the majority of its feedstock). And third, the secondary material must be returned as a feedstock to the original production process and must be recycled as part of that process (as opposed to an ancillary process such as degreasing). EPA believes that these conditions characterize a material that is part of an on-going production process, and as such, the management of the material should not be characterized as waste management (i.e., the material is not part of the waste management problem).

Today's action addresses the second condition—that the production process to which a secondary material is returned be a primary process. This condition was part of the original exclusion due to considerations regarding jurisdiction, as it was understood in 1985, rather than to an evaluation of the potential impacts on the environment from such "closed-loop" recycling involving secondary processes. This condition thus was established without a consideration of whether such secondary materials would be part of the waste management problem. By definition, a secondary process uses waste materials as its principal feedstock. The Agency therefore concluded that the process residue, which is returned to the original process as a substitute for feedstock that is itself waste, is no less a waste than the waste material originally introduced (see 50 FR 639). (The Agency notes that with few exceptions, this condition has no actual impact on the recycling of residues from secondary processes because such residues that exhibit a characteristic of hazardous waste (i.e., characteristic by-products and sludges) are likewise excluded from the definition of solid waste if reclaimed.)

Although the Agency continues to believe that the jurisdictional logic behind this condition is sound, the judicial opinions regarding RCRA jurisdiction allow more weight to be given to environmental considerations. *API* v. *EPA (API)*, 906 F.2d at 740–41; *AMC* v. *EPA (AMC II)*, 907 F.2d 1179, 1186 (D.C. Cir. 1990). Thus, EPA has reevaluated this condition of the exclusion from the definition of solid waste due to its impact on the recycling of residues from secondary processes, in particular secondary lead smelters, and has determined that the condition of a closed-loop involving only primary processes is not legally compelled, and that this condition is less relevant as an environmental consideration, assuming that the secondary material is well-managed prior to reprocessing in the primary or secondary process that generated it.

Comments received on the Agency's proposal to remove this condition from the exclusion were favorable. Although several commenters said that the Agency should go further in modifying the existing regulations to encourage the recycling of hazardous wastes, such an action is beyond the scope of this proceeding. Such further action could result from the efforts currently underway to reevaluate the regulations applicable to hazardous waste recycling (i.e., the Roundtable discussions undertaken by the Definition of Solid Waste Task Force). One commenter also urged the Agency to make regulatory modifications only as part of the Definition of Solid Waste Task Force. EPA does not view the salutary and relatively modest change to the rules promulgated here as undermining the Task Force effort, and so is adopting the amendment.

Thus, the Agency is today removing this condition (i.e., that the process be a primary production process) from the "closed-loop" recycling exclusion. By doing this, secondary materials that are recycled back into the secondary production process from which they were generated are excluded from the definition of solid waste.

Following the same reasoning, the Agency proposed and is today finalizing a modification to section 260.30(b) a related case-by-case variance for materials that are reclaimed prior to reuse in the original primary production process from which they were generated

(see 50 FR 652 (January 4, 1985) for a discussion of the existing variance). This modification similarly expands the variance to make it available for materials that are returned to secondary processes, as well as those returned to primary processes.

2. Storage Prior to Recycling

At proposal, the Agency proposed to condition the "closed-loop" exclusion (and the related 260.30(b) variance) such that secondary materials recycled back into secondary processes from which they were generated would continue to be managed in an environmentally sound manner. The Agency proposed this condition to address concerns that, absent this condition, a listed waste that would otherwise be required to be managed in a protective manner (e.g., without direct placement on the land) could begin to be managed in an unprotective manner because, as an excluded secondary material, no regulatory requirements would apply. Storage of hazardous secondary materials on the land can be deemed to be a type of discarding ("part of the waste disposal problem" in the words of the D.C. Circuit), and hence provide a basis for classifying the materials as solid and hazardous wastes. *AMC II*, 907 F.2d at 1187. The only comments received addressing this proposed condition asked for more clarification of what would be considered "a protective manner." The Agency is promulgating the condition to the exclusion that such secondary materials be managed in a protective manner such that there is no placement on the land, that is no land disposal as defined in § 3004(k). See § 261.4(a)(10) and (11) where EPA has attached this same condition to comparable exclusions. Management that is designed to contain the material or otherwise prevent its release to the environment, such as in a containment building (see 40 CFR 264.1100) or tank, is permissible. The Agency believes that this condition will not require any changes in how these secondary materials are currently managed and will ensure that providing regulatory relief will not unintentionally increase risk to human health and the environment.

Additional changes were proposed and are being promulgated in this rule in order to implement and be consistent with the changes in variances discussed above. Previously the Regional Administrator granted variances from classification as a solid waste in 40 CFR 260.30, 260.31, 260.32, and 260.33. Today's rule transfers this authority to grant variances from the Regional Administrator to the Administrator. The changes in §§ 260.30 and 260.31 are necessary because such variances involve determining RCRA jurisdiction over secondary materials going to secondary processes. The other changes in authority to grant variances in §§ 260.32 and 260.33 are being made in order to be consistent with the provisions of §§ 260.30 and 260.31.

X. Compliance Monitoring and Notification

A. Compliance Monitoring

As proposed, the Agency is adopting an approach that will allow generators and facilities that manage organic toxicity characteristic (TC) wastes in systems other than those regulated under the Clean Water Act (CWA), those engaged in CWA-equivalent treatment prior to land disposal, and those injecting into Class I deep injection wells, to monitor or otherwise determine the presence of underlying hazardous constituents "reasonably expected to be present" in their waste. (See definition at 268.2(i).) This means that regulated entities do not have to ascertain the presence of all hazardous constituents for which EPA is promulgating a universal treatment standard. Generators may base this determination on their knowledge of the raw materials they use, the process they operate, and the potential reaction products of the process, or upon the results of a one-time analysis for the entire list of constituents at § 268.48.

The Agency solicited comment on whether generators should be required to do some testing of organic TC wastes to determine what underlying hazardous constituents are present and whether they meet UTS. Furthermore, the Agency noted that generators who also treat (including generators who decharacterize their waste but do not treat for underlying hazardous constituents) are classified as treaters, and would therefore be required to do some analysis of their wastes pursuant to § 268.7(b) and prepare a treater's certification pursuant to § 268.9(d) (58 FR 48134). A few commenters believed that generators should have to test their organic TC wastes at least once. Most commenters on this issue, however, strongly opposed a generator testing requirement and said that generators should be allowed to use knowledge of their wastes to make such a determination. Based on these comments, and the Agency's reluctance to require generator testing of characteristic wastes but not listed wastes, the Agency is not imposing a testing requirement on generators of organic TC wastes at this time.

The Agency believes, however, that certifications should identify which hazardous constituents may be present in the waste. This is necessary in order that there be some record that the waste indeed requires treatment of these constituents before it can be land disposed. As explained below, existing regulations already require mention of the presence of underlying hazardous constituents in some situations. EPA is slightly amending those regulations today to make the requirement uniform, as discussed below.

If a generator does not treat a prohibited characteristic waste, then the generator must prepare the standard notification and certification required by § 268.7(a)(1) (for wastes that have not been treated to meet the treatment standard) (see § 268.9(d), first clause). These requirements explicitly require mention of underlying hazardous constituents (§ 268.7(a)(1)(ii)).

If a generator partially treats a waste, however, for example by decharacterizing it but not treating the underlying hazardous constituents, there is a slight gap in the existing rules. Those rules require that a one-time notification and certification be prepared (§ 268.9(d)) and that the certification "must state the language found in 268.7(b)(5)" (§ 268.9(d)(2)). The § 268.7(b)(5) certifications, however, do not contemplate the possibility that wastes may require additional treatment for underlying hazardous constituents. To allow for this possibility, EPA is amending § 268.9(d) to state that in the event underlying hazardous constituents in a decharacterized waste have not been fully treated, the certification shall so state. EPA is also adding the following new certification to § 268.7(b)(5) to account for this circumstance:

> I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous toxicity characteristic or the characteristics of ignitability and corrosivity. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet universal treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

The Agency proposed, alternatively, that generators could be required to certify what underlying hazardous constituents are in the organic TC waste and whether they meet treatment standards, in a manner similar to the existing certification requirement for generators of wastes that meet the

treatment standards as generated (see 40 CFR 268.7(a)(2)(ii)) (58 FR 48134). This suggestion was generally not supported by commenters, and EPA is not adopting this approach in this final rule. Before considering broader changes, EPA will see if the amended requirement in § 268.9(d)(2)(i) discussed above is sufficient to create an adequate record.

B. LDR Notification

1. Constituents To Be Included on the LDR Notification

EPA solicited comment on how to limit the underlying hazardous ituents that must be monitored in ic TC wastes, and consequently ted on the LDR notification. menters on this issue said that the ated community should only be ired to address those constituents h are in the organic TC wastes as rated, prior to any subsequent g with other wastes. This is the oach being adopted in this rule. an approach is identical to the oach adopted in the May 24, 1993 im Final Rule (58 FR 29873) and is orted by commenters.

a simplifying measure, EPA is also tly amending the language of 3.7(a)(1)(ii) and § 268.7(b)(4)(ii). The uage in these paragraphs required the hazardous constituents in –F005 spent solvents, F039, wastes ct to the California list provisions 268.32 or RCRA section 3004(d), underlying hazardous constituents haracteristic wastes be listed on the notification. This language is being ged so that if all the hazardous tituents are present in the waste thus the generator/treater will be ing all the constituents), then there longer a need to list all the tituents on the notification form. If, ever, a subset of constituents are ent in the waste (and thus the rator/treater will only be treating e constituents), the constituents in waste must continue to be listed on notification form.

anagement in Subtitle C-Regulated lities

e Agency has information that y of the organic TC wastes that are managed in CWA, or SDWA systems eing treated in hazardous waste agement units (primarily erators) subject to RCRA subtitle C. ch a case, the notification, fication, and recordkeeping irements set out in 40 CFR 268.7 y (which includes identification of underlying hazardous constituents onably expected to be present in the organic TC waste). For organic TC wastes, once the waste is no longer hazardous, however, further recordkeeping and documentation requirements are set out in 40 CFR 268.9. Section 268.9 requires that the generator or treater (including generators who treat, see 51 FR 40598, November 7, 1986) prepare a one-time notification which is sent to the EPA Region or authorized state and also kept in the generator's or treater's files. Treaters must certify that they are familiar with the treatment process used at their facility and that the process can successfully treat the waste to meet the treatment standards without impermissible dilution. See § 268.7(b)(5), which applies to persons who treat formerly characteristic wastes (see existing § 268.9(d)(2)). The Agency believes that, normally, at least some waste analysis is needed to make a good faith showing for meeting the treatment standards, given the number of hazardous constituents that could be covered by those standards.

3. Potential Management of Decharacterized Wastes at a Subtitle D Waste Management Facility

The Agency solicited information on certain potential waste management practices for decharacterized TC wastes to help determine whether new notification requirements are needed. In particular, EPA requested whether generators or treaters, after removing the characteristic, send the decharacterized TC waste off-site to a Subtitle D (nonhazardous waste) treatment facility for further treatment to address the underlying hazardous constituents (58 FR 48134). The Agency solicited comment on potential enforcement concerns if there is not a federal requirement that generators notify Subtitle D treatment and disposal facilities receiving decharacterized wastes.

One commenter stated that the generator of the waste should be made responsible through an EPA mandate to assure that treatment of underlying hazardous constituents at a subtitle D facility meets LDR treatment standards. Other commenters thought that the generator should notify the subtitle D facility of the underlying hazardous constituents, but they did not specify that a mandated notification should be required. However, other commenters said that existing arrangements between generators and off-site treatment facilities would suffice because EPA already requires generators to notify the EPA Regional office or Authorized State when it is sending decharacterized waste to a subtitle D facility under 40 CFR 268.9. One commenter pointed to the contract between the generator and the subtitle D facility as the mechanism by which generators would notify the treatment facility of what underlying hazardous constituents are in the waste.

Only one commenter offered information on the extent that the practice of sending decharacterized wastes to a nonhazardous waste treater for treatment of underlying hazardous constituents is actually occurring. This commenter asked generators who send waste to their facilities how often they remove the characteristic prior to sending the decharacterized waste to a nonhazardous waste treatment facility for treatment of underlying hazardous constituents. They found that roughly 2–3 percent of the wastes from their survey group were decharacterized D001 and D002 wastes being sent off-site for further treatment at a nonhazardous waste treatment facility that employs CWA wastewater treatment or stabilization of underlying hazardous constituents. The commenter added, however, that there will be less decharacterized TC wastes going off-site for treatment of underlying hazardous constituents because these wastes require more sophisticated treatment systems to remove the characteristic than do the D001 and D002 wastes.

Based on this information, the Agency has decided, for the time being, not to impose new notification requirements in today's final rule (a new certification is being added in this rule to § 268.7(b)(5)(iv) as described above). The Agency continues to believe that very little decharacterized TC wastes will be sent to a subtitle D facility for treatment of underlying hazardous constituents. If such a practice should occur, generators and Subtitle D facilities have substantial incentives (such as CERCLA liability) to exchange and verify compliance with treatment standards for underlying hazardous constituents independent of federal notification requirements.

If, however, information becomes available that generators are sending substantial amounts of decharacterized TC wastes off site to subtitle D facilities for treatment of underlying hazardous constituents, or that there is a paperwork loophole that existing arrangements between generators and treatment facilities do not address, today's approach will be revisited to determine whether such tracking is necessary to assure "cradle to grave" tracking of wastes and better informing subtitle D treatment and disposal companies of the requirements to which these decharacterized wastes remain subject.

XI. Implementation of the Final Rule

This section presents flowcharts of what EPA expects will be the most frequent set of decisions that must be made to implement the regulations for TC organic wastes (including soils), mixtures of TC organic wastes with listed wastes, and mixtures of TC organic wastes with ignitable or corrosive wastes. A flowchart describing the decisions necessary to comply with treatment standards for Phase II newly listed wastes is also included Additionally, a flowchart is presented that outlines the decisions necessary to comply with treatment standards for debris contaminated with Phase II wastes. And, as a reminder that TC metals are not regulated by today's rule, a flowchart is also included of the decisions that must be made to determine if a characteristic metal waste is subject to the LDRs at this time based on regulation of Extraction Procedure (EP) metals in the Third Third rule in 1990, or is not yet subject to LDR regulation because TC metals will not be addressed until a later rulemaking. These flowcharts present only the major decisions that must be made; a thorough reading of the regulations will be necessary to fully implement the LDRs. There are requirements for specific waste management scenarios that are not included in these flowcharts because they would have become too complex to be generally useful.

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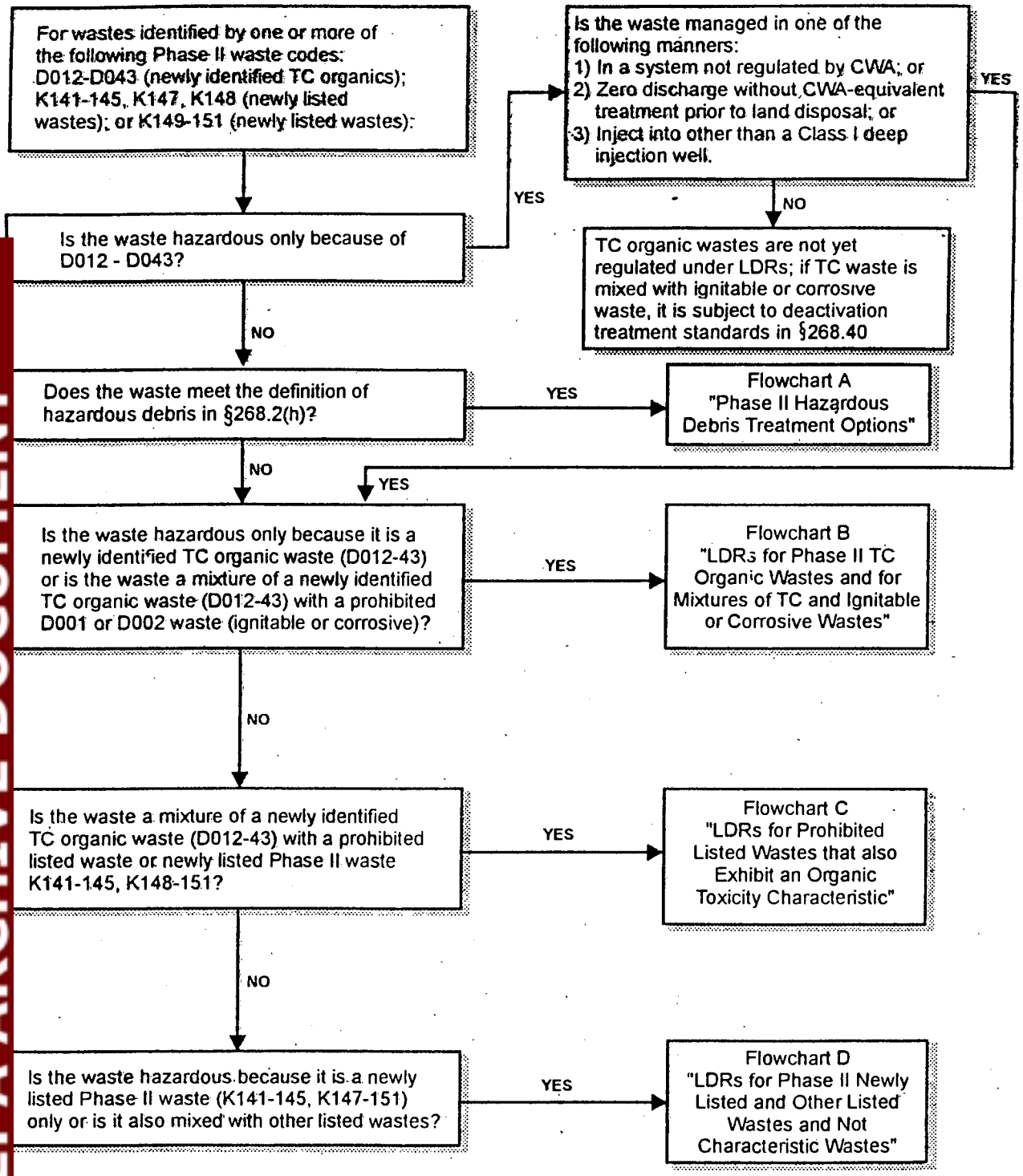
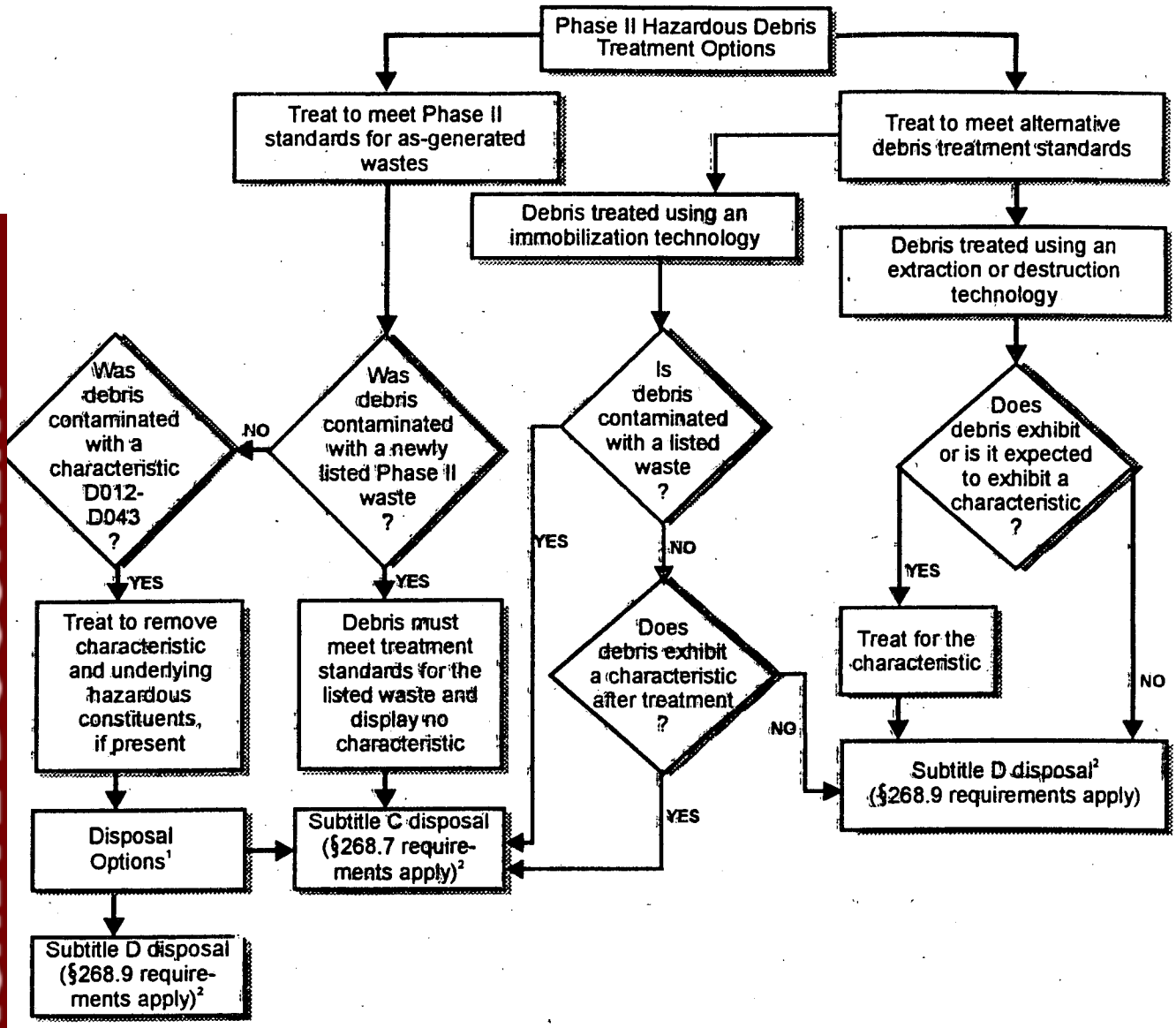
Implementation of Key Phase II LDRs



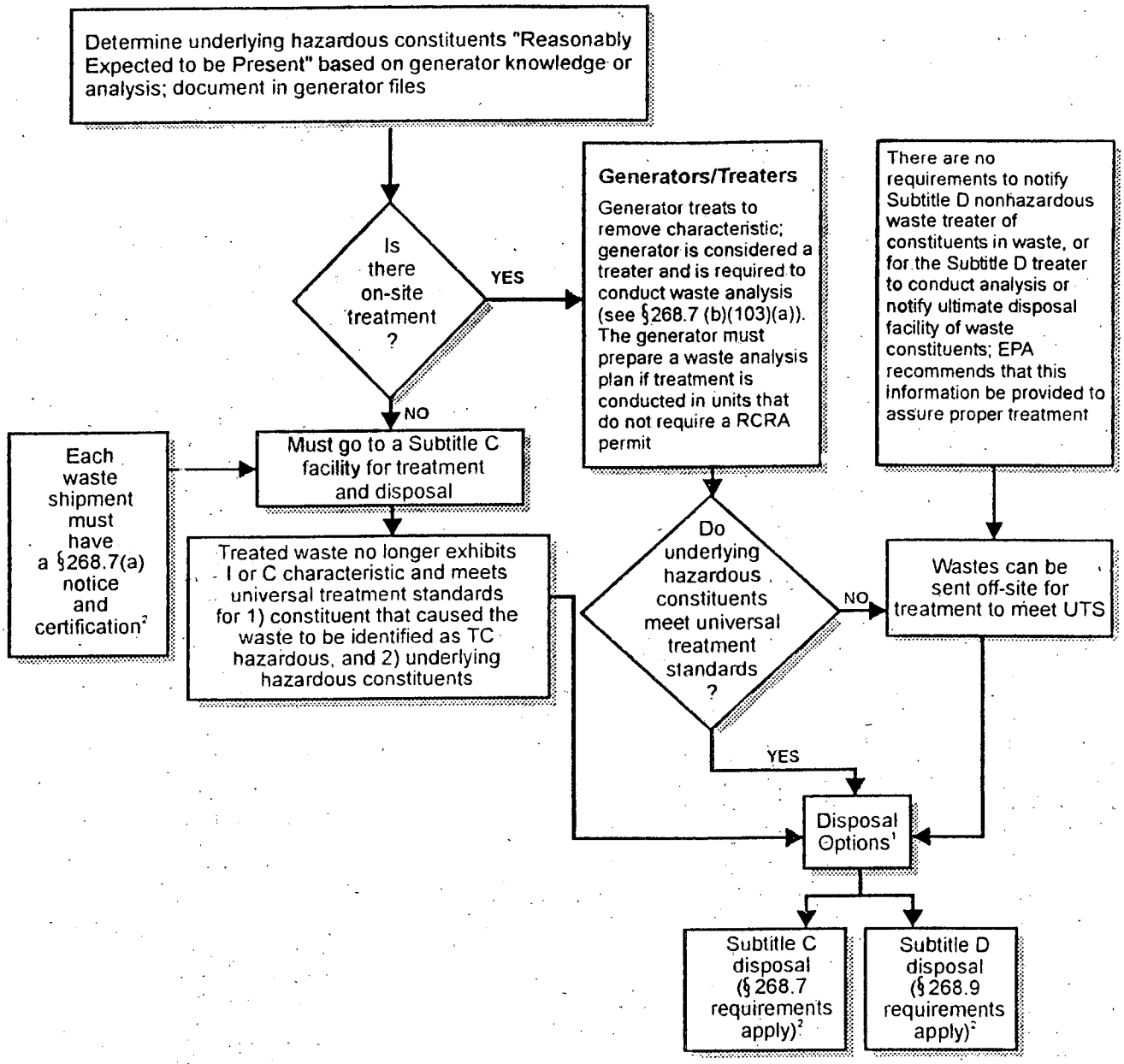
Flowchart A
Phase II Hazardous Debris Treatment Options



[1] *Treaters have the option of disposing of their treated wastes in either a Subtitle C or a Subtitle D facility.*

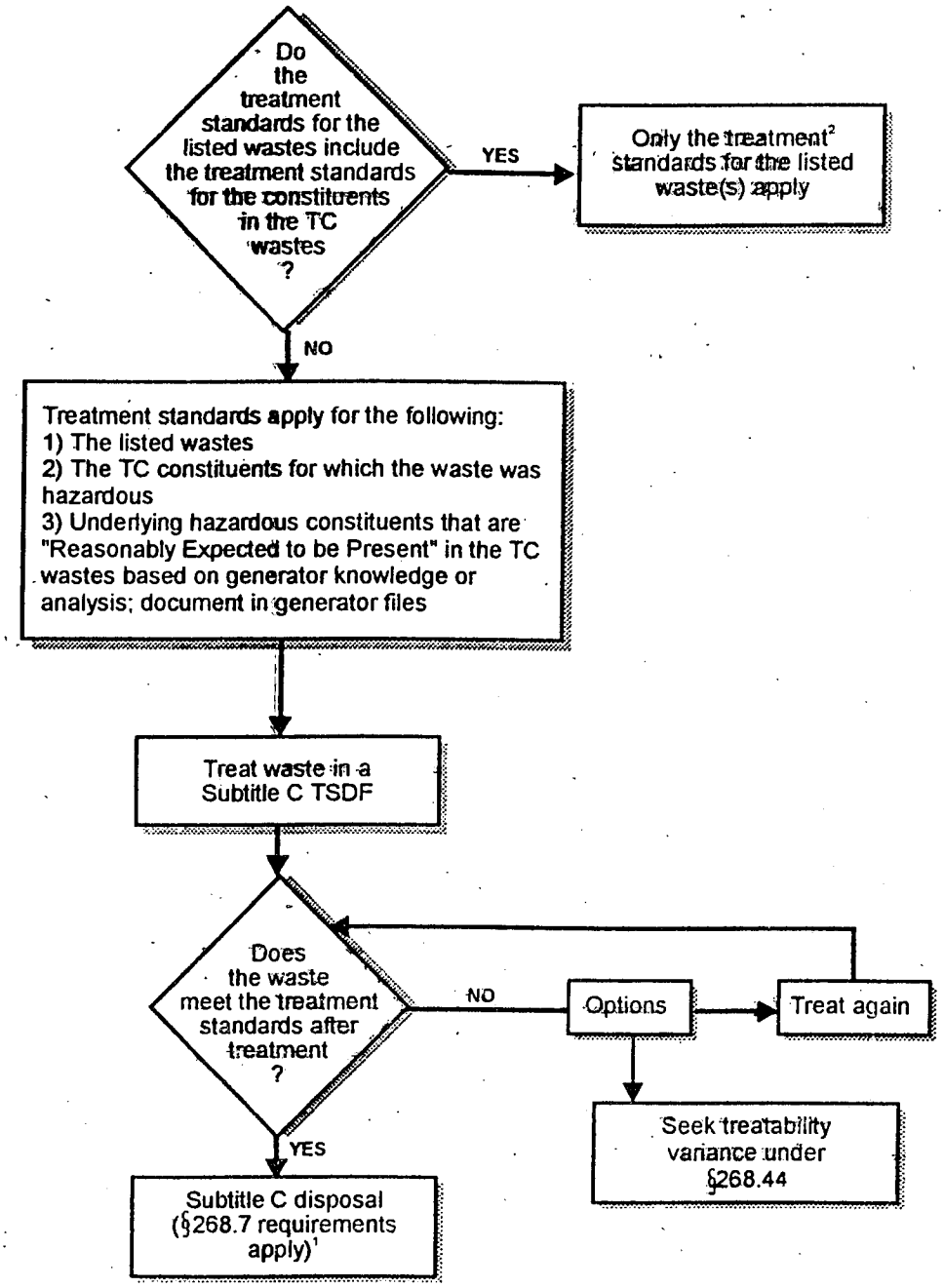
[2] *See Part 268, Appendix X, Table 1 for a detailed summary of all notification and certification requirements under §268.7 and §268.9*

Flowchart B
LDRs for Phase II TC Organic Wastes and for Mixtures of TC and Ignitable or Corrosive Wastes



Treaters have the option of disposing of their treated wastes in either a Subtitle C or a Subtitle D facility
See Part 268, Appendix X, Table 1 for a detailed summary of all notification and certification requirements under §268.7 and §268.9

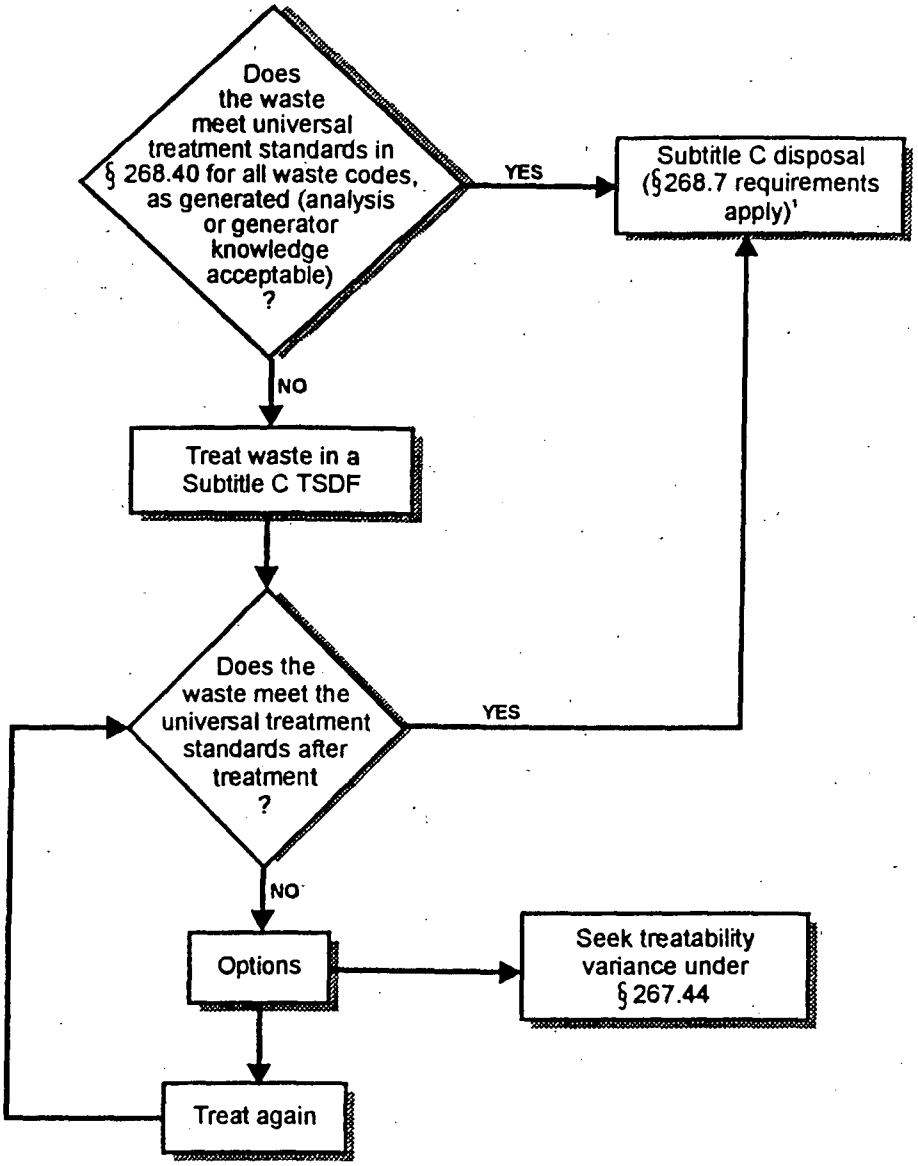
Flowchart C
LDRs for Prohibited Listed Wastes that also Exhibit an Organic Toxicity Characteristic



See Part 268, Appendix X, Table 1 for a detailed summary of all notification and certification requirements under §268.7 and §268.9

For as-generated wastes; would not apply when a TC organic waste is intentionally mixed with a listed waste (in this case the treatment standards for the underlying hazardous constituents in the TC waste and the regulated constituents in the listed waste would apply).

Flowchart D
LDRs for Phase II Newly Listed and Other Listed Wastes and Not Characteristic Wastes



See Part 268, Appendix X, Table 1 for a detailed summary of all notification and certification requirements under §268.7 and § 268.9

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XII. Guidance to Applicants for Treatability Variances for As-Generated Wastes

The Agency's existing regulations provide for variances from treatment standards if a waste cannot be treated to the specified treatment standard or if the treatment technology on which the standard is based is inappropriate for the waste. Section 268.44 (a). For guidance on treatability variances for soil, including site-specific, non-rulemaking variances, see section I.E. "Treatment Standards for Hazardous Soil" in this rule. To be granted a treatability variance, a petitioner must show that "because the physical or chemical properties of the waste differs significantly from wastes analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods." *Id.* A demonstration that the waste cannot be successfully treated can be made "by showing that attempts to treat the waste by available technologies were not successful, or through appropriate analyses of the waste which demonstrate that the waste cannot be treated to the specified levels." 51 FR at 40606 (Nov. 7, 1986). EPA evaluates treatability variance requests by "first look[ing] at the design and operation of the treatment system being used. If EPA determines that the technology and operation are consistent with BDAT, the Agency will evaluate the waste to determine if the waste matrix and/or physical parameters are such [that] the BDAT properly reflects treatment of the waste." *Id.* The guidance set out below applies exclusively to treatability variances (for as-generated wastes) evaluated by EPA headquarters and processed pursuant to rulemaking procedures.

In order to settle a lawsuit challenging the Agency's grant of treatability variances to two particular facilities, 56 FR 12351 (March 25, 1991), the Agency has agreed to provide some clarifying guidance regarding treatability variances, which essentially restates existing Agency practice and does not call into question the validity of any treatability variance the Agency has issued. First, as stated in 1986, to support an application for a treatability variance pursuant to § 268.44(a) for process waste, the applicant should collect and analyze a sufficient number of samples of the untreated waste to accurately characterize it. 51 FR at 40606 (Nov. 7, 1986). In general, the Agency would expect the applicant to collect and analyze four samples of its untreated and treated waste. (This corresponds to the minimum number of samples applicants for delisting pursuant to 260.20 must submit.) However, the exact number of samples would be determined by EPA as part of the Agency's evaluation of each treatability variance application (and so could be less than four samples in a particular case).

Second, the applicant should normally investigate and report on demonstrated and reasonably available pretreatment steps that could significantly improve the effectiveness of the treatment the applicant is conducting. 51 FR at 40606. What the Agency has in mind is that applicants not overlook potentially simple types of pretreatment to remove an interfering parameter; for example, settling to reduce excess total dissolved solids. The Agency does not intend that applicants perform an extensive or expansive engineering analysis. Nor does the Agency intend that applicants be required to utilize treatment systems significantly different from those the Agency evaluated when promulgating the treatment standard. Rather, the Agency wishes to assure that applicants not overlook some relatively obvious means of removing interferences. Again, in particular cases, it may not make sense to conduct this type of analysis, in which case no such evaluation would be necessary.

Third, the applicant should make a good faith effort to explain why the treatment standard is not achievable for its waste. 51 FR at 40606. This good faith effort is to be based on the applicant's knowledge of its process, and is not to entail additional expense (such as a consultant's engineering analysis). As a general matter, the Agency simply believes that some thought should be given (and documented) as to what might be causing the problem.

Finally, EPA's general policy has been and will be to publish a notice of its proposed decision on applications for treatability variances in the **Federal Register**, § 261.44 (e), and to allow a minimum of 30 days for the public to comment on the proposal. 51 FR 40607. All applicants will have the opportunity to comment on the reasonableness of applying one or more of these foregoing statements of guidance to their applications, and, as a result, EPA may decide not to apply them.

EPA notes further that there have been only a handful (fewer than 10) of applications for treatability variances since implementation of the land ban (aside from applications relating to contaminated media and debris), of which EPA has granted three. In the applications relating to electroplating wastes cited earlier, the Agency inferred that something about the applicants' wastes was making the wastes more difficult to treat than the waste EPA evaluated when promulgating the applicable treatment standard. This inference was based on the fact that the applicants were treating the waste with properly designed and operated BDAT treatment technology, namely the same type of treatment technology on which the treatment standard is based. 56 FR at 12352. EPA emphasizes that this type of inference was, and remains, permissible.

XIII. Clarifications and Corrections to Previous Rules

A. Corrections to the Interim Final Rule Establishing Land Disposal Restrictions for Certain Ignitable and Corrosive Wastes

On May 24, 1993, the EPA published an interim final rule establishing treatment standards for ignitable and corrosive characteristic wastes except those disposed in facilities regulated under the Clean Water Act (CWA), or Class I injection wells subject to the Safe Drinking Water Act, or zero-discharge facilities engaged in CWA-equivalent treatment. In today's rule, the Agency is clarifying that the provisions of the interim final rule remain in effect unless and until they are superseded in future LDR rules. The Agency does not plan to issue a final rule at this time; however, it is using the comments received on the interim final rule in developing future rules concerning the portions of the Third Third Land Disposal Restrictions Rule which were remanded by the D.C. Circuit (for discussion of the court ruling, see 58 FR 29861).

Among other things, the interim final rule established treatment standards for the underlying hazardous constituents reasonably expected to be present in the affected wastes at the point of generation. These treatment standards were the concentration levels for the constituents found in F039 (multisource leachate) wastewaters and nonwastewaters. The Agency is clarifying here that the universal treatment standards (UTS) established today supersede the F039 standards. Therefore, underlying hazardous constituents in the ignitable and corrosive wastes covered by the interim final rule must meet the 40 CFR 268.48, Table UTS—Universal Treatment Standards, levels before they can be land disposed. This change is being made simply so that the references to treatment standards for underlying hazardous constituents in ignitable and corrosive wastes in the interim final rule

will be the same as those established for organic TC wastes in today's rule.

Also in the interim final rule, the Agency promulgated requirements to address a concern raised by the court about the potential for volatile organic constituent (VOC) emissions to create violent reactions during the dilution of ignitable and reactive wastes (see 58 FR 29873). The regulatory language in §§ 264.1(g)(6) and 265.1(c)(10), however, inadvertently promulgated requirements for ignitable (D001) wastes and corrosive (D002) wastes. These sections are being corrected in today's rule to indicate, rightly, that the requirements apply to ignitable (D001) and reactive 03) wastes.

Corrections to the Phase I Rule ablishing Land Disposal Restrictions Newly Listed Wastes and Hazardous ris

oday's rule clarifies several issues n the final rule establishing Land posal Restrictions for Newly Listed stes and Hazardous Debris (57 FR 94, August 18, 1992).

he first issue being corrected ponds to questions over which tment standards can be used for ting hazardous debris. It was stated rly in the preamble to the August 1992 rule that debris must be treated ither using one of the specified nologies in § 268.45, or, as an rnative, by meeting LDRs for the cific prohibited listed or racteristic waste with which the ris is contaminated (57 FR 37221). sequent comment from the regulated nmunity indicate that this fact was made completely clear in the ulatory language of that rule. Certain mmenters suggested that a revision of paperwork requirements found in 68.7 indicating that generators have a ice as to which treatment standards y may use would help alleviate the fusion.

PA is, therefore, revising 68.7(a)(1)(iv) and § 268.7(a)(3)(v) to ect that it is not mandatory to meet alternative debris standards in 68.45, and that generators have the ion to meet the treatment standards the as-generated wastes taminating the debris. It should be ed that the paperwork requirements meeting treatment standards for as- erated wastes contaminating debris the same as those for as-generated stes. A new paragraph is being added he regulatory language to indicate .

n addition, consistent with EPA's rt to simplify LDR paperwork uirements, EPA is shortening the ification statement accompanying prohibited debris. In § 268.7(a)(1)(iv) and § 268.7(a)(3)(v), as promulgated on August 18, 1992, the statement "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45" was required to be placed on the LDR notification, after listing the contaminants subject to treatment. EPA is revising that particular statement today so that merely referencing § 268.45 after listing the contaminants subject to treatment is all that must be included on the LDR notification.

The second issue the Agency wishes to clarify and correct today concerns the language in § 268.45(b)(2) of the August 18, 1992 **Federal Register**. This section states that the contaminants subject to the alternative treatment standards for hazardous debris, which were promulgated in the August 18, 1992 rule, are those constituents for which BDAT standards are established in §§ 268.41 and 268.43. The Agency has received several letters asking why section 268.42 was not included in that language. Section 268.42 lists those wastes for which EPA established a treatment method as the standard. The reason section 268.42 was not included in the language in § 268.45(b)(2) is that only the wastes themselves, and not waste constituents, are listed in § 268.42.

The Agency fully intends, however, that debris contaminated with those wastes be subject to the alternate debris standards. Therefore, § 268.45(b)(2) is being clarified today to read "The contaminants subject to treatment for debris that is contaminated with a prohibited listed hazardous waste are those constituents or wastes for which BDAT standards are established for the wastes under §§ 268.41, 268.42, and 268.43."

The third issue the Agency is clarifying concerns exactly when surface impoundments which are newly subject to RCRA section 3005(j)(1) are expected to be in compliance with the requirements of § 265.221 (a), (c), and (d). As is stated in § 268.5(h)(2)(v) (as promulgated at 57 FR 37270, August 18, 1992), such surface impoundments must be in compliance within 48 months after the promulgation of additional listings or characteristics for the identification of hazardous waste. This is the maximum time allowed by RCRA section 3005(j)(6).

EPA mistakenly stated in two separate places in the preamble to the August 18, 1992 rule that the compliance date was 48 months from the effective date of a waste identification or listing (57 FR 37220). The Agency wants to make it clear that the compliance date which was promulgated in the regulations, and which is mandated by RCRA 3005(j)(6), is correct (57 FR 37270). These surface impoundments are thus required to be in compliance 48 months from the promulgation date of a new identification or listing. § 268.5(h)(2)(v).

The promulgation date is the date the Administrator signs the rule which lists the new waste(s). The effective date is the date the new waste must come into compliance with hazardous waste management requirements, and may be six months from the promulgation date. The Agency believes that 48 months to retrofit a surface impoundment is a reasonable amount of time, and believes that effort should begin as soon as the listing of a waste is published in the **Federal Register**; there is no reason to wait to begin retrofitting until a new listing or identification actually becomes effective. In any case, section 3005(j)(6) allows no other option.

Finally, in § 268.38(a) of this rule, EPA is prohibiting debris that is contaminated with the wastes that were prohibited in the Phase I rule. EPA inadvertently omitted to include such contaminated debris in the August 18, 1992 rule.

C. Amendment of Boiler and Industrial Furnace Rules for Certain Mercury-Containing Wastes

1. The Proposal

The Agency proposed a technical clarification to the Boiler and Industrial Furnace (BIF) rules on July 21, 1994 (59 FR 31964), that would exempt certain mercury-bearing hazardous wastes generated by the Chlorine Industry from the provisions of 266.100(c). Under this provision, owners and operators of smelting, melting, and refining furnaces that process hazardous wastes solely for metal recovery are conditionally exempt from regulation. To be exempt, the owner or operator must comply with certain notification, sampling and analysis, and recordkeeping provisions (see 266.100(c)(1)(i)). In addition, as indicated above, the waste must be processed solely for metal recovery; to be processed solely for metal recovery, the waste can not have a heating value greater than 5000 BTU/lb or have a total concentration of organic compounds listed in Appendix VIII of Part 261 greater than 500 ppm by weight. Wastes that have a heating value greater than 5000 BTU/lb or have a total concentration of hazardous organic compounds exceeding 500 ppm are considered by EPA to be burned for energy recovery and destruction, respectively and, thus, are subject to the BIF rules.

The Agency generally believes that most wastes that meet these criteria are appropriately subject to the BIF regulations. However, in certain instances, wastes that are burned for legitimate metal recovery can also exceed the 5000 BTU/lb and 500 ppm organic compound limits, in which case standards other than those in the BIF rules are likely more appropriate. (See 59 FR at 29776 (June 9, 1994) proposing CAA MACT standards for secondary lead smelters and indicating why RCRA air emission standards are not needed.) In fact, the Agency has specified a set of lead and nickel-bearing hazardous wastes that exceed the energy recovery r destruction limits, but are still onditionally exempt from the BIF rules f these wastes are legitimately burned or metal recovery (see 266.100(c)(3) and ppendices XI and XII to Part 266).

In the proposed technical larification, the Agency defined some dditional hazardous wastes—pecifically, those generated by the hlorine Industry and which are uitable for mercury recovery—that ould be recovered in mercury retorting nits without those units being subject o the BIF rules (provided the owners or perators of these units meet certain onditions). The Agency proposed this hange based on the fact that these astes contain high levels of mercury rom hundreds of parts per million to s much as 45%) and, thus are ppropriate for recovery; in addition, he retort units in which these wastes re processed must be subject to missions controls under the Clean Air ct. See § 268.42 (treatment standards or high mercury subcategory wastes hat require retorting units to be subject o the CAA or comparable standards for ontrol of mercury). It should also be oted that the Chlorine Institute, as part f their comments on the Phase II LDR roposal, requested that the Agency xempt these wastes from the BIFs ules. The remainder of this section of he preamble discusses the comments eceived and our response to those omments.

. Comments and the Final Rule

The Agency received comments from ive parties, Borden Chemical and lastics (BCP), Bethlehem Apparatus BA), PPG Industries (PPG), Olin hemicals (Olin), and the Chlorine nstitute (CI). Their collective comments nd the Agency's response follows.

The proposal limited the conditional xemption to certain mercury-bearing azardous wastes generated by the hlorine Institute. BCP, BA, and CI rgued that the proposed change was oo narrow, and that other mercury recovery units may also process combustible materials for legitimate metals recovery. Commenters thus recommended that the exemption should apply to all processors of mercury wastes. The Agency generally agrees with this position. Upon reevaluation, EPA believes there is no need to differentiate between units in the Chlorine Industry and similar units outside the Chlorine Industry. Therefore, the Agency is promulgating a rule which includes units operated by manufacturers and users of mercury or mercury products.

BCP addressed a second option for broadening the exemption so that devices other than those operated in the Chlorine Industry could process combustible wastes for legitimate metals recovery. BCP suggested EPA define mercury as a precious metal and allow processors to burn mercury laden hazardous wastes subject to the Agency's BIF precious metals exemption (see § 266.100(f)). EPA does not agree with BCP's contention that mercury is a precious metal. Mercury is not considered a precious metal by EPA or other Agencies or organizations. Precious metals are defined by the Bureau of Mines to include gold, silver, platinum, and palladium (Mineral Commodity Summary, 1993), and by EPA at 40 CFR 266.70 to include gold, silver, platinum, palladium, iridium, osmium, rhodium, and ruthenium, all metals whose value assures adequate control. Therefore, EPA rejects the approach suggested by BCP.

BCP, PPG, Olin, and CI also commented that the list of materials in the proposed technical clarification should be broadened to include the following additional items:

Sweepings
Respiratory Cartridge Filters
Cleanup Articles
Plastic Bags and Other Contaminated Containers
Laboratory and Process Control Samples
Wastewater Treatment Plant Sludge and Filter Cake
Mercury cell process sump and tank sludges
Mercury cell process solids
K106
Recoverable levels of mercury contained in soil

Upon evaluation, the Agency agrees that of these materials are appropriate for an exemption as long as they have recoverable levels of mercury. However, many mercury units, e.g., retorters, are not combustion devices and organic emissions may not be controlled in these units. Therefore, the Agency is concerned that materials with recoverable levels of mercury, but laden with hazardous organics, may not provide adequate destruction of the hazardous organics in exempt retorters, and thus, may not be protective of human health and the environment. For that reason, the Agency is promulgating a broadened list of materials but is limiting the exemption to these wastes specifically identified and that contain less than 500 ppm of part 261, appendix VIII organics.

Finally, there appears to be some confusion by the Chlorine Industry about their status under the BIF rules (collectively, those regulations set forth in 40 CFR Part 266, Subpart H). CI, PPG, and Olin argued that they are not subject to BIF because they do not "burn" or "combust" anything and the BIF rules are written for combustion devices. The Agency agrees that many mercury recovery devices do not "burn" or "combust" by design; however, these units are Industrial Furnaces as defined in § 260.10 and, thus, are subject to the appropriate BIF rules. In particular, § 260.10 defines Industrial Furnaces as "devices * * * that use *thermal treatment* to accomplish recovery of materials" and that these include "refining furnaces". [Emphasis added.] Mercury recovery units raise the temperature of the waste to aid in the recovery and refining of mercury. Therefore, they are refining furnaces. In addition, § 266.100(c) states that "smelting, melting and refining furnaces * * * that *process* hazardous waste solely for metals recovery are conditionally exempt * * *." [Emphasis added.] This language includes all refining furnaces that *process* hazardous waste, irrespective of whether the process to achieve this end is combustion or not. Therefore, mercury recovery devices are BIFs, and come within the terms of § 266.100(c). EPA is using the term "mercury recovery furnace" in today's amended rule to further clarify this point. (It should be noted that compliance with the BIF rules for these devices are not rigorous. It requires sending a one time written notification to the regional Director and following the provisions set forth in § 266.100(c).)

Mercury recovery operators should note that the changes discussed in this section of the preamble only apply to units which have a metals recovery exemption. Units which process these wastes without the proper exemption are in violation of the BIF rules and subject to enforcement action.

D. Amendment of Rules on Use Constituting Disposal

In 1985, EPA created a separate regulatory regime for hazardous wastes that are recycled by being used in a manner constituting disposal. Part 266 subpart C.[1] These rules provide, in essence, that the wastes can be so used without being subject to the RCRA facility standards if the waste-derived product (i.e. the hazardous wastes that is being used by being applied to the land (i.e. used in a manner constituting disposal)) has been "produced for the general public's use," has undergone a chemical change so as to be inseparable by physical means, and if it meets the applicable LDR treatment standard. See 66.20(b).

Hazardous wastes used in a manner constituting disposal that do not satisfy these conditions are subject to all of the Subtitle C standards. See § 266.23(a). In promulgating this provision in 1985, however, the Agency neglected to mention the then newly-enacted land disposal restriction requirements as among the standards to which the wastes were subject. The Agency obviously was not intending to amend the statute, and cannot override an express statutory requirement by regulation. The Agency only recently noticed this omission, and is using this opportunity to correct the error. Consequently, the Part 268 requirements will be added to the list of requirements in § 266.23(a) for those hazardous wastes not satisfying the conditions of 266.20(b). This amendment is effective days after publication of today's rule.

V. Capacity Determinations

This section presents the data sources, methodology, and results of EPA's capacity analysis for today's rule. Section A summarizes the results of the capacity analysis for the wastes covered this rule; Section B summarizes the analysis of available capacity; Section C summarizes the capacity analysis for those newly identified and listed wastes that are land disposed in units other than deep injection wells; Section D summarizes the capacity analysis for wastes mixed with radioactive contaminants; Section E summarizes the results of the capacity analysis for high TOC ignitable and TC pesticide wastes and newly listed and identified wastes injected into Class I deep wells; and Section F presents the results of the capacity analysis for hazardous soil and debris contaminated with the newly listed and identified wastes covered in this rule.

In general, EPA's capacity analysis methodologies focus on the amount of waste currently land disposed that will require alternative commercial treatment as a result of the LDRs. Land-disposed wastes that do not require alternative commercial treatment (e.g., those that are currently treated using an appropriate treatment technology or that will be treated using an alternative on-site treatment system) are excluded from the quantity estimates. In addition, wastes managed in CWA, SDWA, CWA-equivalent systems are not included in this rule and will be addressed in an upcoming rulemaking.

EPA's decisions on whether to grant a national capacity variance are based on the demand for commercial treatment or recovery technologies. Consequently, the methodology focuses on deriving estimates of the quantity of wastes that will require commercial treatment as a result of the LDRs; quantities of waste that will be treated on-site or by facilities owned by the same company as the generator are omitted from the required commercial capacity estimates.

The major capacity information collection initiative for this rule was an EPA survey of all land disposal facilities that manage newly identified TC organic wastes (including TC-contaminated soil and debris) in land-based units (TC Survey). The survey, conducted in the spring of 1992, is a census of approximately 140 facilities. EPA identified the universe primarily based on those facilities that had submitted permit modifications or received interim status for managing these wastes. For each facility, EPA requested waste-stream specific data on newly identified TC organic wastes and information on on-site land disposal units and treatment and recovery systems.

EPA developed a data set of the information on the TC Survey results. Specifically, the data set contains information on the quantities of newly-identified organic TC wastes that will require commercial treatment capacity as a result of the LDRs. The data collected and the survey used for the required capacity estimates are part of the docket for today's final rule.

A. Capacity Analysis Results Summary

For the organic TC wastes (D018–D043), EPA estimates that 220,000 tons of newly identified organic TC sludges and solids will require alternative commercial treatment as a result of today's final rule.

EPA estimates that much smaller quantities of the other listed wastes included in today's rule will require alternative commercial treatment. Fewer than 100 tons of chlorinated toluene (K149–K151) nonwastewaters are currently being land disposed and will require alternative treatment due to the LDRs. Approximately 4,600 tons of coke by-product (K141–K145, K147 and K148) nonwastewaters are currently being land disposed. However, comments to EPA indicate that the majority of the nonwastewaters are recycled or used for energy recovery and, therefore, alternative treatment may not be required. No K141–K145, K147 and K148 wastewaters are currently being land disposed. No K149–K151 wastewaters are currently being land disposed.

The quantities of radioactive wastes mixed with wastes included in today's final rule and currently being land disposed are generated primarily by the U.S. Department of Energy (DOE). EPA estimates that 1,300 m^3 of high-level waste, 380 m^3 of mixed transuranic waste, and 1,100 m^3 of mixed low-level waste containing wastes covered in today's rule will be generated annually by DOE. These estimates exclude mixed wastes currently in storage, environmental restoration wastes, and soil and debris. DOE currently faces treatment capacity shortfalls for some high-level wastes and for all projected mixed transuranic waste generation. In addition, although the annual DOE treatment capacity for mixed low-level wastes exceeds the estimated annual generation, most of this capacity is limited to treatment of wastewaters with less than one percent total suspended solids, and is not readily adaptable for other waste forms. Consequently, DOE also faces a treatment capacity shortfall for mixed low-level nonwastewaters. Furthermore, DOE has indicated that it will generally give treatment priority to mixed wastes that are already restricted under previous LDR rules.

With respect to certain wastes being injected into deep wells, EPA has very limited information that differentiates high TOC D001 ignitable wastes from low TOC D001 ignitable wastes, particularly with reference to the type of Class I injection well (i.e., nonhazardous versus hazardous) the wastes are ultimately disposed into. The information the Agency does have indicates that both D001 ignitable wastes and D012–D017 TC pesticide wastes are deep well injected into Class I hazardous wells with no-migration exemptions. However, several

[1] These rules apply, of course, only if the recycling is legitimate, and not a form of surrogate disposal. § 266.20(a) applies only to "recyclable materials", which are hazardous wastes being recycled. § 261.6(a)(1). This does not include wastes that are abandoned by being disposed of. 1.2(b)(1).

commenters to the proposed rule, and other industries with Class I injection wells, indicated that it would be extremely difficult to identify, segregate, treat, and/or arrange for disposal of these waste streams in a short time frame. Consequently, EPA is granting these wastes a one-year national capacity variance.

The Agency also estimates that up to 120,000 tons of hazardous soil and 34,000 tons of hazardous debris contaminated with the newly identified organic TC wastes are expected to require alternative commercial treatment.

Table 1 lists each waste code for ich EPA is promulgating LDR ndards today. For each code, this le indicates whether EPA is granting national capacity variance for land- sposed wastes. As indicated, EPA is t granting a two-year national pacity variance for the newly entified organic TC wastes, including il and debris, nor for the listed wastes vered under this rule. Rather, EPA is anting a three-month variance. (This tension does not apply to wastes with specified longer national capacity riance.) EPA is delaying the effective te because the Agency realizes that en where data indicate that sufficient eatment capacity exists, such capacity ay not be immediately available. dditional time may be required to termine what compliance entails, design tracking documents, possibly just facility operations, and possibly gregate waste streams. EPA believes ese legitimate delays can be compassed within a short-term pacity variance because the ability to t wastes to the treatment capacity in lawful manner is an inherent part of sessing available capacity. However, e Agency is granting a two-year tional capacity variance for mixed dioactive wastes (i.e., radioactive astes mixed with newly identified TC ganic constituents D018–D043), cluding soil and debris contaminated ith mixed radioactive wastes.

EPA also is granting a one-year tional capacity variance to allow the ass I injection facilities an appropriate ad time to identify and then manage eir high TOC D001 and D012–D017 aste streams by developing practical d sound treatment and/or disposal tions and ultimately to come into mpliance with today's rule.

TABLE 1.—CAPACITY VARIANCES FOR NEWLY LISTED AND IDENTIFIED WASTES [1]

Waste type	Variance for surface-disposed wastes	Variance for deep well-disposed wastes
High TOC D001 Wastes.	No	One year
D012–D017 Wastes [2].	No	One year
D018–D043 Nonwastewaters.	No	N/A
K141–K145 Wastes.	No	No
K147–K148 Wastes.	No	No
K149–K151 Wastes.	No	No
Soil (Phase II Wastes).	No	N/A
Debris (Phase II Wastes).	No	N/A
Mixed Radioactive	Two years	N/A
Mixed Radioactive Soil and Debris (with Phase II Wastes).	Two years	N/A

N/A=Not applicable.

[1] EPA is granting a three month national capacity variance for all the newly identified and listed wastes covered in this rule to handle logistical problems associated with complying with the new standards.

[2] Newly identified TC wastes that were not previously hazardous by the old EP Leaching Procedure.

B. Analysis of Available Capacity

The analysis of commercial capacity for newly identified and listed wastes is based primarily on data received in voluntary data submissions. These data include estimates of available capacity at commercial combustion facilities provided by the Hazardous Waste Treatment Council (HWTC) on incinerators and the Cement Kiln Recycling Coalition (CKRC) on cement kilns that burn hazardous wastes. Capacity for other conventional treatment processes (e.g., stabilization) is based on the 1990 TSDR Survey Capacity Data Set, which contains results from the National Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Survey (the TSDR Survey), and required capacity information from prior LDR rules.

Combustion Capacity. Combustion capacity for liquid hazardous wastes has historically been more readily available than capacity for sludges and solids. EPA estimates commercial combustion capacity for TC organic liquids to be about 1,267,000 tons per year. Commercial capacity for combustion of sludges and solids is available at both incinerators and industrial furnaces (primarily cement kilns that are authorized to burn hazardous wastes as fuel).

Cement kiln capacity for hazardous waste is limited by air emission limits (e.g., boiler and industrial furnace (BIF) limits under 40 CFR 266 subpart H), feed system limitations (e.g., particle size and viscosity limits), and product (i.e., cement clinker) quality considerations. For instance, cement quality considerations may require that wastes burned in cement kilns have a heating value of at least 5,000 BTU/lb to ensure adequate temperatures in the kiln. (Comments received by EPA, however, indicate that some kilns accept wastes below this heating value.) Incineration capacity is also limited by air emission limits, other permit limits (such as heat release limits), and feed system limits. EPA has taken these limitations into account in its estimates of available commercial combustion capacity.

Information available to EPA indicates that approximately 438,000 tons/year of commercial combustion capacity are available for newly identified TC organic sludges and solids, including soil and debris.[2] EPA primarily derived this estimate primarily from survey data compiled by the Hazardous Waste Treatment Council (HWTC) and Cement Kiln Recycling Coalition (CKRC). These surveys contained detailed information on the amount and types of waste burned at each commercial facility in 1992, and the maximum amount of waste that could practically be burned in light of technical, operational, and regulatory constraints. In deriving this estimate, EPA first reviewed each survey response to confirm that the information provided was based on technically valid assumptions. To be conservative in its national estimate, EPA only included facilities and units that are presently capable of operating at or near full capacity under current permit and operational constraints. EPA then derived a national baseline estimate of available capacity by subtracting the amount of waste (hazardous and nonhazardous) burned in 1992 from the maximum practical capacity at each facility. Several cement kilns that burn hazardous waste were not included in the CKRC survey results. For these facilities, EPA obtained maximum practical capacity estimates from other sources (e.g., past data submittals or

[2] This estimate includes solids and nonpumpable sludges, but excludes pumpable sludges. Pumpable sludge capacity in general is grouped with liquid capacity because of its limitations in particle size, solids content, and viscosity, and because pumpable sludges are often fed through the same feed ports that are used for liquids.

general trade literature), and derived available capacity estimates by assuming that these kilns are utilized at the average rate of those included in the CKRC survey. EPA's methodology for deriving its baseline capacity estimate is described in greater detail in the capacity background document for today's rule.

Once EPA obtained its baseline available commercial combustion capacity estimate, it estimated available capacity for wastes affected by today's rule by subtracting required capacity for routinely generated F037 and F038 (69,000 tons/year) from its baseline estimate. This adjustment was needed ecause these wastes were not regulated uring most of the 1992 base year (refer 57 FR 37194, August 18, 1992). EPA d not adjust its capacity estimate to ccount for one-time generation of F037 d F038 because the Agency nderstands that these wastes were enerally removed prior to the June 994 effective date of the LDR standards are being left in place when the rface impoundments that contain em are being closed.

EPA's estimate of available capacity kes into account capacity that will be quired for Phase I wastes that were anted a national capacity variance, nitable and corrosive wastes whose eatment standards were vacated (58 FR 860, May 24, 1993), waste haracteristics that affect the ability for particular facility(s) to treat the astes, and other factors that may limit pacity.

EPA is also considering the capacity ffects of recent court decisions garding the regulation of hazardous nstituents other than those for which e waste fails the TC test. EPA solicited mments on the treatment capacity ffects of requiring facilities to treat the nderlying hazardous constituents in C organic hazardous wastes to meet e then-proposed universal treatment andards. Although several mmenters submitted comments in pport of or in opposition to quirements for treatment of nderlying hazardous constituents, few mments were received on the specific sue of the effects of this requirement treatment capacity. EPA has ncluded that sufficient combustion pacity exists to treat underlying azardous organic constituents. One mmenter indicated that few facilities uld achieve the universal treatment andards (UTS) for some metals (which ay be present as underlying nstituents) in incinerator ash without rther treatment. However, EPA lieves that stabilization should enerally be able to achieve the UTS levels for metal underlying constituents present in residuals from the treatment of organic TC wastes.

Stabilization Capacity. Stabilization may be required to treat the residuals of wastes covered in today's rule that contain metal underlying constituents. EPA estimates that over 1 million tons of stabilization capacity is currently available. In analyzing alternative treatment capacity for stabilization of newly identified and listed wastes, the Agency built on the capacity analysis conducted for the Third Third LDR rule. This analysis was based on data contained in the TSDR Capacity Data Set.

Innovative (Non-combustion) Technologies. There are several non-combustion technologies for the treatment of soil contaminated with RCRA hazardous wastes, including hydrolysis, vacuum extraction, photolysis, and oxidation. To the extent that these technologies can be used to treat hazardous soil on-site, the required capacity for combustion will decrease.

EPA has limited information on innovative technologies with regard to both available capacity and to limitations of the technologies or constraints on the use of these technologies. EPA solicited comments on the use of innovative technologies for the treatment of soil contaminated with RCRA hazardous wastes. Specifically, EPA requested information regarding constraints on the use of these technologies both on- and off-site, including physical or chemical characteristics of the soils, and logistical constraints such as permitting and scheduling. EPA also solicited data on volumes of contaminated soil currently being treated by these technologies, current available capacity, and estimates of future capacity. EPA received two comments regarding innovative technologies. One commenter noted that to treat soil on-site requires permitting and approval by local, state, and federal agencies, which may be a problem for some innovative technologies. Another commenter stated that the chemical concentration to which a soil can be biotreated is influenced by the particular chemical, the soil type, the age of the contaminated media, and the bioremediation process. EPA encourages the use of innovative technologies when feasible, and realizes that—in some cases—use of these technologies may be limited by technical and non-technical considerations. Sufficient conventional treatment capacity is available, however, such that these limitations do not affect capacity determinations.

C. Surface Disposed Newly Identified and Listed Wastes

1. Required Capacity for Newly Identified TC Organics (D018–D043)

The Agency is promulgating treatment standards for TC organic nonwastewaters based primarily on incineration performance data. Treatment standards for some newly identified organic TC wastewaters are also being promulgated in today's rule. (Organic TC wastewaters managed in systems regulated under the CWA, those injected into Class I injection wells as regulated under the SDWA, and those zero discharge facilities that engage in CWA-equivalent treatment prior to land disposal will be addressed in future rulemakings. EPA will make variance determinations for these wastes at that time.) For the proposed rule, the Agency did not have data indicating that facilities managing organic TC wastewaters would be impacted. Thus, EPA solicited comments in the proposed rule on the quantities of newly identified organic TC wastewaters affected by the rule. However, no comments were received on this issue. The Agency has concluded that facilities managing organic TC wastewaters will not be affected by this rule (i.e., no organic TC wastewaters will likely require alternative commercial treatment as a result of today's rule).

EPA developed estimates of the quantities of newly identified TC organic wastes based on current management options to comply with the LDR requirements. EPA did not receive any data in public comments on the quantities of organic TC nonwastewaters containing underlying metal constituents. EPA estimates that approximately 220,000 tons of organic TC nonwastewaters are subject to this rule. (See Table 2 which presents the quantities of TC nonwastewaters (except for liquid nonwastewaters) requiring off-site treatment by waste code.) Even if all this quantity contained underlying metal constituents, the residuals from the treatment of organics could not be higher than 220,000 tons. Underlying metal constituents are, by definition, at levels that are below TC levels for metals. Stabilization is an appropriate technology for treating low level metal wastes. Given that ample treatment capacity exists for stabilization (over 1 million tons), EPA believes that sufficient treatment capacity exists for residuals of organic TC wastes containing underlying metal constituents.

TABLE 2.—QUANTITIES OF TC NONWASTEWATERS REQUIRING OFF-SITE COMMERCIAL TREATMENT

[Surface disposed wastes in tons]

Code	Nonwastewaters
D018	126,000
D019	8,700
D020	6,300
D021	8,500
D022	8,400
D023	3,900
D024	520
D025	310
D026	1,500
D027	1,200
D028	10,800
D029	3,800
D030	510
D031	200
D032	3,300
D033	450
D034	410
D035	4,200
D036	260
D037	600
D038	3,600
D039	6,900
D040	6,600
D041	110
D042	120
D043	16,500
TOTAL [1]	220,000

[1] Total may not sum due to rounding.

The Agency also developed estimates of available commercial treatment capacity. Table 3 summarizes available capacity for each alternative treatment technology required for the newly identified TC nonwastewaters. The table also summarizes the required capacity for each technology. A comparison of required and available treatment capacity indicates that adequate combustion capacity exists for TC nonwastewaters. Therefore, in the proposed rule, EPA indicated they would not be granting a national capacity variance for D018–D043 nonwastewaters. EPA requested comments and any additional data on its assessment that there is adequate treatment capacity for these wastes. EPA received one comment on this issue. The commenter supported EPA's determination that sufficient capacity exists to treat D018–D043 nonwastewaters. Thus, EPA has not changed its assessment and is not granting a variance for these nonwastewaters.

TABLE 3.—REQUIRED AND AVAILABLE CAPACITY FOR NEWLY IDENTIFIED ORGANIC TC WASTES [1]

[All quantities are in tons]

Treatment technology	Available capacity	Required capacity
Liquid Combustion	1,267,000	[2] 11,000
Sludge/Solid Combustion	438,000	220,000
Stabilization	[3] 1,127,000	([4])

[1] Does not include hazardous soil and debris, mixed radioactive wastes, or deep well injected wastes.

[2] These are liquid nonwastewaters.

[3] Capacity analysis for the Phase I Newly Listed and Newly Identified Waste rule.

[4] Stabilization capacity may be required to treat underlying metal constituents in organic TC wastes after combustion.

2. Used Oil

EPA's capacity assessment does not include specific quantities of used oil which might be subject to this rule. Absent data to the contrary, EPA believes that the quantities of used oil that are land disposed and hazardous for TC organics are relatively small. (Used oil that is recycled and that exhibits the TC is not subject to the land disposal restrictions. See 261.6(a)(4).)

EPA has requested information and conducted various studies of generation, management and characteristics of used oil. Although the data are not comprehensive, based on all indications, most used oil is either recycled or reused as fuel.

In its May 20, 1992 (57 FR 21524) final listing determination for used oil, the Agency concluded that only a small portion of used oil is land disposed (less than 10 percent of the amount generated). Although in general used oil could be hazardous for TC organics (benzene) and metals (lead), the Agency furthermore observed that the trend of increased recycling and the phase down of lead in gasoline under the Clean Air Act would decrease both the quantity of used oil that is land disposed and the proportion of it that is hazardous.

To update and refine its capacity analysis for this rule, EPA requested comments in the September 14, 1993 proposed rule (58 FR 48092) and reviewed available data sources. The Agency requested comments on the quantities of used oil that exhibit the toxicity characteristic and is subject to the LDRs. EPA received only one comment from a firm that collected over 113 million gallons of used oil for re-refining in 1992, but did not receive any comments on the amounts of used oil subject to the LDRs.

To gain a broader perspective of used oil generation and management EPA examined 1991 data from the national Biennial Reporting System (BRS). EPA did not expect to obtain comprehensive total quantities of hazardous used oil generation and management; however, EPA was able to get the proportional management of reported waste oils. The BRS shows that less than one percent of all waste oil reported is landfilled. For example, in the 'waste oil from changes' category of the 1991 BRS, approximately 1,400 tons was reported as landfilled. Although EPA believes the proportionate disposal (percent) is nationally representative, the total quantity was reported for waste streams from only a few states which indicates that the total is not comprehensive.

We have received preliminary data from the State of New Jersey Hazardous Waste Facilities Siting Commission. New Jersey treats used oil as state hazardous waste and the Commission tracks generation and shipping/manifest data. In the oil category, approximately 1 percent of used oil generated is identified as land disposed (landfilled). Of this 1 percent we do not know how much would be hazardous for TC organics.

Therefore, EPA believes that the quantities of used oil that are land disposed and are also hazardous for TC organics are small and sufficient reuse-as-fuel, energy recovery, and/or incineration capacity exists. EPA believes that a capacity variance is not warranted for these wastes.

3. Required Capacity for Other Newly Listed Organic Wastes

This section presents EPA's analysis of required capacity for other listed organic wastes including coke by-product wastes and chlorinated toluene production wastes.

a. Surface Disposed Coke By-Product Wastes

K141—Process residues from the recovery of coal tar, including, but not limited to, tar collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludge from coking operations).

K142—Tar storage tank residues from the production of coke from coal or the recovery of coke by-products produced from coal.

K143—Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil units from the recovery of coke by-products produced from coal.

K144—Wastewater sump residues from light oil refining, including, but not limited to, intercepting or contamination sump

sludges from the recovery of coke by-products produced from coal.
K145—Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal.
K147—Tar storage tank residues from coal tar refining.
K148—Residues from coal tar distillation, including but not limited to still bottoms.

For coke by-product nonwastewaters, EPA is promulgating concentration-based standards based on incineration. Under the authority of section 3007 of RCRA, EPA collected generation and management information concerning coke by-product wastes; this formation was collected in 1985 and 87. The majority of K141 to K145 nwastewaters generated during that neframe were recycled or used for ergy recovery. Tar storage tank and tar tillation bottoms may be removed riodically. The Agency identified the lowing annualized land-disposed antities of wastes: 49 tons of K141 nwastewaters, 2,750 tons of K142 nwastewaters, 10 tons of K143 nwastewaters, 304 tons of K144 nwastewaters, 1,408 tons of K147 nwastewaters, and less than 100 tons K148 nonwastewaters. EPA identified K145 nonwastewaters that were ng land disposed. The Agency icited comments on the above imated quantities that may require ernative treatment as a result of the Rs. However, no comments were eived on this issue. Thus, EPA is ng the estimates shown above for the antities of these wastes that may uire treatment capacity as a result of LDRs.

Current management practices dicate that the majority of the newly ed coke by-product wastes are enable to recycling, and therefore ernative treatment may not be uired as a result of today's final rule. us, EPA believes that adequate pacity exists to treat the small amount wastes that require alternative atment.

EPA does not have any information t coke by-product wastewaters are rently generated. The quantity of se wastewaters is assumed to be zero. A solicited comments on changes of nagement practices or generation a on these wastes. No comments re received on this issue. nsequently, EPA concludes that the antity of these wastewaters is zero. As a result of this analysis, EPA is not nting a national capacity variance to 41, K142, K143, K144, K145, K147, d K148 nonwastewaters and stewaters; however, the Agency is nting a three-month variance as described in Section A for the reason described therein.

b. Surface Disposed Chlorinated Toluene Wastes

K149—Distillation bottoms from the production of alpha (methyl) chlorinated toluene, ring-chlorinated toluene, benzoyl chlorides, and compound with mixtures of these functional groups. (This waste does not include still bottoms from the distillation of benzyl chloride.)
K150—Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha (methyl) chlorinated toluene, ring-chlorinated toluene, benzoyl chlorides and compounds with mixtures of these functional groups.
K151—Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha (methyl) chlorinated toluene, ring-chlorinated toluene, benzoyl chlorides and compounds with mixtures of these functional groups.

For wastes generated during the production of chlorinated toluene, EPA is promulgating concentration-based treatment standards based on incineration for nonwastewaters. EPA collected generation and management information on wastes generated from the production of chlorinated toluene. EPA collected this information under the authority of section 3007 of RCRA during engineering site visits in 1988. This capacity analysis incorporates data from the section 3007 information request and engineering site visits. EPA identified four facilities that produce chlorinated toluene wastes.

The Agency has identified no K149 nonwastewaters, no K150 nonwastewaters, and less than 100 tons of K151 nonwastewaters that were being land disposed. For the capacity analysis, EPA assumes that these quantities are currently being land disposed and will require treatment capacity as a result of today's final rule.

EPA solicited comments on management practices and generation data on these wastes. One commenter requested a variance because high concentrations of salt and halogenated compounds make these wastes difficult to incinerate. EPA contacted a commercial incineration facility that stated that with proper management they could treat these wastes. Therefore, EPA believes that a capacity variance is not warranted for these wastes.

EPA does not have any information that chlorinated toluene wastewaters are currently generated. EPA solicited comments on changes of management practices or generation data on these wastes. No comments were received on this issue. Thus, EPA concludes that the quantity of these wastewaters is zero.

Because adequate capacity exists to treat these wastes, EPA is not granting a national capacity variance for K149, K150, and K151 nonwastewaters and wastewaters; however, like the other newly listed and identified wastes, EPA is granting a three-month variance as described in Section A for the reason described therein.

4. Newly Identified TC Wastes That Were Not Previously Hazardous by the Old EP Leaching Procedure

In the Third Third LDR rule (55 FR 22520, June 1, 1990), EPA promulgated treatment standards for D012 through D017 wastes, but only for those wastes that were previously hazardous by the old EP leaching procedure and remain hazardous under the new TCLP. D012 through D017 wastes that were not hazardous by the old EP leaching procedure but are now hazardous using the new TCLP are considered newly-identified D012 through D017 wastes.

In response to the ANPRM (56 FR 55160, October 24, 1991), EPA did not receive any estimates for additional waste quantities (or newly-identified wastes) due to the use of the TCLP rather than the EP leaching procedure. Similarly, no estimates were received in response to the proposed rule. EPA believes that the quantities of the newly-identified D012 through D017 wastes due to the use of the TCLP rather than the EP leaching procedure are small, if any, and, hence, expects little or no additional demand for commercial treatment capacity as a result of the LDRs. Because sufficient capacity exists to treat these wastes, EPA is not granting the newly-identified D012 through D017 wastes a national capacity variance. However, the Agency is granting a three-month variance as described in Section A of the preamble.

D. Required and Available Capacity for Newly Listed and Identified Wastes Mixed with Radioactive Components

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). These mixed wastes are subject to RCRA hazardous waste regulations, including the LDRs, regardless of the type of radioactive constituents contained in these wastes.

Radioactive wastes that are mixed with spent solvents, dioxins, California list wastes, First Third, Second Third, or Third Third wastes, and Phase I wastes, are subject to the LDRs already promulgated for these hazardous wastes.

EPA granted national capacity variances for all of these mixed wastes because of a lack of national treatment capacity. Today's rule addresses the radioactive wastes that contain newly listed and identified hazardous wastes being restricted in today's rulemaking.

Based on comments received by EPA in response to the proposed rule, the ANPRM (56 FR 55160, October 24, 1991), and previous rulemakings, the U.S. Department of Energy (DOE) is the primary generator of mixed RCRA/radioactive wastes. A variety of non-DOE facilities also generate mixed wastes, including nuclear power plants, academic and medical institutions, and industrial facilities.

. Waste Generation

. Non-soil and Non-debris Mixed Radioactive Wastes

In April 1993, DOE released the nterim Mixed Waste Inventory Report IMWIR), which included a national nventory of all mixed wastes that were eing stored or would be generated over he next five years and a national nventory of mixed waste treatment apacities and technologies. The report rovides waste stream-specific and reatment facility-specific information or each site managing DOE wastes. This eport is currently being updated; owever the Final Mixed Waste nventory Report (MWIR) Data Base that vill be used to develop the Final MWIR vas made public in May, 1994. This Data Base was used to determine the uantity of DOE-generated mixed waste equiring treatment.

Based on the MWIR data, EPA stimates that DOE generates 1,700 m³/r of non-soil, non-debris mixed adioactive waste contaminated with TC rganic constituents. In addition, DOE urrently has 19,000 m³ of these wastes n storage. Table 4 lists the quantities of ach category of non-soil, non-debris ixed waste that DOE expects to enerate annually, as well as the amount urrently in storage.

TABLE 4.—QUANTITIES OF DOE NON-SOIL, NON-DEBRIS NEWLY IDENTIFIED TC ORGANIC MIXED RADIOACTIVE WASTES

Mixed waste category	Current inventory (m³)	Annual generation (m³/yr)
High-level waste (HLW)	11,000	1,300
Mixed transuranic waste (MTRU)	4,700	1
Mixed low-level waste (MLLW)	3,400	400

b. Mixed Radioactive Soil

EPA derived data on the quantities of DOE mixed radioactive soils using MWIR data. Table 5 lists the quantities of each category of mixed radioactive soil that is expected to be generated annually, as well as the amount currently in storage. The quantity of hazardous soil in storage, or projected to be generated annually, is very small. This can be attributed to the fact that the MWIR Data Base generally does not include DOE environmental restoration wastes. When these wastes are generated they will increase the quantity of newly identified mixed wastes, particularly soil, that require treatment. Although these wastes are not included in the Final MWIR Data Base, the IMWIR estimates that DOE will generate a total of approximately 600,000 m³ of mixed environmental restoration wastes over the period from 1993 to 1997. Some of these wastes will likely be newly identified organic TC mixed wastes.

TABLE 5.—QUANTITIES OF DOE NEWLY IDENTIFIED TC ORGANIC MIXED RADIOACTIVE SOILS

Mixed waste category	Current inventory (m³)	Annual generation (m³/yr)
High-level waste (HLW)	0	0
Mixed transuranic waste (MTRU)	0	0
Mixed low-level waste (MLLW)	20	10

c. Mixed Radioactive Debris

EPA derived data on quantities of DOE mixed radioactive debris using MWIR data. Table 6 lists the quantities of each category of mixed radioactive debris that is expected to be generated annually, as well as the quantity currently in storage.

TABLE 6.—QUANTITIES OF DOE NEWLY IDENTIFIED TC ORGANIC MIXED RADIOACTIVE DEBRIS

Mixed waste category	Current inventory (m³)	Annual generation (m³/yr)
High-level waste (HLW)	0	0
Mixed transuranic waste (MTRU)	18,000	380
Mixed low-level waste (MLLW)	14,000	650

2. Available Capacity and Capacity Implications

a. Non-soil and Non-debris Mixed Radioactive Wastes

EPA's review of IMWIR data indicates that 4,000 m³ of treatment capacity are available annually for HLW at three DOE treatment systems. The available capacity appears sufficient to treat the estimated average annual generation. However, the IMWIR indicates that the current national inventory of HLW is greater than 280,000 m³. This quantity dwarfs DOE's annual available treatment capacity for HLW. Consequently, DOE faces a treatment capacity shortfall for high-level radioactive wastes.

DOE is developing the Waste Isolation Pilot Project (WIPP) in New Mexico as a permanent repository for DOE TRU wastes, including MTRU wastes. However, DOE is not yet authorized to begin the placement of TRU wastes in the WIPP. In addition, wastes received at the WIPP must meet DOE's WIPP Waste Acceptance Criteria (WIPP–WAC). DOE is still in the planning stages for facilities designed to prepare MTRU wastes for shipment to the WIPP. As a result, DOE faces a capacity shortfall for treatment of MTRU wastes.

EPA's review of the IMWIR data indicates that 340 m³/yr of currently available capacity exists at four DOE treatment systems for the treatment of alpha MLLW (i.e., MLLW with an alpha particle content between 10 and 100 nCi/g). However, the available capacity is greatly exceeded by the estimated quantity of alpha MLLW requiring treatment annually over the next five years, 3,700 m³. Consequently, DOE faces a treatment capacity shortfall for non-soil, non-debris alpha MLLW.

According to IMWIR, 1,000,000 m³/yr of treatment capacity among 26 systems are currently available to treat non-alpha MLLW. However, IMWIR states that most of DOE's currently available treatment capacity for MLLW is represented by facilities limited to the treatment of wastewaters (defined by DOE as less than 1 percent total suspended solids (TSS)). While these treatment facilities provide excess capacity for MLLW wastewaters, they cannot process wastes with high TSS and are not readily adaptable for other waste forms. Thus, although the quantity of MLLW treatment capacity is greater than the total quantity of mixed wastes, DOE faces a treatment capacity shortfall for nonwastewater MLLW, and thus non-alpha MLLW.

While DOE has provided its best available data on mixed waste generation, uncertainty remains about

mixed waste generation at DOE (and non-DOE) facilities. For example, not all DOE Field Organizations responded to DOE's request for information following publication of the ANPRM. In addition, the data submitted to EPA generally did not include DOE environmental restoration wastes which, when generated, will increase the quantity of newly identified mixed wastes that require treatment. The IMWIR estimates that DOE will generate a total of 600,000 m^3 of mixed environmental restoration wastes over the period from 1993 to 1997. Although the IMWIR notes that the estimates of DOE environmental storation wastes are preliminary, the antities noted above will place ditional strains on DOE's limited ailable mixed waste treatment pacity.

Although DOE is in the process of creasing its capacity to manage mixed CRA/radioactive wastes, information pplied by DOE indicates that a gnificant capacity shortfall currently ists for the treatment of mixed RCRA/ dioactive wastes, much of which are storage facilities awaiting treatment. OE has indicated that it will generally ve treatment priority to mixed wastes at are already restricted under evious LDR rules (e.g., radioactive astes mixed with solvents, dioxins, alifornia list wastes, First Third, cond Third, or Third Third wastes, d Phase I wastes). DOE is also ncerned about the availability of eatment capacity for mixed wastes that ill be generated as a result of site mediation activities. EPA's review of on-DOE data sources also showed a gnificant lack of commercial treatment pacity.

In response to the Phase II proposed le, EPA received six comments ncerning the proposal to grant a two- ar national capacity variance for non- il, non-debris TC organic mixed dioactive wastes. All six commenters, cluding DOE, were in favor of the two- ar national capacity variance. rthermore, none of the commenters entified any additional treatment pacity for the wastes. Thus, despite e uncertainty about the exact antities of mixed radioactive wastes ntaining newly listed and identified astes that will require treatment as a sult of today's rule, the quantities ppear to exceed available capacity. In dition, any new commercial capacity at does become available will be eeded for mixed radioactive wastes at were regulated in previous LDR lemakings and whose variances have ready expired. Therefore, EPA has etermined that sufficient alternative eatment capacity is not available for mixed radioactive wastes contaminated with newly listed and identified wastes whose standards are being promulgated today, and thus is granting a two-year national capacity variance for these wastes.

b. Mixed Radioactive Soil

EPA's review of IMWIR data indicates that no available treatment capacity exists at DOE facilities for mixed radioactive soils. As indicated earlier, a preliminary estimate of mixed radioactive soil is approximately 10 m^3/yr. Therefore, EPA is granting a two-year national capacity variance for mixed radioactive soils.

c. Mixed Radioactive Debris

EPA's review of IMWIR data indicates that less than 2 m^3/yr of treatment capacity is available that can accept mixed low-level debris, an amount that exceeds the estimated annual generation. In addition, DOE has not yet been authorized to begin placement of MTRU wastes into the WIPP. As a result, DOE faces a treatment capacity shortfall for mixed transuranic debris. Therefore, EPA is granting a two-year national capacity variance to debris contaminated with mixed radioactive wastes.

E. Required and Available Capacity for High TOC Ignitable, TC Pesticide, and Newly Listed Wastes Injected Into Class I Deep Wells

As explained in previous rules concerning land disposal restrictions (see e.g., 52 FR 32450, August 27, 1987; 53 FR 30912, August 16, 1988; 55 FR 22520, June 1, 1990), EPA is allocating available capacity first to those wastes disposed in surface units, second to wastes resulting from CERCLA and RCRA clean ups, and finally to underground injected wastes. Based on this hierarchical approach, the Agency is promulgating the following effective dates for injected wastes.

EPA still has very limited information which differentiates high TOC D001 ignitable wastes from low TOC D001 ignitable wastes, particularly with reference to the type of Class I injection well (i.e., nonhazardous versus hazardous) into which the wastes are disposed. The information the Agency does have indicates that both D001 ignitable wastes and D012–D017 TC pesticide wastes are deep well injected into Class I hazardous wells with no-migration variances. EPA is concerned that since these wastes are being generated, the potential exists that diluted D001 ignitable wastes and D012–D017 TC pesticide wastes are also being injected into Class I nonhazardous wells. In the proposed rule, EPA estimated that, based on management practices, low volumes of diluted high TOC ignitable waste were injected into Class I nonhazardous wells, and less than 420 tons of D012–D017 pesticide wastes are deep well injected into Class I nonhazardous wells. However, several commenters to the proposed rule, and other industries with Class I injection wells, have indicated that it would be extremely difficult to identify, segregate, treat, and/or arrange for disposal of these waste streams in a short time frame. This may be particularly true if waste volumes for high TOC D001 ignitable wastes are discovered to greatly exceed earlier estimates. The facilities, depending on their Class I injection wells, would have to reconfigure their disposal systems, which may include the construction or rearrangement of wastelines or piping.

To allow sufficient time to address these logistical problems, EPA is granting a one-year national capacity variance to allow the Class I injection facilities an appropriate lead time to identify their decharacterized high TOC D001 and D012–D017 waste streams and to create an infrastructure that allows their alternative management consistent with today's rule and the statute. This may include installation of equipment to segregate wastes. For operators applying for no-migration petitions, the variance will allow time for conducting the modelling or other analysis, for EPA review, and for the operators to make alternative arrangements if the petitions are not granted.

The following wastes are the newly listed wastes for which numerical standards are being promulgated, and which current data indicate are not being underground injected:

Coke By-Product Wastes: K141, K142, K143, K144, K145, K147, K148

Chlorotoluene Production Wastes: K149, K150, K151

The Agency requested further comment on whether any of these wastes are being injected. Comment was also requested on what quantities of wastes are being injected, and on the characteristics of these wastes. However, no comments were received on this issue. EPA is therefore not granting a national capacity variance for coke production wastes (K141–K145, K147, K148) and for chlorotoluene production wastes (K149–K151) injected into Class I deep wells.

F. Required and Available Capacity for Hazardous Soil and Debris Contaminated with Newly Listed and Identified Wastes

This capacity analysis focuses on hazardous soil and debris contaminated with wastes whose treatment standards are promulgated in today's rule.

EPA used several data sources to estimate the total quantity of land-disposed hazardous soil and debris. These sources include: responses to the Advance Notice to the Proposed Rulemaking (ANPRM) for the newly identified wastes (56 FR 55160); the TC Survey; information provided during a ries of roundtable meetings held by e Agency in May and June of 1991 ith representatives of companies volved in the management and sposal of hazardous debris and soil; e Biennial Reporting System (BRS); ecords of Decision (RODs) of perfund sites; the TSDR Survey; and e National Survey of Hazardous Waste enerators.[3]

Waste Generation

Hazardous Soil

The hazardous soil covered by this le includes soil contaminated with 018–D043 organic TC wastes, and soils ntaminated with coke by-product astes and chlorinated toluene wastes. he largest quantity of hazardous soil fected by today's rulemaking is azardous soil contaminated with 018–D043 organic TC wastes. At the me of the proposal, the Agency timated that approximately 233,000 ns per year of TC soils would require f-site treatment and the majority of ese TC soils was expected to be nerated from surface impoundment osures. Based on new data received om owners/operators concerning rface impoundment closure practices, e Agency now estimates that the nual quantities of TC soil that is land sposed and subject to the LDRs ranges om 70,000 to 120,000 tons. Because TC il generation from surface npoundment closures is somewhat scretionary, decisions by owners/ perators of facilities concerning closure ethods significantly changed the neration rates previously estimated in e TC Survey.

The Agency contacted facilities pected to generate TC soils from rface impoundment closures in 1993, 1994, and 1995 to confirm generation rates. Nearly all of the owners/operators revised their estimates for TC soil generation downward. Most owners/operators revised their closure practices to minimize or eliminate TC soil generation. Some facilities closed impoundments prior to today's rulemaking and other facilities are closing their impoundments as landfills. In closing as a landfill, a facility closes the impoundment with the waste in place. The facility owners/operators remove all free liquids, stabilize the sludges, cap the impoundment, and establish a ground water monitoring system. Therefore, for these facilities, no LDR treatment capacity would be necessary for TC soils. Of the facilities that predicted TC soil generation in 1994 and 1995, no facility currently expects to ship TC soils generated from a surface impoundment closure off-site for LDR treatment.

However, for at least two facilities, some uncertainty existed concerning the ability of these facilities to ship all of their TC soils off-site prior to today's rulemaking. Nevertheless, even if these facilities generated all their TC soils after today's rulemaking, the impact on LDR treatment capacity would be minimal because these facilities were expected to generate only 5,300 tons of TC soils. Therefore, only 5,300 tons of TC soils generated by surface impoundment closures might require off-site treatment.

The Agency also reviewed the TC data base and public information on specific facilities to assess the TC soil generation rate from routine and sporadic activities that might require off-site disposal. For this analysis, the Agency assumed that routine activities and the quantity of soil generated should be considered constant over time when analyzing the generator population as a whole. However, for sporadic activities (e.g. surface impoundment closures), which by their nature occur infrequently, the year in which they occur is critically important in determining the required capacity for soil when the rule becomes effective.

In the TC Survey, some TC wastes were only characterized as a mixture of soil and debris. For the lower bound estimate (70,000 tons), the Agency assumed a 50–50 ratio of soil and debris in mixtures characterized as soil and debris. Using this assumption, EPA estimates that approximately 70,000 tons of TC soils generated by routine and sporadic activities will require additional treatment annually. In addition, in this lower bound estimate, the Agency assumed that all facilities were able to manage the TC soils generated from surface impoundment closures prior to the effective date of today's rule. Therefore, for the lower bound estimate, no TC soils from surface impoundment closures are expected to require additional treatment capacity. Based on these assumptions, the Agency calculates that the lower bound estimate is 70,000 tons of TC soils per year.

For the upper bound estimate, the Agency assigned the entire quantity of mixtures of soil and debris reported in the TC survey as TC soils. As a result, the TC soil generation rate for routine and sporadic activities increased by about 20,000 tons. The Agency conducted a similar review of facilities that submitted confidential business information (CBI) concerning TC soil generation rates. When assuming a 100 percent of mixtures were TC soils, these facilities were estimated to generate an additional 53,000 tons of TC soils for a total of 143,000 tons.

To verify the accuracy of the upper bound estimate, the Agency contacted individual facilities to determine actual TC soil generation rates. Based on these contacts, the TC data base overestimated TC soil generation from routine and sporadic activities. Many facilities stated that actual generation rates were lower or that the estimate included one time wastes from surface impoundment closures that already occurred. Therefore, when the Agency revised the upper bound estimates, TC soil generation rates for routine and sporadic activities at all facilities (non-CBI and CBI facilities) were approximately 114,000 tons. After adding the 5,300 tons of TC soils generated by surface impoundment closures, the estimated upper bound quantity of TC soil requiring additional treatment is approximately 120,000 tons per year.

Due to reduced generation of TC soils from surface impoundment closures in 1994 and 1995 and overestimations of TC soil generation rates from routine and sporadic activities, the Agency estimates that between 70,000 and 120,000 tons per year of TC soils will require off-site treatment.

At the time of the proposed rulemaking, the Agency was uncertain concerning the quantities of TC soil generated from manufactured gas plants (MGP). Most of the soil generated at these plants is expected to be contaminated with benzene. EPA requested updated information on the generation and management of these wastes and on whether there will be sufficient commercial treatment services to treat these wastes on-site. No comments were received that specified quantities of soil generated or discussed

[3] EPA conducted the surveys during 1987 and 88 to obtain comprehensive data on the nation's pacity for managing hazardous waste and the lumes of hazardous waste being land disposed as ell as data on waste generation, waste aracterization, and hazardous waste treatment pacity in units exempt from RCRA permitting.

commercial capacity for contaminated soils. While EPA acknowledges that generation of TC-contaminated soil from MGP will occur, the Agency expects that most of this quantity will be managed on-site and will not require off-site or commercial treatment capacity. Therefore, EPA has concluded that TC-contaminated soil from MGPs will not significantly affect the required treatment capacity for soil.

Similarly, several commenters to the ANPRM indicated that EPA may have underestimated the annual quantities of hazardous soil generated. Some commenters provided site specific data on the quantities of soil generated during remedial actions. The Agency incorporated these data in its analysis of the required capacity for hazardous soil. In the proposed rule, EPA requested comments on the use of innovative technologies for hazardous soil. Specifically, EPA requested information on constraints to the use of these technologies both on- and off-site, including physical or chemical characteristics of the wastes, and logistical constraints such as permitting and scheduling. One commenter noted that to treat soil on-site requires permitting and approval by local, state, and federal agencies, which may be a problem for some innovative technologies. Another said that the chemical concentration to which a soil can be biotreated is influenced by the particular chemical, the soil type, the age of the contaminated media, and the bioremediation process. EPA has taken these comments into account in estimating the available capacity provided by innovative technologies for the treatment of hazardous soil.

b. Hazardous Debris

This rule covers debris contaminated with the newly listed and identified wastes covered in this rule. As shown in Table 7, data from the TC Survey indicates that approximately 34,000 tons of debris contaminated with D018–D043 wastes may be currently land disposed.

TABLE 7.—QUANTITIES OF TC-CONTAMINATED DEBRIS REQUIRING OFF-SITE TREATMENT

[Surface disposed wastes in tons]

Code	Debris
D018	26,400
D019	220
D020	20
D021	210
D022	80
D023	60
D024	60
D025	60
D026	700
D027	290
D028	280
D029	330
D030	90
D031	10
D032	70
D033	110
D034	40
D035	300
D036	70
D037	130
D038	570
D039	970
D040	890
D041	20
D042	20
D043	1,700
Total[1]	34,000

[1] Total may not sum due to rounding.

2. Current Management Practices

Waste generators and TSDFs report that most of the soils contaminated with D018–D043 newly identified organic TC wastes are currently landfilled without prior treatment. Incineration is the commercial off-site treatment technology reportedly available for these wastes.

Other than incineration for treating organic TC-contaminated soil, EPA has no information on the commercial off-site availability of other treatment technologies (e.g., low temperature thermal desorption, bioremediation, solvent extraction). Although several commenters to the ANPRM mentioned bioremediation as an alternative to incineration for the treatment of TC-contaminated soils, no commenter provided facility specific information on commercially available off-site treatment capacity for this technology. The lack of off-site commercial capacity for technologies other than incineration was confirmed by responses to EPA's request for voluntary information from vendors of innovative technologies provided in the Vendor Information System for Innovative Treatment Technologies (VISITT). At the time of the proposed rule, EPA had received no information that special-handling problems may limit the quantity of hazardous soil that currently can be treated by incineration, and EPA requested information on special-handling concerns with managing these wastes. No comments were received on this issue. Thus, EPA has concluded that the quantity of hazardous soil that can be treated by incineration will not be limited by special-handling problems.

3. Available Capacity and Capacity Implications

a. Hazardous Soil

EPA is requiring that hazardous soil be treated prior to land disposal. EPA has determined that available destruction (e.g., incineration) and immobilization (e.g., stabilization) capacity exists. Some additional capacity also exists from many of the technologies in the extraction family (e.g., soil washing, chemical extraction). However, some of the capacity of extraction technologies currently used to decontaminate soils, such as soil washing, may not have received requisite permits by the effective date of this rule, although EPA is exploring the various opportunities for these technologies to become operational in an expedited manner. (Please contact the appropriate EPA regional office or the state hazardous waste program.) Thus, EPA anticipates that the off-site commercial capacity available to treat hazardous soils at the time this rule becomes effective will be limited to incineration and stabilization.

EPA recognizes that innovative technologies are also available to treat hazardous soil. Performance of these technologies also may be the basis for treatability variances pursuant to § 268.44(h). EPA requested comments on the practicality and current availability of these technologies. EPA received comments that the proposed soil standards cannot be met by bioremediation, but may be met by innovative technologies such as thermal desorption and soil vapor extraction. However, EPA did not receive any comments on the current availability of these technologies. Thus, EPA has concluded that the off-site treatment capacity for hazardous soils will initially be limited to incineration and stabilization.

The Agency also solicited comments on the need for a capacity variance and on estimates of available treatment capacity. One commenter opposed the proposed capacity variance for soils and said that EPA should—at the very least—require treatment of "hot spots." Several commenters supported the two-year national capacity variance. However, EPA has determined that a national capacity variance is unnecessary for hazardous soils.

b. Hazardous Debris

EPA estimates that approximately 34,000 tons of debris contaminated with newly identified organic TC wastes are currently land disposed and require off-site commercial treatment capacity. The capacity analysis conducted for debris contaminated with Phase II wastes indicates that sufficient capacity exists to treat debris contaminated with organics. Therefore, EPA is not granting a national capacity variance for hazardous debris contaminated with organic TC wastes and other listed organic wastes covered in this rule.

XV. 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 the Hazardous and Solid Waste Amendments of 1984 (HSWA), a State with final authorization administered its hazardous waste program in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits 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 is implemented Federally in authorized States in the interim.

Certain portions of today's rule are being promulgated pursuant to sections 3004 (d) through (k), and (m), of RCRA (42 U.S.C. 6924 (d) through (k), and (m)). These 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 that 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 of this preamble. Table 2 in 40 CFR 271.1(j) is also modified to indicate that this rule is a self-implementing provision of HSWA.

B. Effect on State Authorization

As noted above, today's rule, with the exception of the changes in the definition of solid waste (see preamble section IX, and further discussion in this section, below), will be implemented 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. On December 18, 1992, EPA extended the period allowing interim authorization to January 1, 2003 (see 40 CFR 271.24(c) and 57 FR 60129).

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 would have to modify its program to adopt these regulations is specified in section 271.21(e). 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 modifications are approved. Of course, states with existing standards could continue to administer and enforce their standards as a matter of State law. In the period between the effective date of today's rule and the approval of state program modifications, the regulated communities in authorized states generally must comply with state regulations in addition to the provisions in today's rule. The regulated community should continue to consult with state agencies authorized to administer LDRs. In implementing the Federal program, EPA will work with States under agreements to minimize duplication of efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs rather than take separate actions under Federal authority.

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

The regulations 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 the amendments that will be promulgated at a future date. 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).

The modifications to the definition of solid waste in this rule (see preamble section IX) are based on non-HSWA authority. This portion of the rule, because it is not based on HSWA authority, will be applicable immediately only in those States that do not have final RCRA authorization. In authorized States, these requirements will not apply until the States revise their programs to adopt equivalent requirements under State law. In addition, this modification broadens the "closed-loop" recycling exclusion from the definition of solid waste. The modification to this rule is less stringent, or reduces the scope of, the Federal program. Therefore, although EPA strongly encourages timely adoption, authorized States are not required to modify their programs to

adopt regulations consistent with and equivalent to this provision.

XVI. Regulatory Requirements

A. Regulatory Impact Analysis Pursuant to Executive Order 12866

Executive Order No. 12866 requires agencies to determine whether a regulatory action is "significant." The Order defines a "significant" regulatory action as one that "is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect, in a material way, the economy, a sector of the onomy, productivity, competition, s, the environment, public health or fety, or State, local, or tribal vernments or communities; (2) create ious inconsistency or otherwise erfere with an action taken or anned by another agency; (3) terially alter the budgetary impact of titlements, grants, user fees, or loan ograms or the rights and obligations of cipients; or (4) raise novel legal or licy issues arising out of legal ndates, the President's priorities, or e principles set forth in the Executive der."

The Agency estimated the costs of lay's final rule to determine if it is a nificant regulation as defined by the ecutive Order. The incremental mpliance costs for today's rule were imated as a range from $194 to $219 llion per year. Therefore, today's final le is considered an economically nificant rule, having an annual effect the economy of over $100 million. e Agency prepared a regulatory pact analysis which analyzed the sts, economic impacts, and benefits of lay's final rule.

This section of the preamble for lay's final rule provides a discussion the methodology used for estimating e costs, economic impacts and the nefits attributable to today's final rule, llowed by a presentation of the cost, onomic impact and benefit results. nitations to these estimates are scribed in the results section. More tailed discussions of the methodology d results may be found in the ckground document, "Regulatory pact Analysis of the Land Disposal strictions Final Rule for the Phase 2 wly Listed and Identified Wastes," nich has been placed in the docket for lay's final rule.

Methodology Section

In today's final rule, the Agency is tablishing treatment standards for wly identified and listed wastes, as ell as any soils and debris which are ntaminated with such wastes. (The Agency plans to develop alternative standards for hazardous soils as a part of the Hazardous Wastes Identification Rule (HWIR).) The newly identified wastes covered under today's rule include wastes displaying the organic toxicity characteristic (TC), and pesticide wastes that were not previously hazardous by the EP leaching procedure. The newly listed wastes are Coke By-product wastes and Chlorotoluene wastes.

Of the newly regulated hazardous soil in today's rule, the only existing volumes are soils contaminated with TC wastes. (Any volumes of soil contaminated with F037 and F038 listed wastes which exist are not covered in today's rule, but are being covered in a future Agency rulemaking.) Finally, the Agency is promulgating new testing and recordkeeping requirements, as well as reducing other recordkeeping requirements.

Furthermore, today's final rule proposes Universal Treatment Standards (UTS) for wastes already regulated under the LDRs. The Agency's analysis includes an analysis of the volumes affected by this change in treatment levels. (In the switch to UTS levels there are cases where the new UTS level is less stringent than the existing listing levels, as well as cases where the UTS is more stringent than existing levels. Either of these cases would have the potential to change the costs associated with treatment of these wastes.)

a. Methodology for Estimating the Affected Universe

In determining the costs, economic impacts, and benefits associated with today's rule, the Agency estimated the volumes of TC nonwastewaters, Coke By-Product wastes, and Chlorotoluene wastes affected by today's rule. For the TC wastes, the Agency employed the 1995 volume estimates presented for each affected waste in the Agency's 1992 TC Census Database (hereafter referred to as the "TC Survey"). (There are several ways in which the volumes employed for the capacity determinations differ from those used in the RIA.) The capacity determinations section of the preamble describes the methods used there to determine volumes. The scope of the RIA differs from that of the capacity determination in the "time window" analyzed. The RIA examines the short- and long-term impacts from the rule. Capacity determinations, on the other hand, are made for a two year time frame beginning at the promulgation of today's rule.

The Agency employed the volumes of Coke By-Products and Chlorotoluene wastes estimated in their respective listing analyses. For Coke By-Products, current management practices suggest that no volumes will be land disposed.

b. Cost Methodology

The cost analysis estimates the national level incremental costs which will be incurred as a result of today's rule. The cost estimates for both the baseline and post-regulatory scenarios are calculated employing: (i) The facility wastestream volume, (ii) the management practice (baseline or post-regulatory) assigned to that wastestream, and (iii) the unit cost associated with that practice. Summing the costs for all facilities produces the total costs for the given waste and scenario. Subtracting the baseline cost from the post-regulatory cost produces the national incremental cost associated with today's rule for the given waste. The unit costs include costs for Subtitle D and Subtitle C disposal (as appropriate), and transportation costs where necessary; all dollar estimates are in 1993 dollars (unless otherwise noted.)

Each section below summarizes the baseline and post-regulatory management practices assignments for each waste. The unit costs employed for the management practices are summarized in the RIA background document for today's rule.

The cost methodology section includes three sub-sections: (i) TC organic wastes, (ii) Other newly identified wastes, (iii) Testing, record-keeping, and permit modification costs.

i. Organic Toxicity Characteristic Wastes (D018–D043)

The standards established in today's rule for the organic TC wastes require the treatment of all underlying hazardous constituents. The affected TC wastes can be divided into three groups: TC nonwastewaters, TC soils, and TC debris. While TC wastewaters which are not managed in CWA or CWA-equivalent units are being regulated in today's rule, the current management practices for these volumes do not trigger land disposal (RCRA exempt tanks, etc.), and therefore are not subject to the LDRs. Below, EPA describes the method of estimating the costs incurred in complying with the TC standards in today's rule.

In establishing a baseline for the TC nonwastewaters, TC hazardous soils, and TC hazardous debris affected by today's rule, the Agency assumed Subtitle C landfilling as the current management practice. The Agency believes that there are TC wastes which

are not affected by today's rule because they are already being treated to comply with the standards established in today's rule (e.g.: wastes with high BTU value which are being used as fuel, etc.). The Agency assumed that landfilling was occurring on-site for noncommercial (company captive) facilities, and off-site for commercial facilities. Employing today's requirement of treating for all underlying constituents reasonably expected to be present, the Agency developed technology assignments for the wastes at each facility. The assignments include a treatment technology (or treatment train where required), and subsequent Subtitle D disposal. These assignments were based on waste characterization and constituent concentration data. Where little or no such data were available for a wastestream, the weighted average unit cost was assigned (the weighted average unit cost was calculated separately for nonwastewaters, soils, and debris).

The Agency allows a generator of hazardous soil to apply for a treatability variance. The Agency, however, has not analyzed the potential short-term savings which could be realized in the management of hazardous soil, and therefore may have overestimated the cost impacts of the rule in the short-term. There is also some uncertainty where certain technologies will be available to treat TC nonwastewaters. The Agency performed a sensitivity analysis to characterize this uncertainty, which is included in the RIA Background Document.

ii. Other Newly Identified Wastes

In addition to organic TC wastes, the wastes affected by today's final rule include coke by-product and chlorotoluene wastes. Based on an economic analysis conducted by the Agency for the listing of coke by-product waste, generators recycle these wastes rather than disposing of them in Subtitle C landfills. Therefore, EPA estimates that negligible volumes of coke by-product wastes would be affected by this rule. For the chlorotoluene waste volumes, EPA conducted a detailed cost analysis using site specific data.

iii. Testing, Recordkeeping, and Permit Modification Costs

In addition to the costs for treatment of wastes, EPA estimated the incremental costs of the testing and recordkeeping requirements in today's rule. Testing and recordkeeping costs were developed for all wastes addressed in today's rule.

The Agency examined the incremental cost of the testing requirements under today's rule. The Agency considered the baseline scenario to include testing for waste identification. The post-regulatory scenario would include testing for waste identification, testing to determine the number and concentration of constituents requiring treatment, and testing following treatment to ensure compliance with the standards.

For the analysis of recordkeeping costs, the Agency employed the estimates developed in the Information Collection Request (ICR) for today's rule. These estimates were employed in a facility specific analysis to develop a total incremental cost associated with the testing and recordkeeping requirements in today's rule.

The Agency also performed a sensitivity analysis on potential permit modification costs for facilities which may switch to on-site treatment. EPA applied a schedule of payments based on the costs of permit modifications to a group of nine facilities. The results of this analysis are provided in the Background Document RIA.

c. Waste Minimization Methodology

Since reducing waste generation may be less costly than treating these wastes to LDR standards, the Agency performed an analysis examining the potential waste minimization alternatives available to facilities. The analysis followed a multi-step methodology which included: (1) Develop a profile of the industries which indicated plans for waste minimization in the 1992 TC Survey Database, (2) select industries to examine which would be representative of the TC waste universe, (3) make telephone data verification calls to facilities within these industries, (4) determine the cost components for the post-regulatory and waste minimization scenarios for all wastestreams for those facilities, (5) estimate whether potential total costs/cost savings for the waste minimization and the post-regulatory (i.e., without waste minimization) scenarios would be a profitable investment for the firms, and (6) extrapolate results to the TC waste universe, and determine overall cost/cost savings.

d. Economic Impact Methodology

The economic effects of today's final rule are defined as the difference between the industrial activity under post-regulatory conditions and the industrial activity in the absence of regulation (i.e., baseline conditions). It should be noted that the volumes used for the economic impacts analysis do not include the reduction in volumes, and thus in costs, from waste minimization practices.

The Agency has evaluated the economic impacts for facilities managing organic TC wastes on a facility specific basis, limited only by the extent that data were available. EPA estimated the economic effects by comparing incremental annual compliance costs to a number of company financial measures, such as revenues, cost of operations, operating income, and net income. Financial data were obtained from Standard & Poor's Corporation Descriptions for the last fiscal year reported.

Since EPA believes that no costs will be associated with the treatment standards for coke by-products in the final rule, no economic impacts will be associated with regulation of these wastes. Economic impacts of compliance for facilities currently land disposing chlorotoluenes were evaluated in aggregated form, as information relating to these wastes are proprietary.

e. Benefits Methodology

This section discusses the benefit estimates for today's rule. The section includes: i. Analysis of the universal treatment standards, ii. hazardous waste recycling exemption, iii. groundwater pathway benefits, and iv. air pathway benefits.

i. Analysis of the Impact of the Universal Treatment Standards

To determine the cost implications of the Universal Treatment Standards (UTS), the Agency compared the UTS levels for each constituent to those levels established for each constituent in each waste code in the Land Disposal Restrictions (LDR) program to date.

The Agency assumed that there would only be a cost impact when the levels were sufficiently different to require a change in the treatment technology used in order to meet the new UTS levels. The comparison of levels rendered three results: (a) No cost impact because the constituent levels were the same, (b) no cost impact because the constituent levels were within one order of magnitude of each other, or (c) a potential cost impact because the constituent levels were greater than one order of magnitude apart.

Upon identifying those waste code/constituent pairs which were significantly different (i.e., greater than one order of magnitude), the Agency developed an estimate of the costs/cost savings based on the incremental difference in the previous technology

required and the new technology required to meet the specified levels.

ii. Hazardous Waste Recycling Exemption

The Agency also estimated the potential cost savings resulting from the hazardous waste recycling exemption for K069 wastes. Obtaining volumes data from the Biennial Reporting System (BRS), and employing unit cost data, the Agency calculated the cost savings associated with the change allowed in management practices. The Agency limited the analysis to K069 wastestreams that are not mixed with other hazardous waste codes, since se mixtures may not be amenable or l for recycling.

Human Health Risk Reduction—undwater Pathway

he Agency evaluated two types of man health benefits for today's rule: uction in human health risks via the undwater pathway, and reduction in man health risks via the air pathway. A's analysis of the benefits of today's e covers TC wastes only. These stes dominate the other wastestreams ered by today's rule in terms of ume. Moreover, these are the only stes for which the Agency had the a necessary to conduct a benefits essment, in terms of attributes such constituent concentrations and ility-specific wastestream volumes. he fundamental assumption derlying EPA's approach for assessing undwater risk reduction is that btitle C containment is completely ective in the short-term, i.e., over a iod of about 30 years, but that in the ger term, containment systems will l. The benefits analysis performed for lay's rule examines this potential g-term risk which would be avoided der today's rule (i.e., only occurring least 30 years into the future). The ference in risks from the baseline to post-regulatory condition is the easure of incremental benefit ociated with today's rule. he basic approach involves the lowing steps (which are elaborated on in the RIA background document, ich has been placed in the docket for lay's rule). (1) The Agency employed ste concentration data from the TC rvey to represent waste ncentrations. (2) EPA calculated the ean concentration of each constituent each facility, weighted across the lume of all TC wastes managed at that ility. (3) EPA calculated the risk that uld be posed by consumption of chate, for both cancer and non-cancer ects, at each facility. (4) EPA veloped a set of dilution/attenuation factors (DAF) to represent the effect of fate and transport processes in a homogeneous ground-water system. For each facility, the Agency divided the risk posed by the consumption of leachate by the DAF (expressed as a probability distribution) to yield the risk posed by predicted concentrations in water from hypothetical exposure wells. (5) EPA then summed the predicted risks across all facilities to develop an estimate of the distribution of individual risk at facilities managing untreated TC wastes. In addition, the Agency simulated the post-regulatory scenario, and summed the predicted risks across facilities, and developed the incremental risk reduction attributable to today's rule. (6) EPA subsequently developed an estimate of the potential incremental population risk using 1990 population estimates around each site. The Agency used standard assumptions for body weight (70 kg) and water intake (2 liters per day) for 9 years.

v. Human Health Risk Reduction—Air Pathway

Constituents contained in TC waste, soil, and debris may be emitted to air through volatilization and dust entrainment. Reducing the concentrations of TC constituents through the treatment standards set in today's rule reduces the potential for air emissions, and the risks posed by those air emissions. The goal of the air pathway risk analysis was to characterize baseline (pre-LDR) risk and the reduction in baseline risk resulting from regulatory requirements in today's rule.

The Agency's basic approach for the air pathway risk analysis involves the following steps (which are elaborated upon in the RIA background document, which has been placed in the docket for today's rule). (1) EPA used bulk waste concentration data from the TC Survey to represent waste concentrations. (2) the Agency calculated the mean concentration of each constituent at each facility, weighted across the volume of all TC wastes managed at that facility. (3) EPA calculated the unit area managing TC wastes. (4) EPA estimated emissions due to volatilization and dust entrainment for each constituent at each facility. (5) The Agency evaluated the atmospheric transport for each constituent. EPA then estimated exposure concentrations at several downwind points corresponding to potential exposure locations. The Agency employed standard high-end assumptions of body weight (70 kg) and 70-year lifetime. (6) The Agency calculated individual cancer risk and non-cancer risk across the facilities, using the modeled exposure assumptions. (7) EPA calculated population risk for exposed populations. (8) The Agency then simulated the risk under the regulatory requirements in today's rule, and determined the incremental risk reduction.

2. Results Section

a. Volume Results

The Agency has estimated the volumes affected by today's rule. A total of 295,000 tons per year of organic TC wastes (D018–D043) are affected by today's rule; this volume includes 167,000 tons per year of nonwastewaters, 94,000 tons per year of hazardous soil, and 34,000 tons per year of hazardous debris. The volume estimates used in the capacity analysis differ, as described above, from those estimates employed in the regulatory analysis. See the regulatory analysis background document for a more detailed discussion of these differences.

In addition, there are 30 tons per year of Chlorotoluene wastes affected by today's rule. The Agency also estimates that 9,760 tons per year of K069 waste will be affected as a result of the hazardous waste recycling exemption.

b. Cost Results

Exhibit XVI–1 summarizes the results of the cost analysis for today's final rule. In total, today's final rule would have an incremental annual cost of between $194 and $219 million. The lower bound cost estimate represents the effects of waste minimization compliance cost savings. In addition, there is a potential cost savings associated with the UTS standards and the hazardous waste recycling exemption of $2.1 million per year.

EXHIBIT XVI–1.—SUMMARY OF COST IMPACTS

Waste type	Post-regulatory cost (million $/yr)	Baseline cost (million $/yr)	Incremental cost (million $/yr)
Organic TC Wastes (D018–D043):			
Nonwastewaters	175	30	145
Soil	52	17	35
Debris	44	8	36
Waste Minimization	.....	.....	(25)
Chlorotoluenes	0.1	<0.1	<0.1
Test & Recordkeeping	.....	.....	3

EXHIBIT XVI–1.—SUMMARY OF COST IMPACTS—Continued

Waste type	Post-regulatory cost (million $/yr)	Baseline cost (million $/yr)	Incremental cost (million $/yr)
Subtotal for All Newly Regulated Wastes	272	56	194 to 219
Previously Regulated Wastes Affected by Rule:			
K069 Recycling Wastes	0	2.0	(2.0)
Cyanide Wastes (UTS Analysis)	66.5	66.6	(0.1)
Subtotal for All Previously Regulated Wastes	66.5	68.6	(2.1)

Note: The cost impact shown for waste minimization reflects a potential compliance cost savings, and therefore is shown as a range. See the write up of the waste minimization results for more details.

i. Organic TC Wastes

As described above, EPA conducted a facility specific cost analysis for those facilities managing organic TC waste. The incremental costs for the TC wastes, presented in Exhibit XVI–1, are between $191 and $216 million per year. Sixty-seven percent of the total cost, in the upper bound, is for the treatment of organic TC nonwastewaters, and 16 percent and 17 percent is for the treatment of organic TC contaminated soil and debris, respectively.

ii. Other Newly Regulated Wastes

Since current management practices show that no coke by-product wastes are landfilled, as a result of the coke by-product listing rule (August 18, 1992, at 57 FR 37284), EPA estimates that there are no cost impacts associated with the treatment standards for coke by-product wastes. The incremental cost for chlorinated toluenes is estimated to be less than $0.1 million annually.

iii. Testing, Recordkeeping, Permit Modification Costs

The analysis of the testing requirements in today's rule estimates incremental costs of approximately $3 million per year. The costs for the recordkeeping requirements were estimated to be approximately $490,000 per year. These costs are described in more detail in the Regulatory Impact Analysis background document developed for today's rule, which has been placed in the Agency's docket.

c. Waste Minimization

Through the methodology outlined above, the Agency analyzed the cost implications of waste management alternatives involving waste minimization in today's rule. The analysis shows that there is a potential savings of $25 million per year quantifiable in comparing current management practices to waste minimization activities which could be implemented. The Agency presents the cost impact of today's rule as a range from $0 to $25 million per year, representing the cost savings possible through waste minimization activities.

In performing the waste minimization analysis, the Agency focused on specific process for two industries for which data were available. This approach allowed the analysis to be detailed in nature, providing a close examination of facility compliance alternatives. However, in doing so, the Agency believes it has underestimated the potential savings due to waste minimization. In addition, the Agency has not attempted to address any further source reduction, waste minimization, or innovative technology development which may result from today's rule.

d. Economic Impact Results

For the 14 companies with non-commercial, or captive, landfills that receive the company's waste (from the TC Survey), only one company would have a ratio of incremental compliance cost to cost of operations greater than one-half percent; all other facilities would experience even lower economic impacts resulting from today's rule.

Since no costs are associated with the treatment standards for coke by-products, no economic impacts are expected. Based on a ratio analysis of incremental cost to total sales, none of the chlorinated toluene generating facilities is expected to experience significant impacts as a result of the final rule.

e. Benefit Estimate Results

The benefit estimates for today's rule include both reduction in risk to human health, as well as incremental cost savings. Cost savings are estimated for the Universal Treatment Standards (UTS), cost savings resulting from changes to the hazardous waste recycling exemptions. Human health benefits are estimated for cancer and non-cancer risks.

However, there are some benefits which the Agency has not attempted to quantify which are potentially attributable to today's rule. For example, the Agency has not attempted to quantify any potential non-use value benefits from protection of resources through treatment of hazardous wastes.

Furthermore, the risk analysis performed by the Agency for today's rule does not account for many other potential benefits from today's rule. Ecological risk reduction from treatment of wastes under today's rule has not been quantified. Nor do the Agency's air and groundwater benefit estimates account for karst terrain, complex flow situations, or other factors which could contribute to underestimates of benefits. These unquantified benefits are discussed at greater length in the regulatory impact background document for today's rule.

i. Universal Treatment Standards Analysis

The Agency's analysis of the cost impacts realized due to the Universal Treatment Standards requiring/allowing a change in treatment technology from that required under the existing standards produced a cost savings of approximately $100,000 per year. The only wastes for which the Agency found that the UTS standards required/allowed a change in treatment were the cyanide wastes.

The Agency received a number of favorable comments on the adoption of the UTS standards. These commenters stated that the UTS would allow them to save much more in operation costs than the Agency has quantified in the above analysis. One commenter stated that they would save approximately $366,000 annually and 1736 hours per year in manhour savings associated with the UTS for F024. And another commenter stated that they would save approximately $740,000 per year as a result of the UTS. A more thorough description of these cost savings is shown in the Regulatory Impact Analysis background document developed for today's rule, which has been placed in the Agency's docket.

ii. Hazardous Waste Recycling Exemption

The analysis performed by the Agency for the cost impacts associated with the recycling exemption for K069 produced a savings of approximately $2 million per year. A detailed description of the cost savings for K069 is shown in the Regulatory Impact Analysis background document developed for today's rule, which has been placed in the Agency's docket.

iii. Results—Groundwater Pathway

This section presents results for the baseline and post-regulatory risk analyses. For each case, results for individual cancer and non-cancer risk are presented for both high end (i.e. the 90th percentile of the distribution) and central tendency (i.e. 50th percentile of the distribution) risk estimates. The section concludes with population risk estimates for cancer risks.

The results, presented in full in the RIA background document which is included in the docket for today's rule, show that the central tendency cancer risk estimate is expected to be zero. The high-end individual cancer risk is 4×10^{-7}. For the post-regulatory scenario, EPA assumed that all constituents would be treated to universal standards. For the post-regulatory case, the central tendency risk estimate is zero, and the high-end risk estimate is 3×10^{-6}. Using the distribution of individual risks, the Agency calculated baseline and post-regulatory cancer population risks. Based on these assumptions, EPA estimates the baseline population cancer risk to be 0.24 cases per year in the central tendency. The post-regulatory population cancer risk is about 0.02 cases per year in the central tendency. In other words, the regulatory option reduces 0.22 cases per year in the central tendency.

For the non-cancer risks, the analysis shows that the 99th percentile baseline exposure level is less than the reference dose, using central tendency assumptions. The population risk estimates show 2000 people, in the central tendency scenario, who are exposed to non-cancer risk above the threshold.

There are a number of limitations to the groundwater pathway analysis. The timeframe to which these benefits are attributable begins 30 years following promulgation of the rule. The analysis does not account for any existing regulations which would mitigate risks from groundwater (e.g., Clean Water Act). In addition, one of the wastestreams which contributes a large proportion of the groundwater population risk is made up primarily of PCBs, which are not expected to migrate any appreciable distance in groundwater. The DAF used in the analysis was calculated based on drinking wells being within one mile of the facility, and was not adjusted to accord with the population estimates used in the analysis which are based on a two-mile distance. The DAF distribution is not constituent-specific and accounts only for homogeneous flow situations.

iv. Results—Air Pathway

This section provides results for the air pathway, for the baseline and post-regulatory scenarios.

It should be noted that the high end scenario models hypothetical receptors. Approximately 26 of the 35 modeled facilities (74 percent) have individual cancer risks exceeding 10^{-6} for the high end scenario in the baseline. For the high end scenario, the non-cancer risk ratio exceeds one at one facility.

In the post-regulatory scenario, individual cancer risk is lowered considerably, indicating that at most of the facilities risk is driven by TC constituents. In the high end scenario, eight facility(s) have risks exceeding 10^{-6}. Doses of all non-carcinogens are well below reference doses.

For the population risk estimates, the Agency determined that the central tendency incremental benefits are approximately 0.037. For the incremental benefits of today's rule, the Agency performed a sensitivity analysis, described in the RIA background document, which examines the risk implications of changing volatilization rates under different assumptions of landfill cover and frequency of waste placement.

There are a number of limitations to the air pathway analysis. Facilities which were modeled in the analysis were assumed to continue to dispose of treated waste on-site, which, for some facilities, may not be the case. In addition, due to limitations in the model employed, wastes were assumed to be disposed of only one time per year. A sensitivity analysis was conducted and is included in the RIA Background Document, which examines the effect on the emissions rate from this assumption. Finally, only wastestreams with all the necessary information were analyzed. This limitation could have the effect of either under- or overestimating the risks from the air pathway.

B. Regulatory Flexibility Analysis

Pursuant to the Regulatory Flexibility Act of 1980, 5 U.S.C. 601 *et seq.*, when an agency publishes a notice of rulemaking, for a rule that will have a significant effect on a substantial number of small entities, the agency must prepare and make available for public comment a regulatory flexibility analysis that considers the effect of the rule on small entities (i.e.: small businesses, small organizations, and small governmental jurisdictions). Under the Agency's Revised Guidelines for Implementing The Regulatory Flexibility Act, dated May 4, 1992, the Agency committed to considering regulatory alternatives in rulemakings when there were any economic impacts estimated on any small entities. Previous guidance required regulatory alternatives to be examined only when significant economic effects were estimated on a substantial number of small entities.

In assessing the regulatory approach for dealing with small entities in today's final rule, for both surface disposal of wastes and underground injection control, the Agency considered two factors. First, data on potentially affected small entities are unavailable. Second, due to the statutory requirements of the RCRA LDR program, no legal avenues exist for the Agency to provide relief from the LDR's for small entities. The only relief available for small entities is the existing small quantity generator provisions and conditionally exempt small quantity generator exemptions found in 40 CFR 262.11–12, and 261.5, respectively. These exemptions basically prescribe 100 kilograms (kg) per calendar month generation of hazardous waste as the limit below which one is exempted from complying with the RCRA standards.

Given these two factors, the Agency was unable to frame a series of small entity options from which to select the lowest cost approach; rather, the Agency was legally bound to regulate the land disposal of the hazardous wastes covered in today's rule without regard to the size of the entity being regulated.

C. Paperwork Reduction Act

The information collection requirements in this rule have been approved by the Office of Management and Budget (OMB) under the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq.* and have been assigned control number 2050–0085. This rule will reduce the average reporting burden an estimated 0.75 hours per response, due to decreased paperwork requirements. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Chief, Information Policy Branch; EPA; 401 M St., S.W. (Mail Code 2138); Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, marked "Attention: Desk Officer for EPA."

List of Subjects

40 CFR Part 148

Environmental protection, Administrative practice and procedure. Hazardous waste, Reporting and

recordkeeping requirements, Water supply.

40 CFR Part 260

Administrative practice and procedure, Hazardous waste.

40 CFR Part 261

Environmental protection, Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 264

Hazardous waste, Packaging and containers, Reporting and recordkeeping requirements.

40 CFR Part 265

Hazardous waste, Packaging and containers.

40 CFR Part 266

Hazardous waste, Reporting and recordkeeping requirements.

40 CFR Part 268

Hazardous waste, Reporting and recordkeeping requirements.

40 CFR Part 271

Administrative practice and procedure, Hazardous materials transportation, Hazardous waste, Penalties, Reporting and recordkeeping requirements.

Dated: July 29, 1994.

Carol M. Browner,

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 148.17 is amended by redesignating paragraph (b) as (d), redesignating paragraph (c) as (e), and by adding paragraphs (b) and (c) to read as follows:

§ 148.17 Waste specific prohibitions; newly listed wastes.

* * * * *

(b) Effective December 19, 1994 the wastes specified in 40 CFR 261.32 as EPA Hazardous waste numbers K141, K142, K143, K144, K145, K147, K148, K149, K150, and K151, are prohibited from underground injection.

(c) Effective September 19, 1995 the wastes specified in 40 CFR 261.23 as D001 (High TOC Subcategory as specified at 40 CFR 268.40), and in 40 CFR 261.24 as EPA Hazardous waste numbers D012, D013, D014, D015, D016, and D017 are prohibited from underground injection.

* * * * *

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

3. The authority citation for part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921–6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974.

4. In § 260.30, the introductory text and paragraph (b) are revised to read as follows:

§ 260.30 Variances from classification as a solid waste.

In accordance with the standards and criteria in § 260.31 and the procedures in § 260.33, the Administrator may determine on a case-by-case basis that the following recycled materials are not solid wastes:

* * * * *

(b) Materials that are reclaimed and then reused within the original production process in which they were generated; and

* * * * *

5. In § 260.31, the introductory text of both paragraph (a) and (b), is revised to read as follows:

§ 260.31 Standards and criteria for variances from classification as a solid waste.

(a) The Administrator may grant requests for a variance from classifying as a solid waste those materials that are accumulated speculatively without sufficient amounts being recycled if the applicant demonstrates that sufficient amounts of the material will be recycled or transferred for recycling in the following year. If a variance is granted, it is valid only for the following year, but can be renewed, on an annual basis, by filing a new application. The Administrator's decision will be based on the following criteria:

* * * * *

(b) The Administrator may grant requests for a variance from classifying as a solid waste those materials that are reclaimed and then reused as feedstock within the original production process in which the materials were generated if the reclamation operation is an essential part of the production process. This determination will be based on the following criteria:

* * * * *

6. In § 260.32, the introductory text is revised to read as follows:

§ 260.32 Variance to be classified as a boiler.

In accordance with the standards and criteria in § 260.10 (definition of "boiler"), and the procedures in § 260.33, the Administrator may determine on a case-by-case basis that certain enclosed devices using controlled flame combustion are boilers, even though they do not otherwise meet the definition of boiler contained in § 260.10, after considering the following criteria:

* * * * *

7. § 260.33 is revised to read as follows:

§ 260.33 Procedures for variances from classification as a solid waste or to be classified as a boiler.

The Administrator will use the following procedures in evaluating applications for variances from classification as a solid waste or applications to classify particular enclosed controlled flame combustion devices as boilers:

(a) The applicant must apply to the Administrator for the variance. The application must address the relevant criteria contained in § 260.31 or § 260.32.

(b) The Administrator will evaluate the application and issue a draft notice tentatively granting or denying the application. Notification of this tentative decision will be provided by newspaper advertisement or radio broadcast in the locality where the recycler is located. The Administrator will accept comment on the tentative decision for 30 days, and may also hold a public hearing upon request or at his discretion. The Administrator will issue a final decision after receipt of comments and after the hearing (if any).

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

8. The authority citation for Part 261 continues to read as follows:

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

9. Section 261.2 is amended by revising paragraph (e)(1)(iii) to read as follows:

§ 261.2 Definition of solid waste.

* * * * *

(e) * * *

(1) * * *

(iii) Returned to the original process from which they are generated, without first being reclaimed or land disposed. The material must be returned as a substitute for feedstock materials. In cases where the original process to which the material is returned is a

secondary process, the materials must be managed such that there is no placement on the land.

* * * * *

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

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

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

11. In § 264.1, paragraph (g)(6) is revised to read as follows:

§ 264.1 Purpose, scope and applicability.

* * * *

(g) * * *

(6) The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in § 260.10 of this chapter, provided that if the owner or operator is diluting hazardous ignitable (D001) wastes (other than the D001 High TOC Subcategory defined in § 268.40 of this chapter, Table Treatment Standards for Hazardous Wastes), or reactive (D003) waste, to remove the characteristic before land disposal, the owner/operator must comply with the requirements set out in § 264.17(b).

* * * *

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

12. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, 6935, and 6936.

13. In § 265.1, paragraph (c)(10) is revised to read as follows:

§ 265.1 Purpose, scope, and applicability.

* * * *

(c) * * *

(10) The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in § 260.10 of this chapter, provided that if the owner or operator is diluting hazardous ignitable (D001) wastes (other than the D001 High TOC Subcategory defined in § 268.40 of this chapter, Table Treatment Standards for Hazardous Wastes), or reactive (D003) waste, to remove the characteristic before land disposal, the owner/operator must comply with the requirements set out in § 265.17(b).

* * * *

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

14. The authority citation for part 266 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6934.

Subpart C—Recyclable Materials Used in a Manner Constituting Disposal

15. In § 266.23, paragraph (a) is revised to read as follows:

§ 266.23 Standards applicable to users of materials that are used in a manner that constitutes disposal.

(a) Owners or operators of facilities that use recyclable materials in a manner that constitutes disposal are regulated under all applicable provisions of subparts A through N of parts 124, 264, 265, 268, and 270 of this chapter and the notification requirement under section 3010 of RCRA. (These requirements do not apply to products which contain these recyclable materials under the provisions of § 266.20(b) of this chapter.)

* * * * *

Subpart H—Hazardous Waste Burned in Boilers and Industrial Furnaces

16. In § 266.100, the introductory text in paragraphs (c)(1), (c)(3), (c)(3)(i), and (c)(3)(ii); and paragraph (c)(3)(i)(A) are revised to read as follows:

§ 266.100 Applicability

* * * * *

(c) * * *

(1) To be exempt from §§ 266.102 through 266.111, an owner or operator of a metal recovery furnace or mercury recovery furnace, must comply with the following requirements, except that an owner or operator of a lead or a nickel-chromium recovery furnace, or a metal recovery furnace that burns baghouse bags used to capture metallic dusts emitted by steel manufacturing, must comply with the requirements of paragraph (c)(3) of this section:

* * * * *

(3) To be exempt from §§ 266.102 through 266.111, an owner or operator of a lead or nickel-chromium or mercury recovery furnace, or a metal recovery furnace that burns baghouse bags used to capture metallic dusts emitted by steel manufacturing, must provide a one-time written notice to the Director identifying each hazardous waste burned and specifying whether the owner or operator claims an exemption for each waste under this paragraph or paragraph (c)(1) of this section. The owner or operator must comply with the requirements of paragraph (c)(1) of this section for those wastes claimed to be exempt under that paragraph and must comply with the requirements below for those wastes claimed to be exempt under this paragraph (c)(3).

(i) The hazardous wastes listed in appendices XI, XII, and XIII, part 266, and baghouse bags used to capture metallic dusts emitted by steel manufacturing are exempt from the requirements of paragraph (c)(1) of this section, provided that:

(A) A waste listed in appendix IX of this part must contain recoverable levels of lead, a waste listed in appendix XII of this part must contain recoverable levels of nickel or chromium, a waste listed in appendix XIII of this part must contain recoverable levels of mercury and contain less than 500 ppm of 40 CFR part 261, appendix VIII organic constituents, and baghouse bags used to capture metallic dusts emitted by steel manufacturing must contain recoverable levels of metal; and

* * * * *

(ii) The Director may decide on a case-by-case basis that the toxic organic constituents in a material listed in appendix XI, XII, or XIII of this part that contains a total concentration of more than 500 ppm toxic organic compounds listed in appendix VIII, part 261 of this chapter, may pose a hazard to human health and the environment when burned in a metal recovery furnace exempt from the requirements of this subpart. In that situation, after adequate notice and opportunity for comment, the metal recovery furnace will become subject to the requirements of this subpart when burning that material. In making the hazard determination, the Director will consider the following factors:

* * * * *

Appendix XIII to Part 266 [Added]

17. Appendix XIII is added to read as follows:

Appendix XIII to Part 266—Mercury Bearing Wastes That May Be Processed in Exempt Mercury Recovery Units

These are exempt mercury-bearing materials with less than 500 ppm of 40 CFR Part 261, appendix VIII organic constituents when generated by manufacturers or users of mercury or mercury products.

1. Activated carbon
2. Decomposer graphite
3. Wood
4. Paper
5. Protective clothing
6. Sweepings
7. Respiratory cartridge filters
8. Cleanup articles

9. Plastic bags and other contaminated containers
10. Laboratory and process control samples
11. K106 and other wastewater treatment plant sludge and filter cake
12. Mercury cell sump and tank sludge
13. Mercury cell process solids
14 Recoverable levels or mercury contained in soil

PART 268—LAND DISPOSAL RESTRICTIONS

18. 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

19. In § 268.1, paragraphs (c)(3)(ii), (e)(4), and (e)(5) are revised, and paragraph (c)(3)(iii) is added, to read as follows:

§ 268.1 Purpose, scope and applicability.

* * * * *

(c) * * *

(3) * * *

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

(iii) If at the point of generation the injected wastes include D001 High TOC subcategory wastes or D012–D017 pesticide wastes that are prohibited under § 148.17(c) of this chapter, those wastes have been treated to meet the treatment standards of § 268.40 before injection.

* * * * *

(e) * * *

(4) *De minimis* losses to wastewater treatment systems of commercial chemical product or chemical intermediates that are ignitable (D001), corrosive (D002), or are organic constituents that exhibit the characteristic of toxicity (D012–D043), and that contain underlying hazardous constituents as defined in § 268.2(i), are not considered to be prohibited wastes. *De minimis* is defined as losses from normal material handling operations (e.g. spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials); minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; and relief device discharges; discharges from safety showers and rinsing and cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing; or

(5) Land disposal prohibitions for hazardous characteristic wastes do not apply to laboratory wastes displaying the characteristic of ignitability (D001), corrosivity (D002), or organic toxicity (D012—D043), that are mixed with other plant wastewaters at facilities whose ultimate discharge is subject to regulation under the CWA (including wastewaters at facilities which have eliminated the discharge of wastewater), provided that the annualized flow of laboratory wastewater into the facility's headworks does not exceed one per cent, or provided that the laboratory wastes' combined annualized average concentration does not exceed one part per million in the facility's headworks.

20. In § 268.2, paragraphs (g) and (i) are revised to read as follows:

§ 268.2 Definitions applicable in this part.

* * * * *

(g) *Debris* means solid material exceeding a 60 mm particle size that is intended for disposal and that is: A manufactured object; or plant or animal matter; or natural geologic material. However, the following materials are not debris: Any material for which a specific treatment standard is provided in Subpart D, Part 268, namely lead acid batteries, cadmium batteries, and radioactive lead solids; Process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emission residues; and Intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume. A mixture of debris that has not been treated to the standards provided by § 268.45 and other material is subject to regulation as debris if the mixture is comprised primarily of debris, by volume, based on visual inspection.

* * * * *

(i) *Underlying hazardous constituent* means any constituent listed in § 268.48, Table UTS—Universal Treatment Standards, except zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard.

21. Section 268.7 is amended by revising paragraphs (a) and (b)(4)(ii), and by adding paragraph (b)(5)(iv) to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) Except as specified in § 268.32, if a generator's waste is listed in 40 CFR part 261, subpart D, the generator must test his waste, or test an extract using test method 1311 (the Toxicity Characteristic Leaching Procedure, described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846 as incorporated by reference in § 260.11 of this chapter), or use knowledge of the waste, to determine if the waste is restricted from land disposal under this part. Except as specified in § 268.32, if a generator's waste exhibits one or more of the characteristics set out at 40 CFR part 261, subpart C, the generator must test an extract using test method 1311 (the Toxicity Characteristic Leaching Procedure, described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW–846)), or use knowledge of the waste, to determine if the waste is restricted from land disposal under this Part. If the generator determines that his waste exhibits the characteristic of ignitability (D001) (and is not in the High TOC Ignitable Liquids Subcategory or is not treated by CMBST or RORGS of § 268.42, Table 1), or the characteristic of corrosivity (D002), and is prohibited under § 268.37; and/or the characteristic of organic toxicity (D012–D043), and is prohibited under § 268.38, the generator must determine the underlying hazardous constituents (as defined in § 268.2, in the D001, D002, or D012–D043 wastes.

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

(i) EPA Hazardous Waste Number;

(ii) The waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001–F005, F039, D001, D002, and D012–D043. Generators must also include whether the waste is a nonwastewater or wastewater (as defined in § 268.2(d) and (f), and indicate the subcategory of the waste (such as "D003 reactive cyanide"), if applicable;

(iii) The manifest number associated with the shipment of waste;

(iv) For hazardous debris when using the alternative treatment technologies provided by § 268.45:

(A) The contaminants subject to treatment, as described in § 268.45(b); and

(B) An indication that these contaminants are being treated to comply with § 268.45.

(v) For hazardous debris when using the treatment standards for the contaminating waste(s) in § 268.40: the requirements described in paragraphs (a)(1) (i), (ii), (iii), and (vi) of this section.

(2) If a generator determines that he is managing a restricted waste under this Part, and determines that the waste can be land disposed without further treatment, with each shipment of waste he must submit, to the treatment, storage, or land disposal facility, a notice and a certification stating that the waste meets the applicable treatment standards set forth in subpart D of this part and the applicable prohibition levels set forth in § 268.32 or RCRA section 3004(d). Generators of hazardous debris that is excluded from the definition of hazardous waste under 261.3(e)(2) of this chapter (i.e., debris that the Director has determined does not contain hazardous waste), however, are not subject to these notification and certification requirements.

(i) The notice must include the following information:

(A) EPA Hazardous Waste Number;

(B) The waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001–F005, F039, D001, D002, and D012–D043. Generators must also include whether the waste is a nonwastewater or wastewater (as defined in § 268.2 (d) and (f)), and indicate the subcategory of the waste (such as "D003 reactive cyanide"), if applicable;

(C) The manifest number associated with the shipment of waste;

(D) Waste analysis data, where available.

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

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

(3) If a generator's waste is subject to an exemption from a prohibition on the type of land disposal method utilized for the waste (such as, but not limited to, a case-by-case extension under § 268.5, an exemption under § 268.6, or a nationwide capacity variance under subpart C of this part), with each shipment of waste he must submit a notice to the facility receiving his waste stating that the waste is not prohibited from land disposal. The notice must include the following information:

(i) EPA Hazardous Waste Number;

(ii) The waste constituents that the treater will monitor, if monitoring will not include all regulated constituents, for wastes F001–F005, F039, D001, D002, and D012–D043. Generators must also include whether the waste is a nonwastewater or wastewater (as defined in § 268.2 (d) and (f)), and indicate the subcategory of the waste (such as "D003 reactive cyanide"), if applicable;

(iii) The manifest number associated with the shipment of waste;

(iv) Waste analysis data, where available;

(v) For hazardous debris when using the alternative treatment technologies provided by § 268.45:

(A) The contaminants subject to treatment, as described in § 268.45(b); and

(B) An indication that these contaminants are being treated to comply with § 268.45.

(vi) For hazardous debris when using the treatment standards for the contaminating waste(s) in § 268.40: the requirements described in paragraphs (a)(1) (i), (ii), (iii), and (vi) of this section.

(4) If a generator is managing prohibited waste in tanks, containers, or containment buildings regulated under 40 CFR 262.34, and is treating such waste in such tanks, containers, or containment buildings 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. (Generators treating hazardous debris under the alternative treatment standards of Table 1, § 268.45, however, are not subject to these waste analysis requirements.) 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).

(5) If a generator determines whether the waste is restricted based solely on his knowledge of the waste, all supporting data used to make this determination must be retained on-site in the generator's files. If a generator determines whether the waste is restricted based on testing this waste or an extract developed using the test method described in Appendix I of this part, all waste analysis data must be retained on-site in the generator's files.

(6) If a generator determines that he is managing a restricted waste that is excluded from the definition of hazardous or solid waste or exempt from Subtitle C regulation, under 40 CFR 261.2 through 261.6 subsequent to the point of generation, he must place a one-time notice stating such generation, subsequent exclusion from the definition of hazardous or solid waste or exemption from RCRA Subtitle C regulation, and the disposition of the waste, in the facility's file.

(7) Generators must retain on-site a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to this section for at least five years from the date that the waste that is the subject of such documentation was last sent to on-site or off-site treatment, storage, or disposal. The five year record retention period is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator. The requirements of this paragraph apply to solid wastes 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 40 CFR 261.2 through 261.6, or exempted from RCRA Subtitle C regulation, subsequent to the point of generation.

(8) If a generator is managing a lab pack waste and wishes to use the alternative treatment standard under § 268.42(c), with each shipment of waste the generator must submit a notice to the treatment facility in accordance with paragraph (a)(1) of this section, except that underlying hazardous constituents need not be determined. 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 wastes which have not been excluded under appendix IV to 40 CFR 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) [Reserved]

(10) 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 waste constituents to be monitored, if monitoring will not include all regulated constituents, for wastes F001–F005, F039, D001, D002, and D012–D043. Generators must also include whether the waste is a nonwastewater or wastewater (as defined in § 268.2 (d) and (f), and indicate the subcategory of the waste (such as D003 reactive cyanide), if applicable.

* * * * *

(5) * * *

(iv) For characteristic wastes D001, D002, and D012–D043 that are: subject to the treatment standards in § 268.40 (other than those expressed as a required method of treatment); that are reasonably expected to contain underlying hazardous constituents as defined in § 268.2(i); are treated on-site to remove the hazardous characteristic; and are then sent off-site for treatment of underlying hazardous constituents, the certification must state the following:

I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet universal treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

* * * * *

22. In § 268.9, paragraph (a), (d)(1)(i), and (d)(1)(ii) are revised, (d)(1)(iii) is removed and (d)(2) (i) and (ii) are added 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 EPA Hazardous Waste Number (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 the waste code for any applicable listing under 40 CFR part 261, subpart D. In addition, the waste will carry one or more of the waste codes under 40 CFR part 261, subpart C, where the waste exhibits a characteristic, except in the case when the treatment standard for the waste code listed in 40 CFR part 261, subpart D operates in lieu of the treatment standard for the waste code under 40 CFR part 261, subpart C, as specified in paragraph (b) of this section. If the generator determines that his waste displays the characteristic of ignitability (D001) (and is not in the High TOC Ignitable Liquids Subcategory or is not treated by CMBST, or RORGS), or the waste code listed in 40 CFR part 261, subpart D operates in lieu of the treatment standard for the waste code under 40 CFR part 261, subpart C, as specified in paragraph (b) of this section. If the generator determines that his waste displays the characteristic of ignitability (D001) (and is not in the High TOC Ignitable Liquids Subcategory or is not treated by CMBST, or RORGS), or the characteristic of corrosivity (D002), and is prohibited under § 268.37; or that his waste displays the characteristic of toxicity (D012–D043), and is prohibited under § 268.38, the generator must determine the underlying hazardous constituents (as defined in § 268.2), in the D001, D002, or D012–D043 wastes.

* * * * *

(d) * * *

(1) * * *

(i) Name and address of the RCRA Subtitle D facility receiving the waste shipment; and

(ii) A description of the waste as initially generated, including the applicable EPA Hazardous Waste Number(s), treatability group(s), and underlying hazardous constituents (as defined in § 268.2(i) in D001 and D002 wastes prohibited under § 268.37, or D012–D043 wastes under § 268.38.

(2) * * *

(i) If treatment removes the characteristic but does not treat underlying hazardous constituents, then the certification found in § 268.7 (b)(5)(v) apply.

(ii) [Reserved]

Subpart C—Prohibitions on Land Disposal

23. In subpart C, § 268.38 is added to read as follows:

§ 268.38 Waste specific prohibitions—newly identified organic toxicity characteristic wastes and newly listed coke by-product and chlorotoluene production wastes.

(a) Effective December 19, 1994, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste numbers K141, K142, K143, K144, K145, K147, K148, K149, K150, and K151 are prohibited from land disposal. In addition, debris contaminated with EPA Hazardous Waste numbers F037, F038, K107–K112, K117, K118, K123–K126, K131, K132, K136, U328, U353, U359, and soil and debris contaminated with D012–D043, K141–K145, and K147–K151 are prohibited from land disposal. The following wastes that are specified in 40 CFR 261.24, Table 1 as EPA Hazardous Waste numbers: D012, D013, D014, D015, D016, D017, D018, D019, D020, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D031, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043 that are not radioactive, or that are managed in systems other than those whose discharge is regulated under the Clean Water Act (CWA), or that are zero dischargers that do not engage in CWA-equivalent treatment before ultimate land disposal, or that are injected in Class I deep wells regulated under the Safe Drinking Water Act (SDWA), are prohibited from land disposal. CWA-equivalent treatment means biological treatment for organics, alkaline chlorination or ferrous sulfate precipitation for cyanide, precipitation/sedimentation for metals, reduction of hexavalent chromium, or other treatment technology that can be demonstrated to perform equally or better than these technologies.

(b) On September 19, 1996, radioactive wastes that are mixed with D018–D043 that are managed in systems other than those whose discharge is regulated under the Clean Water Act (CWA), or that inject in Class I deep wells regulated under the Safe Drinking Water Act (SDWA), or that are zero dischargers that engage in CWA-equivalent treatment before ultimate land disposal, are prohibited from land disposal. CWA-equivalent treatment means biological treatment for organics, alkaline chlorination or ferrous sulfate precipitation for cyanide, precipitation/sedimentation for metals, reduction of hexavalent chromium, or other treatment technology that can be

demonstrated to perform equally or greater than these technologies. Radioactive wastes mixed with K141–K145, and K147–K151 are also prohibited from land disposal. In addition, soil and debris contaminated with these radioactive mixed wastes are prohibited from land disposal.

(c) Between December 19, 1994 and September 19, 1996, the wastes included in paragraphs (b) of this section may be disposed in a landfill or surface impoundment, only if such unit is in compliance with the requirements specified in § 268.5(h)(2) of this Part.

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

(1) The wastes meet the applicable treatment 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 treatment 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.

(e) To determine whether a hazardous waste identified in this section exceeds the applicable treatment standards specified in § 268.40, the initial generator must test a sample of the waste extract or the entire waste, depending on whether the treatment standards are expressed as concentrations in the waste extract or the waste, or the generator may use knowledge of the waste. If the waste contains constituents in excess of the applicable Subpart D levels, the waste is prohibited from land disposal, and all requirements of part 268 are applicable, except as otherwise specified.

Subpart D—Treatment Standards

24. Section 268.40 is revised to read as follows:

268.40 Applicability of Treatment Standards.

(a) A waste identified in the table "Treatment Standards for Hazardous Wastes" may be land disposed only if it meets the requirements found in the table. For each waste, the table identifies one of three types of treatment standard requirements:

(1) All hazardous constituents in the waste or in the treatment residue must be at or below the values found in the table for that waste ("total waste standards"); or

(2) The hazardous constituents in the extract of the waste or in the extract of the treatment residue must be at or below the values found in the table ("waste extract standards"); or

(3) The waste must be treated using the technology specified in the table ("technology standard"), which are described in detail in § 268.42, Table 1—Technology Codes and Description of Technology-Based Standards.

(b) For wastewaters, compliance with concentration level standards is based on maximums for any one day, except for D004 through D011 wastes for which the previously promulgated treatment standards based on grab samples remain in effect. For all nonwastewaters, compliance with concentration level standards is based on grab sampling. For wastes covered by the waste extract standards, the test Method 1311, the Toxicity Characteristic Leaching Procedure found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in § 260.11, must be used to measure compliance. An exception is made for D004 and D008, for which either of two test methods may be used: Method 1311, or Method 1310, the Extraction Procedure Toxicity Test. For wastes covered by a technology standard, the wastes may be land disposed after being treated using that specified technology or an equivalent treatment technology approved by the Administrator under the procedures set forth in § 268.42(b).

(c) When wastes with differing treatment standards for a constituent of concern are combined for purposes of treatment, the treatment residue must meet the lowest treatment standard for the constituent of concern.

(d) Notwithstanding the prohibitions specified in paragraph (a) of this section, treatment and disposal facilities may demonstrate (and certify pursuant to 40 CFR 268.7(b)(5)) compliance with the treatment standards for organic constituents specified by a footnote in the table "Treatment Standards for Hazardous Wastes" in this section, provided the following conditions are satisfied:

(1) The treatment standards 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 based on combustion in fuel substitution units operating in accordance with applicable technical requirements;

(2) The treatment or disposal facility has used the methods referenced in paragraph (d)(1) of this section to treat the organic constituents; and

(3) The treatment or disposal facility may demonstrate compliance with organic constituents if good-faith analytical efforts achieve detection limits for the regulated organic constituents that do not exceed the treatment standards specified in this section by an order of magnitude.

(e) For characteristic wastes (D001, D002, and D012–D043 that are subject to treatment standards in the following table "Treatment Standards for Hazardous Wastes," all underlying hazardous constituents (as defined in § 268.2(i)) must meet Universal Treatment Standards, found in § 268.48, Table UTS, prior to land disposal.

(f) The treatment standards for F001–F005 nonwastewater constituents carbon disulfide, cyclohexanone, and/or methanol apply to wastes which contain only one, two, or three of these constituents. Compliance is measured for these constituents in the waste extract from test Method 1311, the Toxicity Characteristic Leaching Procedure found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in § 260.11. If the waste contains any of these three constituents along with any of the other 25 constituents found in F001–F005, then compliance with treatment standards for carbon disulfide, cyclohexanone, and/or methanol are not required.

Treatment Standards for Hazardous Wastes

Note: The treatment standards that heretofore appeared in tables in §§ 268.41, 268.42, and 268.43 of this part have been consolidated into the table "Treatment Standards for Hazardous Wastes" in this section.

BILLING CODE 6560–50–P

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
D001	Ignitable Characteristic Wastes, except for the §261.21(a)(1) High TOC Subcategory, that are managed in non-CWA/ non-CWA-equivalent/non-Class I SDWA systems.	NA	NA	DEACT and meet §268.48 standards; or RORGS; or CMBST	DEACT and meet §268.48 standards, or RORGS; or CMBST
	Ignitable Characteristic Wastes, except for the §261.21(a)(1) High TOC Subcategory, that are managed in CWA/CWA-equivalent/Class I SDWA systems	NA	NA	DEACT	DEACT
	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1) - Greater than or equal to 10% total organic carbon. (Note: This subcategory consists of nonwastewaters only.)	NA	NA	NA	RORGS; or CMBST
D002	Corrosive Characteristic Wastes that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems.	NA	NA	DEACT and meet §268.48 standards	DEACT and meet §268.48 standards
	Corrosive Characteristic Wastes that are managed in CWA, CWA-equivalent, or Class I SDWA systems.	NA	NA	DEACT	DEACT
D002, D004, D005, D006, D007, D008, D009, D010, D011	Radioactive high level wastes generated during the reprocessing of fuel rods. (Note: This subcategory consists of nonwastewaters only.)	Corrosivity (pH)	NA	NA	HLVIT
		Arsenic	7440-38-2	NA	HLVIT
		Barium	7440-39-3	NA	HLVIT
		Cadmium	7440-43-9	NA	HLVIT
		Chromium (Total)	7440-47-3	NA	HLVIT
		Lead	7439-92-1	NA	HLVIT
		Mercury	7439-97-6	NA	HLVIT
		Selenium	7782-49-2	NA	HLVIT
		Silver	7440-22-4	NA	HLVIT
D003	Reactive Sulfides Subcategory based on 261.23(a)(5).	NA	NA	DEACT	DEACT
	Explosives Subcategory based on 261.23(a)(6), (7), and (8).	NA	NA	DEACT	DEACT
	Other Reactives Subcategory based on 261.23(a)(1).	NA	NA	DEACT	DEACT
	Water Reactive Subcategory based on 261.23(a)(2), (3), and (4). (Note: This subcategory consists of nonwastewaters only.)	NA	NA	NA	DEACT
	Reactive Cyanides Subcategory based on 261.23(a)(5).	Cyanides (Total)[7]	57-12-5	Reserved	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
D004	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for arsenic based on the extraction procedure (EP) in SW846 Method 1310.	Arsenic	7440-38-2	5.0	5.0 mg/l EP
		Arsenic; alternate[8] standard for nonwastewaters only.	7440-38-2	NA	5.0 mg/l TCLP
D005	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for barium based on the extraction procedure (EP) in SW846 Method 1310.	Barium	7440-39-3	100	100 mg/l TCLP

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
D006	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for cadmium based on the extraction procedure (EP) in SW846 Method 1310.	Cadmium	7440-43-9	1.0	1.0 mg/l TCLP
	Cadmium Containing Batteries Subcategory (Note: This subcategory consists of nonwastewaters only.)	Cadmium	7440-43-9	NA	RTHRM
D007	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for chromium based on the extraction procedure (EP) in SW846 Method 1310.	Chromium (Total)	7440-47-3	5.0	5.0 mg/l TCLP
D008	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for lead based on the extraction procedure (EP) in SW846 Method 1310.	Lead	7439-92-1	5.0	5.0 mg/l EP
		Lead; alternate[6] standard for nonwastewaters only	7439-92-1	NA	5.0 mg/l TCLP
	Lead Acid Batteries Subcategory (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).). (Note: This subcategory consists of nonwastewaters only.)	Lead	7439-92-1	NA	RLEAD
	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 stablized as ash.). (Note: This subcategory consists of nonwastewaters only.)	Lead	7439-92-1	NA	MACRO
D009	Nonwastewaters that exhibit, or are expected to exhibit, the characteristic of toxicity for mercury based on the extraction procedure (EP) in SW846 Method 1310; and contain greater than or equal to 260 mg/kg total mercury that also contain organics and are not incinerator residues. (High Mercury-Organic Subcategory)	Mercury	7439-97-6	NA	IMERC; OR RMERC
	Nonwastewaters that exhibit, or are expected to exhibit, the characteristic of toxicity for mercury based on the extraction procedure (EP) in SW846 Method 1310; and contain greater than or equal to 260 mg/kg total mercury that that are inorganic, including incinerator residues and residues from RMERC. (High Mercury-Inorganic Subcategory)	Mercury	7439-97-6	NA	RMERC
	Nonwastewaters that exhibit, or are expected to exhibit, the characteristic of toxicity for mercury based on the extraction procedure (EP) in SW846 Method 1310; and contain less than 260 mg/kg total mercury. (Low Mercury Subcategory)	Mercury	7439-97-6	NA	0.20 mg/l TCLP
	All D009 wastewaters.	Mercury	7439-97-6	0.20	NA
	Elemental mercury contaminated with radioactive materials. (Note: This subcategory consists of nonwastewaters only.)	Mercury	7439-97-6	NA	AMLGM
	Hydraulic oil contaminated with Mercury Radioactive Materials Subcategory. (Note: This subcategory consists of nonwastewaters only.)	Mercury	7439-97-6	NA	IMERC

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
D010	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for selenium based on the extraction procedure (EP) in SW846 Method 1310.	Selenium	7782-49-2	1.0	5.7 mg/l TCLP
D011	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for silver based on the extraction procedure (EP) in SW846 Method 1310.	Silver	7440-22-4	5.0	5.0 mg/l TCLP
D012	Wastes that are TC for Endrin based on the TCLP in SW846 Method 1311.	Endrin	72-20-8	BIODG; or INCIN	0.13 and meet §268.48 standards
		Endrin aldehyde	7421-93-4	BIODG; or INCIN	0.13 and meet §268.48 standards
D013	Wastes that are TC for Lindane based on the TCLP in SW846 Method 1311.	alpha-BHC	319-84-6	CARBN; or INCIN	0.066 and meet §268.48 standards
		beta-BHC	319-85-7	CARBN; or INCIN	0.066 and meet §268.48 standards
		delta-BHC	319-86-8	CARBN; or INCIN	0.066 and meet §268.48 standards
		gamma-BHC (Lindane)	58-89-9	CARBN; or INCIN	0.066 and meet §268.48 standards
D014	Wastes that are TC for Methoxychlor based on the TCLP in SW846 Method 1311.	Methoxychlor	72-43-5	WETOX or INCIN	0.18 and meet §268.48 standards
D015	Wastes that are TC for Toxaphene based on the TCLP in SW846 Method 1311.	Toxaphene	8001-35-2	BIODG or INCIN	2.6 and meet §268.48 standards
D016	Wastes that are TC for 2,4-D (2,4-Dichlorophenoxyacetic acid) based on the TCLP in SW846 Method 1311.	2,4-D (2,4-Dichlorophenoxyacetic acid)	94-75-7	CHOXD, BIODG, or INCIN	10 and meet §268.48 standards
D017	Wastes that are TC for 2,4,5-TP (Silvex) based on the TCLP in SW846 Method 1311.	2,4,5-TP (Silvex)	93-72-1	CHOXD or INCIN	7.9 and meet §268.48 standards
D018	Wastes that are TC for Benzene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Benzene	71-43-2	0.14	10 and meet §268.48 standards
D019	Wastes that are TC for Carbon tetrachloride based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Carbon tetrachloride	56-23-5	0.057	6.0 and meet §268.48 standards
D020	Wastes that are TC for Chlordane based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Chlordane (alpha and gamma isomers)	57-74-9	0.0033	0.26 and meet §268.48 standards)
D021	Wastes that are TC for Chlorobenzene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Chlorobenzene	108-90-7	0.057	6.0 and meet §268.48 standards
D022	Wastes that are TC for Chloroform based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Chloroform	67-66-3	0.046	6.0 and meet §268.48 standards

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
D023	Wastes that are TC for o-Cresol based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	o-Cresol	95-48-7	0.11	5.6 and meet §268.48 standards
D024	Wastes that are TC for m-Cresol based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	m-Cresol (difficult to distinguish from p-cresol)	108-39-4	0.77	5.6 and meet §268.48 standards
D025	Wastes that are TC for p-Cresol based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	p-Cresol (difficult to distinguish from m-cresol)	106-44-5	0.77	5.6 and meet §268.48 standards
D026	Wastes that are TC for Cresols (Total) based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Cresol-mixed isomers (Cresylic acid) (sum of o-, m-, and p-cresol concentrations)	1319-77-3	0.88	11.2 and meet §268.48 standards
D027	Wastes that are TC for p-Dichlorobenzene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	0.090	6.0 and meet §268.48 standards
D028	Wastes that are TC for 1,2-Dichloroethane based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	1,2-Dichloroethane	107-06-2	0.21	6.0 and meet §268.48 standards
D029	Wastes that are TC for 1,1-Dichloroethylene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	1,1-Dichloroethylene	75-35-4	0.025	6.0 and meet §268.48 standards
D030	Wastes that are TC for 2,4-Dinitrotoluene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	2,4-Dinitrotoluene	121-14-2	0.32	140 and meet §268.48 standards
D031	Wastes that are TC for Heptachlor based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Heptachlor	76-44-8	0.0012	0.066 and meet §268.48 standards
		Heptachlor epoxide	1024-57-3	0.016	0.066 and meet §268.48 standards
D032	Wastes that are TC for Hexachlorobenzene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Hexachlorobenzene	118-74-1	0.055	10 and meet §268.48 standards
D033	Wastes that are TC for Hexachlorobutadiene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Hexachlorobutadiene	87-68-3	0.055	5.6 and meet §268.48 standards
D034	Wastes that are TC for Hexachloroethane based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Hexachloroethane	67-72-1	0.055	30 and meet §268.48 standards
D035	Wastes that are TC for Methyl ethyl ketone based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Methyl ethyl ketone	78-93-3	0.28	36 and meet §268.48 standards

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
D036	Wastes that are TC for Nitrobenzene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Nitrobenzene	98-95-3	0.068	14 and meet § 268.48 standards
D037	Wastes that are TC for Pentachlorophenol based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Pentachlorophenol	87-86-5	0.089	7.4 and meet § 268.48 standards
D038	Wastes that are TC for Pyridine based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Pyridine	110-86-1	0.014	16 and meet § 268.48 standards
D039	Wastes that are TC for Tetrachloroethylene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Tetrachloroethylene	127-18-4	0.056	6.0 and meet § 268.48 standards
D040	Wastes that are TC for Trichloroethylene based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Trichloroethylene	79-01-6	0.054	6.0 and meet § 268.48 standards
D041	Wastes that are TC for 2,4,5-Trichlorophenol based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	2,4,5-Trichlorophenol	95-95-4	0.18	7.4 and meet § 268.48 standards
D042	Wastes that are TC for 2,4,6-Trichlorophenol based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	2,4,6-Trichlorophenol	88-06-2	0.035	7.4 and meet § 268.48 standards
D043	Wastes that are TC for Vinyl chloride based on the TCLP in SW846 Method 1311 and that are managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems only.	Vinyl chloride	75-01-4	0.27	6.0 and meet § 268.48 standards
F001, F002, F003, F004, & F005	F001, F002, F003, F004 and/or F005 solvent wastes that contain any combination of one or more of the following spent solvents: acetone, benzene, n-butyl alcohol, carbon disulfide, carbon tetrachloride, chlorinated fluorocarbons, chlorobenzene, o-cresol, m-cresol, p-cresol, cyclohexanone, o-dichlorobenzene, 2-ethoxyethanol, ethyl acetate, ethyl benzene, ethyl ether, isobutyl alcohol, methanol, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, nitrobenzene, 2-nitropropane, pyridine, tetrachloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, trichloromonofluoromethane, and/or xylenes (except as specifically noted in other subcategories). See further details of these listings in § 261.31	Acetone	67-64-1	0.28	160
		Benzene	71-43-2	0.14	10
		n-Butyl alcohol	71-36-3	5.6	2.6
		Carbon disulfide	75-15-0	3.8	NA
		Carbon tetrachloride	56-23-5	0.057	6.0
		Chlorobenzene	108-90-7	0.057	6.0
		o-Cresol	95-48-7	0.11	5.6
		m-Cresol (difficult to distinguish from p-cresol)	108-39-4	0.77	5.6
		p-Cresol (difficult to distinguish from m-cresol)	106-44-5	0.77	5.6
		Cresol-mixed isomers (Cresylic acid) (sum of o-, m-, and p-cresol concentrations)	1319-77-3	0.88	11.2
		Cyclohexanone	108-94-1	0.36	NA

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] *Number*	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
		o-Dichlorobenzene	95-50-1	0.088	6.0
		Ethyl acetate	141-7-6	0.34	33
		Ethyl benzene	100-41-4	0.057	10
		Ethyl ether	60-29-7	0.12	160
		Isobutyl alcohol	78-83-1	5.6	170
		Methanol	67-56-1	5.6	NA
		Methylene chloride	75-9-2	0.089	30
		Methyl ethyl ketone	78-93-3	0.28	36
		Methyl isobutyl ketone	108-10-1	0.14	33
		Nitrobenzene	98-95-3	0.068	14
		Pyridine	110-86-1	0.014	16
		Tetrachloroethylene	127-18-4	0.056	6.0
		Toluene	108-88-3	0.080	10
		1,1,1-Trichloroethane	71-55-6	0.054	6.0
		1,1,2-Trichloroethane	79-00-5	0.054	6.0
		1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.057	30
		Trichloroethylene	79-01-6	0.054	6.0
		Trichloromonofluoromethane	75-69-4	0.020	30
		Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)	1330-20-7	0.32	30
	F003 and/or F005 solvent wastes that contain any combination of one or more of the following three solvents as the only listed F001-5 solvents: carbon disulfide, cyclohexanone, and/or methanol. [formerly 268.41(c)]	Carbon disulfide	75-15-0	3.8	4.8 mg/l TCLP
		Cyclohexanone	108-94-1	0.36	0.75 mg/l TCLP
		Methanol	67-56-1	5.6	0.75 mg/l TCLP
	F005 solvent waste containing 2-Nitropropane as the only listed F001-5 solvent.	2-Nitropropane	79-46-9	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
	F005 solvent waste containing 2-Ethoxyethanol as the only listed F001-5 solvent.	2-Ethoxyethanol	110-80-5	BIODG; or INCIN	INCIN

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	Cadmium	7440-43-9	0.69	0.19 mg/l TCLP
		Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
		Lead	7439-92-1	0.69	0.37 mg/l TCLP
		Nickel	7440-02-0	3.98	5.0 mg/l TCLP
		Silver	7440-22-4	NA	0.30 mg/l TCLP
F007	Spent cyanide plating bath solutions from electroplating operations.	Cadmium	7440-43-9	NA	0.19 mg/l TCLP
		Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
		Lead	7439-92-1	0.69	0.37 mg/l TCLP
		Nickel	7440-02-0	3.98	5.0 mg/l TCLP
		Silver	7440-22-4	NA	0.30 mg/l TCLP
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	Cadmium	7440-43-9	NA	0.19 mg/l TCLP
		Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
		Lead	7439-92-1	0.69	0.37 mg/l TCLP
		Nickel	7440-02-0	3.98	5.0 mg/l TCLP
		Silver	7440-22-4	NA	0.30 mg/l TCLP
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	Cadmium	7440-43-9	NA	0.19 mg/l TCLP
		Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
		Lead	7439-92-1	0.69	0.37 mg/l TCLP
		Nickel	7440-02-0	3.98	5.0 mg/l TCLP
		Silver	7440-22-4	NA	0.30 mg/l TCLP

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	NA
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	Cadmium	7440-43-9	NA	0.19 mg/l TCLP
		Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
		Lead	7439-92-1	0.69	0.37 mg/l TCLP
		Nickel	7440-02-0	3.98	5.0 mg/l TCLP
		Silver	7440-22-4	NA	0.30 mg/l TCLP
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process	Cadmium	7440-43-9	NA	0.19 mg/l TCLP
		Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
		Lead	7439-92-1	0.69	0.37 mg/l TCLP
		Nickel	7440-02-0	3.98	5.0 mg/l TCLP
		Silver	7440-22-4	NA	0.30 mg/l TCLP
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive con ersion coating process.	Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Cyanides (Total)[7]	57-12-5	1.2	590
		Cyanides (Amenable)[7]	57-12-5	0.86	30
F020, F021, F022, F023, F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of: (1) tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives, excluding wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol (F020); (2) pentachlorophenol, or of intermediates used to produce its derivatives (i.e., F021); (3) tetra-, penta-, or hexachlorobenzenes under alkaline conditions (i.e., F022). Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of: (1) tri- or tetrachlorophenols, excluding wastes from equipment used only for the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol (F023); (2) tetra-, penta-, or hexachlorobenzenes under alkaline conditions (i.e., F026).	HxCDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		HxCDFs (All Hexachlorodibenzofurans)	NA	0.000063	0.001
		PeCDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		PeCDFs (All Pentachlorodibenzofurans)	NA	0.000035	0.001
		TCDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		TCDFs (All Tetrachlorodibenzofurans)	NA	0.000063	0.001
		2,4,5-Trichlorophenol	95-95-4	0.18	7.4
		2,4,6-Trichlorophenol	88-06-2	0.035	7.4
		2,3,4,6-Tetrachlorophenol	58-90-2	0.030	7.4

Waste Code	Waste Description and Treatment/Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
		Pentachlorophenol	87-86-5	0.089	7.4
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.).	HxCDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		HxCDFs (All Hexachlorodibenzofurans)	NA	0.000063	0.001
		PeCDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		PeCDFs (All Pentachlorodibenzofurans)	NA	0.000035	0.001
		TCDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		TCDFs (All Tetrachlorodibenzofurans)	NA	0.000063	0.001
		2,4,5-Trichlorophenol	95-95-4	0.18	7.4
		2,4,6-Trichlorophenol	88-06-2	0.035	7.4
		2,3,4,6-Tetrachlorophenol	58-90-2	0.030	7.4
		Pentachlorophenol	87-86-5	0.089	7.4
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Wastes Nos. F020, F021, F023, F026, and F027.	HxCDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		HxCDFs (All Hexachlorodibenzofurans)	NA	0.000063	0.001
		PeCDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		PeCDFs (All Pentachlorodibenzofurans)	NA	0.000035	0.001
		TCDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.000063	0.001
		TCDFs (All Tetrachlorodibenzofurans)	NA	0.000063	0.001
		2,4,5-Trichlorophenol	95-95-4	0.18	7.4
		2,4,6-Trichlorophenol	88-06-2	0.035	7.4
		2,3,4,6-Tetrachlorophenol	58-90-2	0.030	7.4
		Pentachlorophenol	87-86-5	0.089	7.4
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in §261.31 or §261.32.).	All F024 wastes	NA	INCIN	INCIN
		2-Chloro-1,3-butadiene	126-99-8	0.057	0.28
		3-Chloropropylene	107-05-1	0.036	30
		1,1-Dichloroethane	75-34-3	0.059	6.0
		1,2-Dichloroethane	107-06-2	0.21	6.0
		1,2-Dichloropropane	78-87-5	0.85	18
		cis-1,3-Dichloropropylene	10061-01-5	0.036	18

Waste Code	Waste Description and Treatment /Regulatory Subcategory[1]	REGULATED HAZARDOUS CONSTITUENT		WASTEWATERS	NONWASTEWATERS
		Common Name	CAS[2] Number	Concentration in mg/l[3]; or Technology Code[4]	Concentration in mg/kg[5] unless noted as "mg/l TCLP"; or Technology Code
		trans-1,3-Dichloropropylene	10061-02-6	0.036	18
		bis(2-Ethylhexyl) phthalate	117-81-7	0.28	28
		Hexachloroethane	67-72-1	0.055	30
		Chromium (Total)	7440-47-3	2.77	0.86 mg/l TCLP
		Nickel	7440-02-0	3.98	5.0 mg/l TCLP
F026	Condensed light ends from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. F025 - Light Ends Subcategory	Carbon tetrachloride	56-23-5	0.057	6.0
		Chloroform	67-66-3	0.046	6.0
		1,2-Dichloroethane	107-06-2	0.21	6.0
		1,1-Dichloroethylene	75-35-4	0.025	6.0
		Methylene chloride	75-9-2	0.089	30
		1,1,2-Trichloroethane	79-00-5	0.054	6.0
		Trichloroethylene	79-01-6	0.054	6.0
		Vinyl chloride	75-01-4	0.27	6.0
	Spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. F025 - Spent Filters/Aids and Desiccants Subcategory	Carbon tetrachloride	56-23-5	0.057	6.0
		Chloroform	67-66-3	0.046	6.0
		Hexachlorobenzene	118-74-1	0.055	10
		Hexachlorobutadiene	87-68-3	0.055	5.6
		Hexachloroethane	67-72-1	0.055	30
		Methylene chloride	75-9-2	0.089	30
		1,1,2-Trichloroethane	79-00-5	0.054	6.0
		Trichloroethylene	79-01-6	0.054	6.0
		Vinyl chloride	75-01-4	0.27	6.0