United States Environmental Protection Agency

Office of Solid Waste Washington, D.C. 20460

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Background Document for Capacity Analysis for Land Disposal Restrictions: Inorganic Chemical Production Wastes (Proposed Rule)

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1. INTRODUCTION

This document presents the capacity analysis that the U.S. Environmental Protection Agency (EPA) conducted to support the proposed land disposal restrictions (LDRs) for newly proposed inorganic chemical production wastes. EPA is proposing to list as hazardous three wastes from inorganic chemicals production and to concurrently set LDR treatment standards for these wastes. EPA conducts capacity analyses for all newly identified hazardous wastes to evaluate the need for national capacity variances from the land disposal prohibitions.[1] The capacity analysis provides estimates of the quantities of wastes that will require alternative commercial treatment prior to land disposal as a result of the LDRs and estimates alternative commercial treatment capacity available to manage wastes restricted from land disposal.

This background document, which presents the capacity analyses conducted for the proposal of LDR standards for newly proposed inorganic chemical production wastes, is organized into four sections, as described below:

- **Section 1: Introduction.** Provides background, general methodology, and a summary of the analysis.

- **Section 2: Available Treatment Capacity.** Describes the detailed methodology and data used to assess available commercial capacity for hazardous waste treatment applicable to these wastes.

- **Section 3: Required Treatment Capacity for Newly listed Inorganic Chemicals Production Wastes.** Describes the generation and management of these newly proposed wastes, the constituents of concern, quantity generated, the quantity that currently meets the LDRs, and relevant waste management methods, and the detailed methodology and data used to assess required treatment capacity for newly proposed inorganic production wastes (K176, K177, and K178).

- **Section 4: Capacity Analysis Results.** Describes the results of the capacity analysis by comparing available treatment capacity (Section 2) with required treatment (Section 3).

1.1 LEGAL BACKGROUND

The Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA), enacted on November 8, 1984, set priorities for hazardous waste management. Land disposal, which had been the most widely-used method for managing

[1] The LDRs are effective when the listings and LDRs are promulgated unless the Administrator grants a national capacity variance from the otherwise applicable date and establishes a different date (not to exceed two years beyond the statutory deadline) based on "…the earliest date on which adequate alternative treatment, recovery, or disposal capacity which protects human health and the environment will be available (RCRA section 3004(h)(2)).

hazardous waste, is now the least preferred option.[2] Under HSWA, EPA must promulgate regulations restricting the land disposal of hazardous wastes according to a strict statutory schedule. As of the effective date of each regulation, land disposal of wastes covered by that regulation is prohibited unless (1) the waste meets the treatment standards that have been established; or (2) it can be demonstrated that there will be no migration of hazardous constituents from the disposal unit for as long as the waste remains hazardous.

If finalized, the LDRs are effective on the same date that the hazardous waste listing determinations become effective (typically six months from publication in the *Federal Register*), unless EPA grants a national capacity variance from the statutory date because of a lack of available treatment capacity [see RCRA Section 3004(h)(2)]. EPA is required to determine whether to list as hazardous 'inorganic chemical industry wastes' by Section 30001(e)(2) of RCRA. In 1989, the Environmental Defense Fund (EDF) sued EPA (EDF v. Reilly, Civ. No. 89-0598 D.D.C) in part for failing to meet these statutory deadlines. EPA and EDF entered into a consent decree, which has been amended several times to revise dates. The consent decree sets out a series of deadlines for promulgating RCRA listing decisions, including a requirement to propose a hazardous waste listing determination for inorganic chemical industry wastes. In today's rule, EPA is concurrently proposing LDRs for wastes proposed to be listed as hazardous wastes. The wastes specified in the consent decree, relevant to inorganic chemicals production, are as follows:

- Sodium dichromate production wastes
- Wastes from the dry process for manufacturing phosphoric acid
- Phosphorous trichloride production wastes
- Phosphorous pentasulfide production wastes
- Wastes from the production of sodium phosphate from wet process phosphoric acid
- Sodium chlorate production wastes
- Antimony oxide production wastes
- Cadmium pigments production wastes
- Barium carbonate production wastes
- Potassium dichromate production wastes
- Phenyl mercuric acetate production wastes
- Boric acid production wastes
- Inorganic hydrogen cyanide production wastes
- Titanium dioxide production wastes (except for chloride process waste solids).

The consent decree stipulates that listing decisions are not required for wastes already excluded from hazardous waste regulation under RCRA Section 3001(b)(3)(A)(ii). This section of RCRA exempts solid waste from the extraction, beneficiation, and processing of ores and minerals, as further defined by EPA in 40 CFR 261.4(b)(7).

[2] RCRA defines land disposal "to include, but not be limited to, any placement of such hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave" (RCRA section 3004(k)).

In the past, EPA promulgated listings for ten different wastes from the production of inorganic chemicals and inorganic pigments and established land disposal restrictions for these wastes. This document does not concern such previously regulated wastes.

For every waste EPA considers, on a national basis, both the capacity of commercially available treatment technologies and the quantity of restricted wastes currently sent to land disposal for which on-site treatment capacity is not available. If EPA expects that adequate alternative commercial treatment capacity is available for a particular waste, the land disposal restrictions are effective when the new hazardous waste listings become effective. If not, EPA establishes an alternative effective date based on the earliest date on which adequate treatment capacity will be available or two years, whichever is less. Once the variance expires, the wastes must meet the LDR treatment standards prior to being land disposed.

RCRA also allows generators to apply for extensions to the LDRs on a case-by-case basis for specific wastes generated at a specific facility for which there is not adequate capacity [RCRA Section 3004(h)(3)]. EPA may grant case-by-case capacity variances to applicants who can demonstrate that: (1) no capacity currently exists anywhere in the U.S. to treat a specific waste; and (2) a binding contractual commitment is in place to construct or otherwise provide alternative capacity, but due to circumstances beyond the applicant's control, such alternative capacity cannot reasonably be made available by the effective date (40 CFR 268.5).[3]

HSWA's schedule divided hazardous wastes into three broad categories: solvent and dioxin wastes; California list wastes;[4] and "scheduled" wastes. Exhibit 1-1 summarizes the previous LDR and LDR-related rulemakings and their respective promulgation dates. EPA restricted surface-disposed solvents and dioxins from land disposal on November 7, 1986, and deep well-injected solvents and dioxins from land disposal on July 26, 1988. The final rule for California list wastes, issued on July 8, 1987, covers wastes originally listed by the State of California and fully adopted by HSWA. The "scheduled" wastes consist of all wastes that were identified or listed as hazardous prior to November 8, 1984, but were not included in the first two categories listed above. HSWA's statutory timetable required that EPA restrict one-third of these wastes by August 8, 1988, two-thirds by June 8, 1989, and the remaining third by May 8, 1990. For hazardous wastes that are newly identified or listed after November 8, 1984, EPA is required to promulgate land disposal prohibitions within six months of the date of identification or listing [RCRA Section 3004(g)(4)].

Exhibit 1-1 also lists proposed rules which are relevant to the LDR program. These rules are included because if they are finalized, they would affect the capacity analysis for inorganic chemical production wastes.

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[3] RCRA also allows generators to petition for a variance from treatment standards if the waste cannot be treated to meet LDR standards due to its chemical or physical properties. These variances are known as treatability variances (40 CFR 268.44).

[4] The "California list" comprises the following classes of wastes: liquid hazardous wastes with a pH of less than or equal to 2.0 (acidic corrosive wastes); all liquid hazardous wastes containing free cyanides, various metals, and polychlorinated biphenyls (PCBs) exceeding statutory concentration levels; and all wastes (liquid, sludge, or solid) containing halogenated organic compounds (HOCs) in concentrations greater than or equal to specified statutory levels.

Exhibit 1-1. Summary of Land Disposal Restrictions and Related Rulemakings

Rulemaking	Federal Register Notice	Promulgation/ Proposal Date
Solvents and Dioxins (surface disposed)	51 *FR* 40572	November 7, 1986
Solvents and Dioxins (deep well injected)	53 *FR* 28188	July 26, 1988
California List (surface disposed)	52 *FR* 25760	July 8, 1987
California List (deep well injected)	53 *FR* 30908	July 26, 1988
First Third Rule	53 *FR* 31138	August 8, 1988
First Third Rule (deep well injected)	54 *FR* 25416	June 7, 1989
Second Third Rule	54 *FR* 26594	June 8, 1989
Third Third Rule	55 *FR* 22520	May 8, 1990
Newly Listed Wastes and Hazardous Debris (Phase I) Land Disposal Restrictions; Final Rule	57 *FR* 37194	August 18, 1992
Interim Final Rule for Vacated Treatment Standards	58 *FR* 29860	May 24, 1993
Land Disposal Restrictions Phase II - Universal Treatment Standards, and Treatment Standards for Organic Toxicity Characteristic Wastes and Newly Listed Wastes (Phase II); Final Rule	59 *FR* 47980	September 19, 1994
Land Disposal Restrictions Phase III - Decharacterized Wastewaters, Carbamate Wastes, and Spent Potliners; Final Rule	61 *FR* 15566, 15660	April 8, 1996
Emergency Revision of the Land Disposal Restrictions (LDR Phase III) Treatment Standards for Listed Hazardous Wastes from Carbamate Production; Final Rule	61 *FR* 43924	August 26, 1996
Emergency Extension of the K088 Capacity Variance (Phase III - Final Rule)	62 *FR* 1992, 62 *FR* 37693	January 14, 1997, July 14, 1997
Treatment Standards for Wood Preserving Wastes, Paperwork Reduction and Streamlining, Exemptions from RCRA for Certain Processed Materials, and Miscellaneous Hazardous Waste Provisions (Phase IV - Final Rule)	62 *FR* 25998	May 12, 1997
Clarification of Standards for Hazardous Waste Land Disposal Restriction Treatment Variances (Final Rule)	62 *FR* 64504	December 5, 1997
Organobromine Production Wastes; Identification and Listing of Hazardous Waste; Land Disposal Restrictions; et al.; Final Rule	63 *FR* 24596	May 4, 1998
Land Disposal Restrictions Phase IV: Final Rule Promulgating Treatment Standards for Metal Wastes and Mineral Processing Wastes; Mineral Processing Secondary Materials and Bevill Exclusion Issues; Treatment Standards for Hazardous Soils, and Exclusion of Recycled Wood Preserving Wastewaters, Final Rule	63 *FR* 28556	May 26, 1998
Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Petroleum Refining Process Wastes; Land Disposal Restrictions for Newly Identified Wastes; et al.; Final Rule	63 *FR* 42110	August 6, 1998
Hazardous Remediation Waste Management Requirements (HWIR-Media); Final Rule	63 *FR* 65874	November 30, 1998

Exhibit 1-1. Summary of Land Disposal Restrictions and Related Rulemakings

Rulemaking	Federal Register Notice	Promulgation/ Proposal Date
Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Dye and Pigment Industries; Hazardous Waste Listing Determination Policy; and CERCLA Hazardous Substance Designation and Reportable Quantities; Proposed Rule	59 *FR* 66072	December 22, 1994
Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Dye and Pigment Industries; Land Disposal Restrictions for Newly Identified Wastes; CERCLA Hazardous Substance Designation and Reportable Quantities; Proposed Rule	64 *FR* 40192	July 23, 1999
Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Chlorinated Aliphatics Production Wastes; Land Disposal Restrictions for Newly Identified Wastes; and CERCLA Hazardous Substance Designation and Reportable Quantities; Proposed Rule	64 *FR* 47476	August 25, 1999

1.2 CAPACITY ANALYSIS METHODOLOGY

In evaluating the need for national capacity variances, EPA estimates the quantities of waste requiring alternative commercial treatment as a result of the LDRs and the capacity available at commercial treatment facilities to manage the restricted wastes. By comparing the capacity demand with the available commercial capacity, EPA can identify capacity shortfalls and make proposed determinations concerning national capacity variances. The first step in satisfying the goals of a capacity analysis is to make a "threshold" analysis, which dictates whether a national treatment capacity variance is needed for the two years following promulgation of a waste's LDR treatment standards or is not needed at all. Thus, EPA estimates the required and available commercial treatment capacity for all affected wastes and facilities, but often only to the extent needed to make this threshold analysis. For example, when upper-bound estimates of required capacity are well below lower-bound estimates of available capacity, then generally a variance is not needed and the analysis can stop. Similarly, when lower-bound estimates of required capacity far exceed the upper-bound estimates of available capacity, then often the two-year maximum capacity variance is needed. Results that are between two extremes generally require EPA to conduct further analyses.[5]

This section provides an overview of EPA's methodology in estimating required and available commercial treatment capacity.

[5] EPA will also derive estimates of affected facilities and waste quantities for the regulatory impact analysis (RIA). However, the goals of a capacity analysis and an RIA are very different, which often results in reasonable differences in methodologies, data, and results. In contrast to the capacity analysis' focus on required and available capacity during the next two years and its initial focus on threshold determinations, the RIA concentrates on estimating specific potential significant (or dominant) long-term costs and benefits of the LDR treatment standards. Thus, the RIA does not conduct a threshold analysis of treatment capacity. Furthermore, the RIA evaluates affected facilities and wastes over a much longer time frame.

1.2.1 Analysis of Required Commercial Treatment Capacity

Required commercial treatment capacity represents the quantity of wastes currently being land disposed that cannot be treated on site and will consequently need commercial treatment to meet the LDR treatment standards. Required commercial capacity includes the residuals generated by treatment of these wastes (i.e., the quantity of generated residuals that will need treatment prior to land disposal).

EPA identifies the waste streams potentially affected by the LDRs by types of land disposal units, including surface impoundments, waste piles, land treatment units, landfills, and underground injection wells. Not all of these disposal methods are used for the inorganic chemical production wastes; only those land disposal methods reported to be used for these inorganic chemical production wastes are addressed in the capacity analysis.

To assess the type of alternative capacity required to treat the affected wastes, EPA conducts a "treatability analysis" for each waste stream. Based on the waste's physical and chemical form and information about prior management practices, EPA assigns the quantity of affected waste to an appropriate technology (i.e., a technology that can meet the treatment standards). For treatment standards proposed as numerical standards, more than one technology may be applicable. For treatment standards proposed as technology standards, only one technology is applicable because it is the only technology that is allowed to be used for compliance with LDRs. Mixtures of RCRA wastes (i.e., waste streams described by more than one waste code) can present special treatability concerns because they often contain constituents (e.g., organics and metals) requiring different types of treatment. To treat these wastes, EPA develops a treatment train that will effectively treat all waste types in the group (e.g., incineration followed by stabilization of the incinerator ash). In these cases, EPA estimates the amount of residuals that would be generated by treatment of the original quantity of waste and includes these residuals in the quantities requiring alternative treatment capacity.

EPA identifies the quantities of waste requiring alternative treatment on a facility level basis. If the appropriate treatment technology is not available on site, or if adequate available capacity is not present to manage the waste, then the appropriate quantity of waste requiring alternative treatment is aggregated into a national demand for commercial capacity. EPA excludes from the estimates of required commercial capacity those wastes that are managed in on-site treatment systems.

1.2.2 Analysis of Available Commercial Treatment Capacity

The analyses conducted to estimate available commercial treatment capacity focuses on treatment capacity projected to be available for the two years following the effective date of the final rule, starting from the baseline capacity identified from the most recent land disposal restrictions final rule. As shown in Exhibit 1-1, this was the rule finalizing listing determinations and land disposal restrictions for petroleum refining wastes (63 *FR* 42110, August 6, 1998).

Available treatment capacity can be analyzed by grouping facilities into four categories:

(1) commercial - capacity available at facilities that manage waste from any facility;
(2) onsite (private) - capacity available at facilities that manage only waste generated onsite;
(3) captive - capacity available at facilities that manage only waste from other facilities under the same ownership; and
(4) limited commercial - capacity available at facilities that manage waste from a limited number of facilities not under the same ownership.

For capacity analyses, estimates on available capacity reflect available commercial capacity. The determination of available capacity focuses on commercial facilities. Consequently, most estimates of capacity presented in this document represent commercially available capacity.

1.3 SUMMARY OF CAPACITY ANALYSIS FOR PROPOSED RULE

EPA is proposing to list as hazardous three wastes generated from antimony oxide and titanium dioxide production. EPA is proposing to list K176 through K178 wastes as hazardous:

- K176: "Baghouse filters from the production of antimony oxide." These wastes are typically generated as nonwastewaters.

- K177: "Slag from the production of antimony oxide that is disposed of or speculatively accumulated." These wastes are typically generated as nonwastewaters.

- K178: "Nonwastewaters from the production of titanium dioxide by the chloride-ilmenite process [This listing does not apply to chloride process waste solids from titanium tetrachloride production exempt under section 261.4 (b)(7)]." These wastes are typically generated as nonwastewaters.

For the wastes generated by the remaining production processes identified in the consent decree, EPA is proposing not to list these wastes. Therefore, they are not addressed in this capacity analysis.

Today's rule concurrently proposes land disposal restrictions for the three wastes proposed for listing and also proposes modifications to the Universal Treatment Standards (UTS) and treatment standards for F039 wastes. A summary of the types of treatment standards being proposed and the treatment technologies expected to be used in meeting the proposed treatment standards is as follows:

- Modification of UTS/F039: Numerical treatment standards for manganese are being added to the UTS list (found at 40 CFR §268.48) and the F039 list (40 CFR §268.40). EPA expects that facilities can use existing technologies, specifically stabilization for nonwastewater forms of wastes, if the waste they generate is subject to one of these standards and contains manganese above the proposed treatment standard.

- K176: This waste is comprised of metals on a cloth matrix. EPA is proposing that the waste meet numerical treatment standards, equivalent to UTS, for antimony, arsenic,

cadmium, lead, and mercury. EPA expects these wastes to require treatment only for the metals antimony, arsenic, cadmium, lead, and mercury. EPA expects that facilities will use stabilization and/or metals recovery to meet the proposed standards. EPA does not expect facilities to use mercury recovery technologies because the level of mercury in the waste is less than 260 mg/kg.

- K177: This waste is an inorganic matrix. EPA is proposing numerical treatment standards, equivalent to UTS, for antimony, arsenic, and lead. EPA expects that facilities will use stabilization and/or metals recovery to meet the proposed standards.

- K178: This waste is a wastewater treatment sludge. EPA is proposing numerical treatment standards for manganese, thallium, and for forms of octa-, hepta-, tetra-, penta-, and hexa- dioxins and furans. In addition, EPA is proposing an alternative treatment standard of combustion (CMBST) for the dioxin/furan components. EPA expects that facilities will use incineration followed by stabilization to meet the proposed treatment standards.

For these wastes, EPA has determined that only nonwastewater forms of the waste are generated. However, wastewater forms may occasionally be generated as treatment residuals, etc.

To assess the need for national capacity variances, EPA estimated the quantities of waste requiring alternative commercial treatment as a result of the land disposal restrictions and the capacity available at commercial treatment facilities to manage the restricted wastes. Exhibit 1-2 indicates the quantities of land disposed wastes requiring alternative commercial treatment of recovery capacity as a result of the proposed rule. Exhibit 1-2 also indicates whether adequate treatment capacity is available for these wastes. Based on the results of the capacity analysis, EPA is proposing not to grant a national capacity variance for wastewater or nonwastewater forms of K176, K177, or K178.

Exhibit 1-2. Inorganic Chemicals Production Wastes Proposed for Listing: Capacity Analysis Summary

Waste Stream	Quantities Requiring Alternative Capacity (tons per year)	Type of Treatment*	Adequate Commercial Treatment Capacity Available?
K176 Nonwastewaters	8	Stabilization or metals recovery	Yes
K177 Nonwastewaters	22	Stabilization or metals recovery	Yes
K178 Nonwastewaters	7,300- 73,000	Incineration followed by stabilization	Yes
Wastewater forms of K176, K177, and K178	Minimal	---	Yes
Soil and Debris Contaminated with K176, K177, and K178	Minimal	---	Yes
F039/UTS Nonwastewaters **	<70,000 F039 <520,000 UTS	Stabilization or metals recovery	Yes
F039/UTS Wastewaters**	<7,000,000 F039 <14,000,000 UTS	Sedimentation, chemical precipitation, or other wastewater treatment	Yes

*Because numerical standards are being finalized, generators may use any method (other than impermissible dilution) to meet the treatment standards. For K178, generators may use the alternative treatment standard of combustion to satisfy the land disposal restrictions for dioxins and furans. This table lists the technologies identified as BDAT or otherwise likely to be used in meeting the treatment standard.

**This represents the additional capacity that may be required to treat manganese, as a result of its proposed addition to UTS and F039 treatment standards. These are bounding assumptions and are therefore expressed as 'less than.'

2. AVAILABLE TREATMENT CAPACITY

This section presents EPA's estimates of available commercial treatment capacity for selected treatment technologies applicable to TC metal wastes, mineral processing wastes, and other mixed radioactive wastes affected by the proposed rule for inorganic chemical production wastes. This information is used in subsequent sections for evaluating the availability of capacity for treatment/recovery technologies as alternatives to land disposal of the newly proposed hazardous wastes and making treatment capacity variance determinations for LDR wastes.

This section is organized into the following four sections:

- Section 2.1: Combustion Capacity
- Section 2.2: Stabilization Capacity;
- Section 2.3: Metals Recovery Capacity; and
- Section 2.4: Wastewater Treatment Capacity.

These four technologies were selected because they are commonly used by the hazardous waste management industry for the treatment of nonwastewater forms of newly identified hazardous wastes and/or they are designated as best demonstrated available technologies (BDATs) for LDR wastes (e.g., combustion for organic compounds).

2.1 COMMERCIAL HAZARDOUS WASTE COMBUSTION CAPACITY

EPA is proposing numerical treatment standards, based on universal treatment standards, for dioxins and furans in K178. Combustion was used to develop universal treatment standards for these organic constituents. Combustion, therefore, represents one treatment technique that can be used to achieve these numerical treatment standards.

In assessing the available treatment capacity for combustion, EPA used two estimation methods. In the first method, data from an early 1990's trade association survey was used in conjunction with the identified additional capacity requirements resulting from subsequent LDR rules such as Phase IV. In this analysis, data were compiled for both hazardous waste incinerators and boilers and industrial furnaces (BIFs) (hazardous waste incinerators have the sole purpose of destroying hazardous wastes, while BIFs have the dual purpose of destroying hazardous wastes and deriving energy from the waste that can be then used for other industrial processes). A summary of the methodology, data, and results are provided in Sections 2.1.1 and 2.1.2.

Due to the age of the survey data, EPA also used an alternative method to estimate capacity using more recent BRS data. This analysis identified commercial combustion facilities from the 1995 and 1997 BRS. A summary of the results are provided in Section 2.1.3 with more detailed discussion included in Appendix A.

2.1.1 Methodology and Data

EPA has estimated current available commercial combustion capacity by using the results of industry data provided in the early 1990s, and subsequently subtracting required combustion

capacity due to promulgation of land disposal restrictions of the Phase I through IV wastes, and other listed wastes.

In 1993, the Hazardous Waste Treatment Council (HWTC) and the Cement Kiln Recycling Coalition (CKRC) surveyed their membership to obtain data on combustion capacity, which was then submitted to EPA. Subsequent to the original HWTC survey, members also received a supplemental questionnaire regarding the burning of soils. In 1994, the Environmental Technologies Council (ETC) submitted updates to the HWTC Survey from its members.[6] Survey responses received from incinerators are classified as confidential business information (CBI). Following the receipt of the original surveys, EPA reviewed the data submitted by each facility to evaluate the completeness, consistency, and accuracy of the information. EPA identified and reconciled data gaps and anomalies by contacting the respective HWTC or CKRC coordinators and the individual facilities in question.[7]

The data contains facility information (e.g., location, EPA identification number of burner, number of units currently on-line), unit specific information (e.g., type of incinerator/kiln unit, operating hours per year, types of hazardous waste feed systems, types of hazardous waste burned in 1992), and waste-type specific information (e.g., tons of hazardous waste burned in 1992, average hazardous waste feed rate, maximum practical capacity, maximum permit capacity). To preserve the confidentiality of the survey and updated data, only aggregated results for these CBI data are provided.

The information received from facilities participating in these surveys does not lend itself to simple summation and tabulation of results because facilities sometimes differed in their approach to reporting quantities burned or burning capacity. Incineration systems can generally accept multiple waste forms (e.g., pumpable sludges and aqueous liquids) and accepting larger amounts of one waste form may reduce the capacities for others. In responding to the HWTC survey (and ETC updates), facilities sometimes grouped waste types for their capacity-related responses. For example, if a feed system can accommodate both liquids and pumpable sludges, a facility may report a capacity for both forms grouped together. To address this interchangeability of waste forms, EPA's LDR capacity analysis accommodated the reported waste groupings (e.g., one capacity estimate for liquids and pumpable sludges combined).

A second issue also relating to the interchangeability of waste forms required more extensive consideration. In the HWTC survey (and ETC update), some facilities reported the maximum combustion capacity for individual waste forms that together exceed the reported overall capacity of the unit. As a result, summing these individual capacities results in a total capacity that far exceeds what a facility may practically accommodate. EPA developed the following algorithm to address this situation.

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[6] In 1994, HWTC became the Environmental Technologies Council (ETC). ETC provided EPA with a 1994 update to the commercial incinerator survey.

[7] Background Document for Capacity Analysis for Land Disposal Restrictions Phase II – Universal Standards, and Treatment Standards for Organic Toxicity Characteristic Wastes and Other Newly Listed Wastes. Volume 1: Capacity Analysis Methodology and Results, Chapter 2. U.S. EPA. August 1994. (In docket for 59 *FR* 47980, September 19, 1994.)

The waste apportionment algorithm focuses on three primary variables: the quantity of waste burned during the year, the maximum practical capacity of the unit, and the available capacity for burning hazardous waste. The available capacity for a waste form (e.g., aqueous liquids, dry solids) is obtained by taking the difference between the quantity of the form burned (hazardous and non-hazardous waste) and the maximum capacity for the waste form. EPA's approach assumes that a facility will not stop burning non-hazardous waste if it is currently burning non-hazardous waste but all unutilized capacity will be used for hazardous waste. Difficulties arise, however, because facilities report maximum capacities for each waste form without regard to capacity accounted for by other waste forms. Consequently, the sum of maximum capacities for all waste forms may exceed the total capacity. In these cases, EPA distributed the total maximum hazardous waste capacities reported by each facility to individual waste forms based on burning practices. The utilization rate for each waste form was calculated by dividing the larger of the quantity of hazardous waste burned or total waste burned for that waste form by the sum of the quantities burned for all waste forms. A new maximum hazardous waste capacity for each waste form was then calculated by multiplying the utilization rate for that waste form by the maximum practical capacity for the incineration unit as a whole. If the calculated maximum capacity for a waste form exceeded the reported value for that form, EPA used the reported value. In this case, the difference between the calculated and reported value was then redistributed to other waste forms using a hierarchy based on the types of wastes in this rule for which capacity has historically been most limited relative to demand. EPA used the following order for redistributing capacity:[8]

(1) Soils;
(2) Bulk Solids;
(3) Containerized Solids;
(4) Nonpumpable Sludges;
(5) Pumpable Sludges;
(6) Compressed Gases;
(7) Non-aqueous Liquids; and
(8) Aqueous Liquids.

Cement kiln capacity for hazardous waste is limited by air emission limits (e.g., 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 in the past, however, indicate that some kilns accept wastes below this heating value.) Incineration capacity is also limited by air emission limits and 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.

[8] ibid, page 2-10 to 2-12 to see example.

Once the baseline[9] available combustion estimates were calculated using the above methodology (i.e., based on information received from the facilities participating in the HWTC and CKRC surveys conducted in 1993 and updates by ETC in 1994), EPA subtracted the required combustion capacity for any previously regulated wastes that are not accounted for in the data received from the incinerators or BIFS (e.g., LDR Phase I wastes under variance, LDR Phase II, III, and IV wastes, and recently listed petroleum refining wastes)[10] to derive the available combustion capacity for the proposed dye and pigment manufacturing wastes. The capacity required for Phase II, III, and IV wastes, and newly listed petroleum refining process wastes were not reflected in the estimates of utilized capacity because the Phase II, III, and IV rules, and Listing/LDR rule for petroleum refining process wastes were not in effect when the estimates were submitted to EPA. In addition, some Phase I wastes (F037 and F038 in particular) were under a variance for at least part of the period of time for which EPA received capacity estimates.

Also, when EPA finalized the LDR Phase IV rule, EPA conducted additional analysis by developing assumptions to account for the uncertainty associated with the age of the bulk of the data (which are now several years old) and assessing the potential trends in combustion capacity over the next two years. This additional analysis primarily involved three activities: (1) updating available capacity where possible using facility-specific CBI submitted by Rollins Environmental Services (RES) in 1996 as a public comment to the LDR Phase IV proposed rule[11], (2) applying assumptions where necessary to obtain a range of overall available capacity, and (3) researching potential impacts of upcoming maximum achievable control technology (MACT) standards.

2.1.2 Available Combustion Capacity

Exhibit 2-1 summarizes EPA's estimates of "pre-baseline" available commercial hazardous waste combustion (incinerators and BIFs) capacity by waste form. This exhibit also provides summarized estimates of available capacity by two broad categories of waste physical forms: (1) liquids and (2) sludges/solids. The following analysis has focused on the availability of capacity only for solids/sludges because the newly listed petroleum refining process wastes are expected to fall entirely within this broad category of physical forms.

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[9] "Pre-Baseline" available combustion capacity estimates are presented in Exhibit 2-1 (i.e., estimates prior to accounting for LDR Phase I, II, III, IV wastes, and recently listed petroleum refining process wastes).

[10] LDR Phase I Final Rule: 57 *FR* 37194, August 18, 1992; LDR Phase II Final Rule: 59 *FR* 47980, September 19, 1994; LDR Phase III Final Rule; 61 *FR* 15566, April 8, 1996; LDR Phase IV Final Rules: 62 *FR* 25998, May 12, 1997 and 63 *FR* 28556, May 26, 1998; Listing and LDR Final Rule for Petroleum Refining Process Wastes: 63 *FR* 42110, August 6, 1998

[11] Background Document for Land Disposal Restrictions - Wood Preserving Wastes (Final Rule): Capacity Analysis and Response to Capacity-Related Comments, April 1997, pages 4-7 to 4-12.

Exhibit 2-1. Pre-Baseline Available Commercial Hazardous Waste Combustion Capacity Summary

Waste Form	Incinerators			BIFs			Total Available (1000 tpy)
	Maximum (1000 tpy)	Available (1000 tpy)	Percent Utilized	Maximum (1000 tpy)	Available (1000 tpy)	Percent Utilized	
Liquids (aqueous)	190	92	51	NA	NA	NA	92
Liquids (non-aqueous)	346	159	54	NA	NA	NA	159
Reported as All Liquids (aqueous & non-aqueous)	82	56	31	1,548	702	55	759
Reported as Liquids & Pumpable Sludges Grouped	32	20	38	236	49	79	68
Pumpable Sludges	116	66	43	37	12	68	78
Nonpumpable Sludges	32	17	47	5	1	72	18
Reported as Solids & Nonpumpable Sludges Grouped	53	38	27	35	11	69	49
Bulk Solids	133	70	47	25	18	30	88
Dry Solids	NA	NA	NA	49	39	20	39
Containerized Solids	231	102	56	146	106	28	208
Compressed Gases	5	3	43	NA	NA	NA	3
Soils	169	157	7	NA	NA	NA	157
TOTAL LIQUIDS	650	327	50	1,785	751	58	1,078
TOTAL SOLIDS & SLUDGES	734	450	39	298	187	37	638
TOTAL	1,390	780	44	2,083	938	55	1,718

Notes:

1. This pre-baseline capacity summary is based on survey data compiled during 1993 and 1994. For details of capacity for individual combustion units (incinerators and BIFs) refer to U.S. EPA's "Background Document for Capacity Analysis for Land Disposal Restrictions Phase III-Decharacterized Wastewaters, Carbamate and Organobromine Wastes, and Spent Potliners (Final Rule)", February 1996, Chapter 2.
2. Although estimates of available capacity for today's final rule are based on this capacity summary, the final values include adjustments for the additional capacity required due to Phases II, III and IV LDR rules. Details of adjustments are provided in the text.

As shown in Exhibit 2-1, the available sludge/solid commercial combustion capacity) prior to accounting for the capacity required due to the Phase I through IV rules) is 638,000 tons/year.[12] Post-Phase I and II, but pre-Phase III and IV, data obtained from one major treater, RES, through comments and subsequent submissions of CBI, as well as extrapolation of these data to all other combustion data, were used to update this pre-baseline estimate and to simultaneously account for Phase I and II wastes. The result is approximately 489,000 tons/year of available pre-Phase III and IV capacity,[13] with a range between about 410,000 to 568,000 tons/year.[14] For the Phase III wastes, EPA estimated that the relevant required sludge/solid combustion capacity is 4,600 tons/year. Therefore, the overall pre-Phase IV combustion capacity for sludges/solids is estimated at 484,000 tons/year; between about 406,000 to 564,000 tons/year. In the Phase IV rulemaking for wood preserving wastes, EPA estimated that approximately 9,000 tons/year of non-liquid/nonwastewater combustion capacity is required for wastes from wood preserving operations.[15] Thus, EPA estimates that approximately 475,000 tons/year (397,000 to 555,000 tons/year) of combustion capacity is available to treat wastes restricted from land disposal by the remainder of the Phase IV rulemaking. In the Phase IV rulemaking for TC metal and mineral processing wastes, EPA estimated that approximately 32,000 tons/year (8,800 to 52,000 tons/year) of combustion capacity is required.[16] Finally, as a result of the August 6, 1998 finalizing listing and LDR standards for four newly listed petroleum refining wastes (K169-K172), approximately 8,000 tons/year of sludges of combustion capacity is required.[17] Thus, EPA estimates that approximately 435,000 tons/year (337,000 to 538,000 tons/year) of combustion capacity is available to treat the newly proposed inorganic chemicals production wastes. Even

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[12] EPA summed the available capacity of "pumpable sludges" (78,000 tons/year), "nonpumpable sludges" (18,000 tons/year), "solids and non-pumpable sludges" (49,000 tons/year), "bulk solids" (88,000 tons/year), "dry solids" (39,000 tons/year), "containerized solids" (208,000 tons/year), and "soils" (157,000 tons/year).

[13] To calculate this quantity, EPA first developed separate estimates of available combustion capacity for RES facilities and non-RES facilities. EPA determined the pre-baseline capacity available at non-RES facilities by subtracting the pre-baseline combustion at RES facilities from the pre-baseline estimate of national sludge, solid, and soil combustion available capacity, and then subtracting an estimate of the non-RES share of wastes restricted from land disposal due to the Phase I and II rulemakings. EPA then added this result to the estimated increase in RES available capacity to estimate the total pre-Phase III available capacity for incinerators and BIFs. Because most of the information used in these calculations is CBI, EPA can not disclose the details in this document.

[14] Because of the age of the data used and the uncertainties of the various assumptions used, EPA developed a "best estimate" and a range of available combustion capacity values. EPA's best estimate is based on a calculation of the current percentage of the Phase I and Phase II wastes that RES is combusting. The range was calculated by assuming that RES is combusting a lesser percentage than the best estimate (lower end), or is burning a greater percentage than the best estimate (upper bound).

[15] Background Document for Land Disposal Restrictions - Wood Preserving Wastes (Final Rule), Capacity Analysis and Response to Capacity-Related Comments, April 1997, page 3-13

[16] U.S. Environmental Protection Agency. Capacity Analysis for Land Disposal Restrictions--Phase IV: Newly Identified Toxicity Characteristic Metal Wastes and Mineral Processing Wastes (Final Rule) Background Document. Section 3.6.10, page 3-28. April 1998.

[17] U.S. Environmental Protection Agency. Background Document for Capacity Analysis for Land Disposal Restrictions: Newly Identified Petroleum Refining Wastes (Final Rule). Section 3.3, page 3-15. August, 1998.

though soil and debris contaminated with wood preserving wastes[18] would utilize some combustion capacity, there is still more than adequate combustion capacity to treat the much lesser volume of newly proposed inorganic chemicals production wastes (Section 3 presents an estimate of the quantity requiring alternative treatment).

Since the baseline combustion capacity data were several years old, some combustion facilities have closed, others have opened, and others have made process changes affecting their capability and capacity to treat hazardous wastes.[19] Much of this information is industry proprietary in nature and cannot be quantified in this report. In addition, several facilities that had proposed expansion of thermal capacity have now abandoned their proposals.[20] Difficulties in permitting make it highly unlikely that other combustion units could be brought on-line in the near-term (i.e., within two years). Recent industry publications indicate that the public continues to oppose nearly every proposed hazardous waste management facility, and state and local legislative bodies continue to pass restrictive siting laws or permitting moratoriums. As a result, many project sponsors have already, or may eventually, find the process too costly.[21] Therefore, the available combustion capacity is expected to remain relatively steady through the year 2001.

2.1.3 Alternative Data Source Used in Estimating Combustion Capacity

To update or substantiate the estimates identified in Section 2.1.2, EPA used more current data obtained from the RCRA Information System (RCRIS), the 1997 Biennial Reporting System (BRS), and the 1995 BRS. This analysis identifies hazardous waste combustion facilities that are commercial and operational as of May 1999. For each facility, the maximum practical capacity is calculated as the amount of hazardous waste that could be handled by a facility, given constraints of a calendar year, work shifts, and permits. Utilized capacity is identified as the amount of hazardous waste that was actually managed (i.e., the quantity managed in 1997 according to the 1997 BRS). No additional analysis was conducted to account for wastes for which the effective date of land disposal restrictions was after this date.

A description of the data and methodology are presented in Appendix A, and results are summarized here. There were 48 commercial combustion facilities in the nation with a combined maximum practical capacity of 2.8 million tons per year. Less than 1.3 million tons per year of the capacity was being utilized, leaving a total available capacity of almost 1.6 million tons per year.

The total available capacity for the combustion of liquids and pumpable sludges is approximately 0.9 million tons per year. Of this capacity, approximately 0.3 million tons per year

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[18] Note that the two-year capacity variance for soil and debris contaminated with wood preserving wastes which was effective from May 12, 1997 (62 *FR* 25998) has expired.

[19] Background Document for "Capacity Analysis for Land Disposal Restrictions–Phase IV: Newly Identified Toxicity Characteristic Metal Wastes and Mineral Processing Wastes (Final Rule), April 1998," page 2-15 to 2-17.

[20] "Commercial Hazardous Waste Management Facilities: 1997 Survey of North America," *The Hazardous Waste Consultant*. March/April 1997.

[21] ibid.

comes from incineration and 0.6 million tons per year comes from energy recovery. The total capacity for the combustion of solids and non-pumpable sludges is approximately 0.7 million tons per year.

2.2 STABILIZATION CAPACITY

Stabilization is a conventional treatment technology that effectively treats wastes contaminated with metals and other inorganic contaminants. Thus, stabilization is a widely used commercial treatment technology for the wastes covered by the newly proposed rule for inorganic chemical production wastes. EPA used the stabilization capacity analysis conducted in support of the Phase IV LDRs[22] for this proposed rulemaking.

In the capacity analysis conducted for the Phase IV LDR second supplemental proposed rule (62 *FR* 26041, May 12, 1997), the Agency estimated approximately 1.1 million tons/year of stabilization capacity to be commercially available. To obtain this estimate, the Agency built, in part, on the capacity analysis conducted for the Third Third LDR Rule (55 *FR* 22520, June 1, 1990). The Third Third analysis was based on the May 1990 Treatment, Storage, Disposal, and Recycling (TSDR) Capacity Data Set (based on a survey of TSDR facilities). The TSDR data set contains estimates of the amount of hazardous and nonhazardous waste entering each treatment system in 1986, the maximum hazardous waste capacity, and the maximum total waste capacity. The TSDR Survey was administered in 1987 to 2,500 facilities and was designed to provide comprehensive information on current and planned hazardous waste management practices at RCRA-permitted and interim status treatment, storage, recycling, and disposal facilities. The TSDR Survey also contained projections of capacity changes from 1986 through 1992.[23]

Following the original TSDR Survey, EPA updated the TSDR Capacity Data Set for critical technologies based on confirmation of planned capacity changes, and other information received since the survey (e.g., comments on proposed rules). This updated information was used to account for the treatment capacity required for wastes covered by previous LDR rules and then estimate the stabilization capacity available (approximately 1.1 million tons/yr) for wastes covered by the Phase IV LDR rule.

EPA provided these estimates for public comment as part of the Phase IV LDR second supplemental proposed rule (62 *FR* 26041, May 12, 1997). In response, EPA obtained additional and more recent information on stabilization capacity from commenters. EPA also collected additional information from published data and surveys and the 1995 Biennial Reporting System (BRS) database. These data were used to build upon the 1.1 million tons/year of stabilization capacity estimate published by EPA in the Phase IV proposed rule. The methodology used for this analysis and the revised stabilization treatment capacity estimated for the Phase IV wastes are provided below.

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[22]U.S. EPA. Capacity Analysis for Land Disposal Restrictions - Phase IV: Newly Identified Toxicity Characteristic Metal Wastes and Mineral Processing Wastes (Final Rule). Background Document. April 1998.

[23]For a more detailed explanation of the TSDR Survey and of the Third Third Rule, refer to USEPA, *Background Document for Third Third Wastes to Support 40 CFR Part 268 Land Disposal Restriction*s, May 1990, Volumes I and II, in the docket for the Third Third rule.

For updating the stabilization treatment capacity estimate for the Phase IV final rule, EPA examined several new data sources. Of these, the 1995 BRS data provided the most substantive and current information on commercial stabilization facilities. EPA relied on information provided in the PS, WR, and GM forms of the BRS and estimated the available capacity for individual facilities as follows:[24]

- For 16 facilities, complete maximum and utilized treatment capacity data were available from PS forms;
- For nine facilities, the 1995 BRS data did not provide adequate capacity information, so EPA used information reported by these facilities in the 1993 BRS;
- For 12 facilities, EPA received maximum and utilized treatment capacity data through direct correspondence with facility representatives;
- Additional information on three facilities was received from contact with states;
- For 24 facilities, EPA estimated the utilized capacity information based on the waste quantities reported in the WR and GM forms, and since maximum capacity information is not provided in the WR and GM forms, these capacities were calculated from the utilized capacity and the average industry utilization rate (14 percent)[25] calculated based on data from facilities that provided complete information; and
- For one facility only maximum capacity value was available, and therefore the utilized capacity was estimated based on the average industry utilization rate of 14 percent.

A summary of the results of this analysis are provided in Exhibit 2–2. Based on this analysis, EPA estimates that as much as 18 million tons/year of stabilization capacity was available in 1995 for wastes restricted from land disposal restrictions (prior to the effective date of Phase IV).[26] Even if EPA restricts their analysis to facilities reporting fully commercial status, the estimate of available stabilization capacity in 1995 is still approximately 8 million tons (the difference is due to data which is missing and to facilities which report that services are available only to a specific site, company, or limited number of generators in their 1995 PS form). This estimate reflects a significant increase from the estimate of 1.1 million tons/year in the capacity

[24]The PS form, which is submitted voluntarily, provides information on the capacity and quantity managed in individual treatment systems; the WR form includes the amount of waste received from off-site; and the GM form includes the amount of waste that was generated and managed on-site.

[25]An average industry utilization rate of approximately 14 percent (1,864,805/13,716,092 = 0.136) was calculated based on the volumes of waste being treated at the 34 facilities that submitted PS forms to the BRS or provided capacity information through direct correspondence with EPA.

[26] Because the primary data source is the 1995 BRS, the capacity estimate is given with that year. However the estimate was supplemented with public comments and facility correspondence from 1997, as well as (for some facilities) 1993 BRS data. . .

analysis for the Phase IV LDR second supplemental proposed rule (62 *FR* 26041, May 12, 1997). This increase in available capacity is attributed to the use of more complete, accurate, and current commercial treatment data.

Several caveats should be noted regarding these data:

- Because the stabilized wastes are typically disposed in on-site landfills, many facilities could be reporting their landfill capacities as stabilization capacities. In such cases, the available stabilization treatment capacity values would be overestimated.

- For many facilities identified from the BRS database, the commercial availability of the treatment is limited, none, or unknown. Therefore, available commercial capacity could be lower than what is shown in Exhibit 2–2. On the other hand, most facilities that report commercial status report fully available commercial status. These facilities alone account for approximately 8 million tons/year of available capacity. Furthermore, the one facility reporting full non-commercial status was one of the smaller facilities.

- Capacity information used in this analysis is primarily based on information provided by the industry in the PS, WR, and GM forms of the BRS database. Because some of the information provided in the BRS is voluntary (e.g., PS forms), these data may not accurately reflect the maximum and available treatment capacity.

- The average utilization rate of 14 percent used to calculate the utilized and available capacity for many facilities may not provide an accurate statistical representation of the national average.

- Because nonhazardous wastes are not required to be reported in the BRS, the utilized capacity data only refer to the hazardous waste capacity. Therefore, the available capacity could be an overestimate. In addition, wastes excluded from the definition of solid waste and permitting requirements are not reported in the BRS. These factors could significantly influence the stabilization capacity estimates.

- Another caveat is the ability of the treatment to meet UTS, give any technical limitations. Thus available capacity could be less than estimated based on this issue.

Additional information was obtained during the public comment period, and in discussions with individual facilities. In general, commenters who provided information on available capacity indicated that they are not utilizing their treatment units to the maximum practical capacity.

Some waste streams (i.e., organics) were identified by commercial waste managers as being relatively difficult to treat using stabilization. This is significant for inorganic chemical production wastes because two of the four wastes proposed to be listed contain both organic and inorganic constituents above UTS. Three facilities (Environmental Enterprises, Heritage Environmental Services, and Peoria Disposal Company) noted, for example, that treating organic underlying hazardous constituents (UHCs) would require some type of pretreatment. Two of these facilities (Environmental Enterprises and Heritage Environmental Services) stated that they

would incinerate these wastes, and the other facility (Peoria Disposal Company) stated that it would send the wastes off site for pretreatment. EPA received several other comments, however, indicating that these difficulties could be readily overcome. Two commenters (Environmental Quality and LWD, Inc.) specifically stated that organic UHCs in the wastes that they receive can be readily treated to UTS without significant changes in their processes. Therefore, EPA believes that sufficient commercial capacity exists for stabilization treatment technology for wastes containing both organic and inorganic properties.

Exhibit 2-2. Summary of Capacity for Stabilization and Metals Recovery

Technology	Maximum Capacity (tons/year)	Utilized Capacity (tons/year)	Available Capacity (tons/year)
Stabilization	21,298,000	2,896,000	18,402,000
Metals recovery	3,669,000	1,441,000	2,228,000

Note: available capacity is of 1997, prior to the effective date of the Phase IV rule.

2.3 METALS RECOVERY CAPACITY

Due to several factors - including (1) metal recovery treatment as one of the bases for the LDR treatment standards for several metals, (2) the basic nature of mineral processing wastes and many TC wastes generated by metal industries, and (3) EPA's policy of preferring pollution prevention or recycling to treatment - EPA evaluated the potential to recover metals from inorganic chemical production wastes. In general, metal recovery facilities may specialize in the types of treatment and metal recovery conducted. Specifically, EPA anticipates that proposed wastes K176 and K177 are potentially amenable to metal recovery because these wastes have significant quantities of antimony. Additionally, sampling data from high temperature metals recovery is the basis of the proposed treatment standard for manganese.

EPA identified metals recovery capacity data collected in support of the Phase IV LDRs[27] for the inorganic chemicals production wastes proposed rule. For the Phase IV final rule, EPA examined several data sources for updating the metals recovery capacity estimate from the Phase IV second supplemental proposed rule (62 *FR* 26041, May 12, 1997), including 1995 BRS data representing the PS, WR, and GM forms (i.e., these forms identify the capacity, and the quantities treated). EPA does not expect all such facilities to potentially accept the proposed wastes. However, the results of this analysis are summarized in Exhibit 2–2. Based on this analysis, EPA estimates that as much as 2.2 million tons/year of metals recovery capacity is available for wastes restricted from land disposal. Several caveats should be noted regarding these data:

- EPA does not possess data specific to metals recovery for antimony oxide or titanium dioxide wastes. While EPA knows that metals recovery for antimony containing wastes is available, the Agency does not have a list of facilities that recover antimony or the available recovery capacity of facilities recovering antimony. Such wastes must

[27]U.S. EPA. Background Document for Capacity Analysis of the Land Disposal Restrictions - Phase IV: Newly Identified Toxicity Characteristic Metal Wastes and Mineral Processing Wastes (Final Rule). April 1998.

typically be evaluated on a site-specific basis to identify recoverable metals content and restricted impurities.

- For many facilities identified from the BRS database, the commercial availability of the treatment is limited, none, or unknown. Therefore, available commercial capacity could be lower than what is shown in Exhibit 2–2. Most facilities that report commercial status report partial or fully available commercial status. The fully commercial facilities alone account for approximately 900,000 tons/year of available capacity.

- Capacity information used in this analysis is primarily based on information provided by the industry in the PS, WR, and GM forms of the BRS database. Because some of the information provided in the BRS is voluntary (e.g., PS forms), these data may not accurately reflect the maximum and available treatment capacity.

- The average utilization rate of 39 percent that was used to calculate the maximum and available capacity for many facilities may not provide an accurate statistical representation of the national average.

- Because nonhazardous wastes are not required to be reported in the BRS, the utilized capacity data only refer to the hazardous waste capacity. Therefore, the available capacity could be an overestimate. In addition, wastes excluded from the definition of solid waste and permitting requirements are not reported in the BRS. These factors could significantly influence the metals recovery capacity estimates. Another caveat is the ability of the treatment to meet UTS, give any technical limitations. Thus available capacity could be less than estimated based on this issue.

To account for this uncertainty, EPA identified available treatment capacity for one type of metal recovery, high temperature metals recovery (HTMR), using other data sources. This is expected to be most relevant for K176, K177, and K178 because several regulated constituents have numerical treatment standards based on HTMR.

EPA first identified HTMR treatment capacity in its promulgation of the final treatment standards for K061 (56 FR 41174, August 19, 1991). In this rule, EPA estimated an available capacity of 550,000 tons per year of HTMR capacity were available, and approximately 415,000 tons per year of K061 were generated in 1991 (with most managed by HTMR). This available capacity estimate carried a caveat that "some of the capacity was believed to be from older facilities that may not be able to meet the land disposal restrictions." Therefore, using the 1991 data, there was excess HTMR capacity of well over 100,000 tons per year.

Since 1991 there have been changes in the generation and management of K061, and in HTMR capacity. The quantity of K061 generated has increased to about 900,000 tons in 1998.[28] Additionally, stabilization followed by landfilling is currently the most predominant management

[28] Bagsarian, Tom. "Cashing in on Steelmaking Byproducts." New Steel, March 1999.

method. About 390,000 tons of K061 was managed using HTMR in 1998. While plant-specific capacity information is not available, recent information suggests insufficient K061 recycling capacity is available to manage greater quantities of the waste.[29]

The results of this analysis suggest that the 1991 estimate of available HTMR capacity is no longer valid, and data are not available to form a more appropriate estimate. However, available metals recovery is dependent on the specific composition of the waste, with a high of 2.2 million tons per year (if all types of metal recovery were applicable).

2.4 WASTEWATER TREATMENT CAPACITY

Commercial wastewater treatment may be required for facilities to comply with the proposed addition of manganese to the F039 treatment standards and UTS. Additionally, wastewater forms of K176, K177, and K178 (e.g., generated as treatment residuals) may require treatment. EPA has identified the BDAT for manganese as sedimentation. Other technologies, including chemical precipitation, are also expected to meet the proposed treatment standard. Chemical precipitation is a separation technology that removes organic and inorganic constituents from wastewater by the addition of chemicals that cause the formation of precipitates. Sedimentation is the removal of solids from wastewater, which may be used alone or in conjunction with a technology such as chemical precipitation.

EPA cannot estimate the available capacity for facilities using technologies likely to remove manganese or other metals to below UTS (e.g., limited to facilities that use sedimentation, chemical precipitation, or similar technologies). Instead, EPA has made estimates regarding the available capacity of wastewater treatment as a whole (e.g., technologies that treat organics and/or metals). This estimate was conducted for the Phase IV rule[30] and EPA used this same estimated available wastewater treatment capacity for this proposed inorganic chemicals production wastes rule. The Phase IV estimate was based on the results of a 1991 survey developed by EPA's Office of Water (the Waste Treatment Industry Questionnaire), to collect information on centralized wastewater treatment capacity. The information collected during this effort represents 1989 data and includes maximum and available treatment capacity. Approximately 40 million tons (9.7 billion gallons) of wastewater treatment capacity are available each year at 65 facilities. In addition, there are 11 additional treatment facilities that were not included in this estimate because they did not supply the requested capacity information. By assigning the average available capacity of 638,000 tons per year to each of the non-reporting facilities, EPA estimates a total available commercial wastewater treatment capacity of more than 47 million tons each year. This 47 million ton per year capacity is in the form of many types of treatment such as biological, metal treatment, etc.

EPA used the 1991 BRS to confirm this estimate of available wastewater treatment capacity. Specifically, the PS form (waste treatment, disposal, or recycling process systems) of

[29] Ibid.

[30] U.S. EPA. Background Document for Land Disposal Restrictions: Wood Preserving Wastes (final rule). April 1997. Pages 2-6 through 2-10.

the 1991 BRS contains information on the utilized and maximum capacity of the facility's waste treatment system. EPA found the total available wastewater treatment capacity reported in the BRS at facilities representing approximately 90 percent of the total operational capacity reported in the Waste Treatment Industry Questionnaire. According to the 1991 BRS, these facilities had 33 million tons (7.9 billion gallons) of available capacity. Adjusting this estimate to reflect the fact that it represents an estimated 90 percent, rather than 100 percent, of the total operational capacity, approximately 37 million tons of available wastewater treatment capacity are available. This estimate compares favorably to the estimate of 47 million tons obtained from the Office of Water data.

3. REQUIRED CAPACITY FOR INORGANIC CHEMICALS PRODUCTION WASTES

3.1 INTRODUCTION

This section describes the required treatment capacity for the newly proposed K176, K177, and K178 inorganic production wastes. The overall purpose of this analysis is to estimate the new demand for commercial Subtitle C treatment and recovery capacity resulting from the proposed listing of these hazardous wastes and simultaneous proposal of land disposal restrictions. The quantity of K176, K177, and K178 estimated to require commercial offsite treatment capacity as a result of this analysis is then compared to the national estimate of available Subtitle C commercial treatment capacity (presented in Section 2). When EPA promulgates final LDR standards for these wastes, EPA will use data from the capacity analysis to assess the need for a national capacity variance from the LDRs as specified in RCRA 3004(h)(2).

This capacity analysis incorporates data and information on K176, K177, and K178 generation and management collected during the EPA industry study of inorganic chemicals production wastes. Section 3.1 contains information on the processes generating K176, K177, and K178. Section 3.2 describes the data sources used in estimating the quantities of K176, K177, and K178 generated and managed. Section 3.3 presents EPA's assessment of the quantities of K176, K177, and K178 potentially requiring commercial treatment. Sections 3.4 to 3.6 describe other aspects of the capacity analysis. Section 3.7 discusses the wastes that are impacted by revisions to F039 treatment standards and UTS.

3.1.1 Background

Information on the regulatory background of the K176, K177, and K178 wastes, the processes that generate the wastes, and the proposed regulatory definitions of these wastes is presented here. Specifically, regulatory background for K176, K177, and K178 is presented in Section 3.1.1, and industry sector overviews and descriptions of the processes generating the wastes are presented in Section 3.1.2.

Regulatory Background of Previous Solid Waste Regulations Affecting Industry

EPA has previously listed as hazardous a number of wastes in 40 CFR §261.32 from specific sources within the inorganic chemicals industry, including wastes from the production of inorganic pigments (codes K002 through K008), and wastes from chlorine production (codes K071, K073, and K106).

EPA also prepared a Report to Congress which further studied mineral processing wastes identified in the 1990 rule to determine their regulatory status under the Bevill exclusion. EPA issued this report on July 31, 1990 (Report to Congress on Wastes from Mineral Processing). As a result of this Report to Congress, EPA published a regulatory determination on June 13, 1991(56 FR 27300) which finalized the list of Bevill exempt activities and wastes (40 CFR §261.4(b)(7)).

One waste from titanium dioxide production processes is specifically listed under 40 CFR

261.4(b)(7)(ii)(S) as the following Bevill exemption: “chloride process waste solids from titanium tetrachloride production”. These solids are generated during the chlorination reaction of the titanium ore in the reducing presence of coke at elevated temperatures, and are generated from both the chloride process and the chloride-ilmenite process. Solids are also generated from the oxidation and finishing stages of titanium dioxide production that are not covered by the Bevill exemption. When these ‘Bevill’ and ‘non-Bevill’ wastes are mixed, the resulting waste is no longer covered by the Bevill exemption.

EDF Consent Decree

In 1984 HSWA amended RCRA by instituting explicit new hazardous waste management requirements, including land disposal restriction (LDR) schedules for all listed hazardous wastes (Solvents and Dioxins, California List, First Third, Second, Third, and Third Third). Congress directed EPA (through HSWA) to investigate wastes generated by the inorganic chemical production industry [RCRA Section 3001(e)(2)]. In 1989, the Environmental Defense Fund (EDF) sued EPA, in part, for failing to meet the statutory deadlines of Section 3001(e)(2) of RCRA (EDF vs. Browner; Civ. No. 89-0598 D.D.C.). To resolve most of the issues of the case, EDF and EPA entered into a consent decree, which was approved by the court on December 9, 1994 and has been amended subsequently to revise dates. The consent decree sets out an extensive series of deadlines for promulgating RCRA rules and for completing certain studies and reports. The proposed K176, K177, and K178 wastes include those studied as a result of the consent decree.

For the purposes of the current listing investigation, EPA must make listing determinations for the following inorganic chemicals manufacturing process wastes:

- Sodium dichromate production wastes
- Wastes from the dry process for manufacturing phosphoric acid
- Phosphorus trichloride production wastes
- Phosphorus pentasulfide production wastes
- Wastes from the production of sodium phosphate from wet process phosphoric acid
- Sodium chlorate production wastes
- Antimony oxide production wastes
- Cadmium pigments production wastes
- Barium carbonate production wastes
- Potassium dichromate production wastes
- Phenyl mercuric acetate production wastes
- Boric acid production wastes
- Inorganic hydrogen cyanide production wastes
- Titanium dioxide production wastes (except for chloride process waste solids).

Inorganic Wastes Proposed for Listing

The wastes proposed for listing under 40 CFR Part 261 in today’s rule are as follows:

- K176: Baghouse filters from the production of antimony oxide.

- K177: Slag from the production of antimony oxide that is disposed of or speculatively accumulated.

- K178 Nonwastewaters from the production of titanium dioxide by the chloride-ilmenite process. [This listing does not apply to chloride process waste solids from titanium tetrachloride production exempt under section 261.4(b)(7).]

3.1.2 Processes Generating Inorganic Chemicals Wastes

Antimony Oxide Production

Antimony oxide was produced by four facilities in the United States in 1998. Antimony oxide is used as a flame retardant in plastics and textiles, a smoke suppressant, a stabilizer for plastics, an opacifier in glass, ceramics and vitreous enamels, and a coating for titanium dioxide pigments and chromate pigment.

Two processes are used to produce antimony oxide, the direct process and the indirect process. In the direct process, antimony oxide is roasted in the presence of air. The antimony oxide is formed as a fume, cools, and is condensed in a baghouse. In the indirect process, coarse oxides, slags and other feedstocks are reduced to antimony metal prior to the production of antimony oxide. The metal is then volatilized and reacted with oxygen in the vapor phase to produce antimony oxide. The antimony oxide cools and is condensed in a baghouse.

Wastes typically generated from antimony oxide production include antimony slag (with relatively low antimony levels), high antimony slag, baghouse filters, miscellaneous antimony oxide waste, empty supersacks, and truck wash sludge. In addition to these wastes, there are other materials produced that are immediately reused in the production process. Antimony oxide product from various product packaging operations collected in the hygiene system and reinserted into the furnace is not a solid waste when used in this manner. Floor sweepings are also immediately reinserted into the furnace for antimony recovery.

Baghouse filters would be classified as K176 and slag would be classified as K177.

Titanium Dioxide Production Using the Chloride-Ilmenite Process

Titanium dioxide (TiO_2) is a bright-white powder used predominately as a pigment for paints, rubber, paper, and plastics. While four different processes are used to generate titanium dioxide (sulfate process, chloride process, sulfate-chloride process, and chloride-ilmenite process), only one, the chloride-ilmenite process, produces wastes that are proposed for listing. Three facilities, each owned by E.I. DuPont de Nemours and Company (DuPont), use the chloride-ilmenite process as described below. The three facilities are located in New Johnsonville (TN), Edgemoor (DE), and Pass Christian (MS).[31]

[31] U.S. EPA. Technical Background Document. Identification and Description of Mineral Processing Sectors and Waste Streams. December 22, 1997.

This process utilizes two steps to convert a low-grade ilmenite ore to titanium tetrachloride ($TiCl_4$). First, the ilmenite ore is reacted with chlorine in the presence of coke as a reducing agent. The chlorine reacts with the iron oxide in the ilmenite ore, producing gaseous iron chlorides that are subsequently condensed in a spray condenser to form iron chloride waste acids (i.e., ferric chloride ($FeCl_3$)). In the second step, the beneficiated ore is converted to gaseous $TiCl_4$ over a period of several hours. The $TiCl_4$ is then purified to separate the $TiCl_4$ from the other chlorides and then oxidized to TiO_2. Aluminum chloride is added in the oxidation step to promote the formation of the rutile crystal, which is the titanium dioxide (TiO_2) product.[32]

The titanium oxide production process generates various wastewaters. Solids generated from these wastewaters would be classified as K178.

3.2 DATA SOURCES

EPA's investigation of the wastes generated by the inorganic chemical industry has included two major information collection efforts: survey evaluation and field investigations.

3.2.1 RCRA §3007 Questionnaire

EPA developed an extensive questionnaire under the authority of Section 3007 of RCRA for distribution to the inorganic chemicals production industry. The purpose of the RCRA §3007 Questionnaire was to gather information about solid and hazardous waste management practices in the U.S. inorganic chemicals production industry. EPA used this information to determine whether certain waste streams should be managed as hazardous under RCRA and added to the list of hazardous wastes under 40 CFR 261. The questionnaire included sections requesting information with respect to:

- Corporate and facility information
- Types of inorganic chemical products and inorganic chemical intermediates manufactured at the facility
- Types of processes at the facility
- Solvent use during the manufacturing process
- Specific production processes; as well as residuals generated
- Residuals characterization
- General residual management information
- Specific onsite residual management information
- Source reduction efforts, and
- Signed certification.

EPA distributed the industry-wide survey in Spring 1999 (for calender year 1998) regarding consent decree wastes generated by each facility. Data from these responses were reviewed by EPA and are summarized in this capacity analysis for the wastes proposed for listing.

[32] U.S. EPA. Technical Background Document. Identification and Description of Mineral Processing Sectors and Waste Streams. December 22, 1997.

3.2.2 Record Sampling and Site Visits

EPA initiated field activities with a series of engineering site visits. The primary purpose of the site visits was to gather first-hand information about production processes, as well as waste generation, management, and characterization data for each of the consent decree wastes. Simultaneous with some of the site visits, EPA conducted familiarization sampling and analysis to more precisely identify target analytes and any potential matrix interference problems.

Upon completion of the familiarization sampling and analysis effort, EPA initiated record sampling and analysis of the wastes generated from inorganic chemicals production in 1999. The record sampling results were used in EPA's risk assessment as well as to identify constituents to be proposed for LDR treatment standards. Record sampling was conducted at two antimony oxide production facilities, two titanium dioxide production facilities using the chloride-ilmenite process, and at other industries that EPA subsequently proposed not to list any wastes as hazardous. The sampled facilities that generate the wastes proposed for listing are as follows:

Titanium Dioxide Wastes
- DuPont, New Johnsonville, TN. Sampled K178.
- DuPont, Edgemoor, DE. Sampled K178.

Antimony Oxide Wastes
- Laurel Industries, LaPorte, TX. Sampled K176 and K177.
- U.S. Antimony, Thompson Falls, MT. Sampled K176 and K177.

3.3 METHODOLOGY, ASSUMPTIONS, AND PRELIMINARY RESULTS FOR K176, K177, and K178

In conducting the capacity analysis for K176, K177, and K178 inorganic chemicals production wastes, EPA estimated the quantities and summarized the physical and chemical characteristics of the wastes that will require hazardous waste commercial treatment and/or recovery as a result of LDRs. The method that EPA developed for the K176, K177, and K178 inorganic chemicals production wastes capacity analysis is comprised of three stages:

1. Estimate the quantities of K176, K177, and K178 waste generated. Information on waste generation and current management practices (treatment, storage, disposal, and recycling) of these wastes was collected in the RCRA 3007 surveys described in Section 3.2 of this report.

2. Estimate the quantity of waste currently meeting LDR standards. Several facilities already mange their waste, onsite or offsite, using methods that would likely satisfy the LDR treatment standards. Current management methods were determined using the RCRA 3007 surveys described in Section 3.2 of this report. The quantity being managed in this fashion can be subtracted from the required commercial treatment capacity.

3. Estimate the annual quantity with onsite treatment or recovery availability. Several

facilities have appropriate onsite treatment or management technologies that can result in some, most, or all of the facility's generated waste quantity to be managed onsite and can be subtracted from the required commercial treatment capacity. This assessment was made using sources such as the RCRA 3007 survey described in Section 3.2 of this report.

The results of these three steps determine how much offsite commercial capacity is required to manage K176, K177, and K178. Exhibit 3-1 summarizes the results of the analysis. The derivation of the quantities presented in Exhibit 3-1 is discussed in Sections 3.3.1 through 3.3.4 for each of K176, K177, and K178. EPA evaluated the quantity of each waste requiring offsite commercial treatment using the three step process described above. First, EPA estimated the quantity of the waste generated annually. Second, EPA subtracted from this quantity the amounts of the proposed wastes that are already managed in a manner that would comply with the proposed land disposal restrictions. Third, EPA subtracted the quantities of wastes that potentially could be managed or treated onsite in existing systems, but were not presently managed in such a manner.

Exhibit 3-1. Generation and Management Practices of K176, K177, and K178 Wastes Following Effective Date of LDRs

Waste Stream	(1) Annual Quantity Generated, tons	(2) Annual Quantity Currently Meeting LDR Standards, tons	(3) Annual Quantity with Onsite Treatment/ Recovery Availability, tons	(4) Annual Quantity Requiring Commercial Treatment, tons
K176 Nonwastewaters (no K176 wastewaters are found to be generated)	10	0	2	8
K177 Nonwastewaters (no K176 wastewaters are found to be generated)	22	0	0	22
K178 nonwastewaters (no K178 wastewaters are found to be generated	7,300-73,000	0	0	7,300-73,000

All quantities are developed using 1998 data.

3.3.1 K176 Wastes

The K176 wastes are principally cloth filters. As a result, EPA expects K176 to be generated in nonwastewater form; no quantities of wastewater forms of K176 are expected to be generated.

The different waste management methods for the process waste are listed in Exhibit 3-2. This information was gathered from the 1998 surveys and site visits to each facility. Table 3-2 identifies the facility using the management method, the reported 1998 waste generation quantity, and an indication of whether (1) record sampling data are available, or (2) an assessment of

whether the management method could likely comply with the proposed land disposal restrictions. A waste generation quantity at one facility was not estimated. However, this waste stream is recycled onsite so that commercial offsite treatment is not expected to be required.

Data in Exhibit 3-2 identify an estimated K176 waste generation rate of 10 tons per year. This quantity does not include one facility that manages its waste in an on-site antimony oxide production furnace. Several of the other K176 waste management methods identified will likely continue if the listing decision and the land disposal restrictions are promulgated as proposed. Thus, approximately two tons can be treated onsite or recovered offsite and will not require commercial treatment capacity. Two other facilities dispose of these wastes in a non-hazardous waste incinerator and an industrial Subtitle D landfill. These facilities may or may not be able to use their onsite production furnace to manage their wastes; they do not have any other alternative onsite treatment capacity. Therefore, we assumed these two facilities would require alternative offsite commercial treatment.

These findings are summarized in Exhibit 3-3. As a result of this analysis, required alternative treatment capacity for K176 nonwastewaters is estimated to be eight tons per year. EPA anticipates that commercially available stabilization, as well as other technologies such as metals recovery, can be used in meeting the proposed numerical treatment standards. We estimate that the commercially available stabilization capacity is much greater than this estimated quantity and therefore sufficient to treat the proposed K176 hazardous wastes that would require treatment. Therefore, EPA is proposing not to grant a national capacity variance for K176 wastewaters or nonwastewaters.

Exhibit 3-2. Reported Management Methods for K176

Final Management	Facility	1998 Quantity (tons)	Comment
Antimony recovery in Mexico	U.S. Antimony, Thompson Falls, MT	2.2	Two record samples collected. Management practice would likely comply with LDRs.
Offsite nonhazardous waste incineration	Amspec, Gloucester City, NJ	3.3	Alternative management would be required to meet LDRs.
Recycled to onsite furnace for antimony recovery	Great Lakes Chemical, Laredo, TX	Not available	Management practice would likely comply with LDRs, assuming that the facility meets metal recovery exemptions.
Subtitle D Landfill disposal	Laurel Industries, LaPorte, TX	4.4	One record sample collected. Alternative management would be required to meet LDRs.
Subtotal		10	

Exhibit 3-3. Capacity Analysis Summary for K176

Step in Methodology	1998 Quantity, tons

Exhibit 3-3. Capacity Analysis Summary for K176	
1. Annual Quantity Generated	10
2. Annual Quantity Currently Meeting LDR Standard	0
3. Annual Quantity that Could be Managed Using onsite Treatment or Recovery	2
4. Annual Quantity Requiring Commercial Treatment	8

3.3.2 K177 Wastes

The K177 wastes are principally slag. As a result, EPA expects K177 to be generated in nonwastewater form; no quantities of wastewater forms of K177 are expected to be generated.

The facility-specific waste generation and management practices for K177 wastes are presented in Exhibit 3-4. This information was gathered from the 1998 surveys and site visits to several of the facilities. Three facilities generate K177. Two of the three facilities send the waste offsite for lead or antimony recovery (e.g., for manufacture of batteries which use a lead-antimony alloy). The other facility stores the waste in on-site drums prior to planned onsite land-based storage. These materials have been reportedly stored onsite in steel drums for a minimum of four years, and possibly as long as ten years, with the facility reporting that they intend to reclaim the antimony from this slag when antimony prices are favorable. This facility may or may not be able to use their onsite production furnace to manage its waste; they do not have any other alternative onsite treatment capacity. Therefore, we assumed this facility would require alternative offsite commercial treatment.

These findings are summarized in Exhibit 3-5. As a result of this analysis, required alternative treatment capacity for K177 nonwastewaters is estimated to be 22 tons per year. EPA is proposing numerical treatment standards for K177 nonwastewaters. EPA anticipates that commercially available stabilization, as well as other technologies, can be used in meeting these treatment standards. We estimate that the commercially available stabilization capacity is much greater than these estimated quantities and therefore sufficient to treat the proposed K177 hazardous wastes that would require treatment. Therefore, EPA is proposing not to grant a national capacity variance for K177 wastewaters or nonwastewaters.

Exhibit 3-4. Reported Management Methods for K177			
Final Management	**Facility**	**1998 Quantity (ton/yr)**	**Comment**
Onsite drum storage. Land-based unit may be constructed in future to manage the material.	U.S. Antimony, Thompson Falls, MT	22	One record sample collected. Alternative management would be required to meet LDRs
Sold to Mexican broker for antimony/lead recovery	Amspec, Gloucester City, NJ	22 **	Would not meet proposed listing definition.

Exhibit 3-4. Reported Management Methods for K177			
Final Management	**Facility**	**1998 Quantity (ton/yr)**	**Comment**
Sold to broker for lead recovery	Laurel Industries, LaPorte, TX	80 **	One record sample collected. Would not meet proposed listing definition.
Subtotal		22	

** The proposed listing definition for K177 would only include wastes that are disposed or speculatively accumulated. Therefore, the quantities of wastes at the New Jersey and Texas facilities are not included in the resulting K177 generation quantity.

Exhibit 3-5. Capacity Analysis Summary for K177	
Step in Methodology	**Quantity, tons**
1. Annual Quantity Generated	22
2. Annual Quantity Currently Meeting LDR Standard	0
3. Annual Quantity that Could be Managed Using onsite Treatment or Recovery	0
4. Annual Quantity Requiring Commercial Treatment	22

3.3.3 K178 Wastes

The K178 wastes are principally sludges or treatment solids. EPA expects K178 to be generated in nonwastewater form; no quantities of wastewater forms of K178 are expected to be generated.

Due to business confidentiality concerns, facility-specific waste generation and management practices as reported in the RCRA Section 3007 Questionnaire were not used in the K178 capacity analysis. Instead, industry-wide waste generation was estimated using the methodology developed as part of the economic analysis for inorganic chemicals relying on publicly available information. A more detailed discussion of this methodology can be found in the *Economic Analysis for Listing of Inorganic Chemicals, Notice of Proposed Rulemaking* (USEPA, July 2000), specifically Appendix A of that report. Based on data presented in that report, EPA identified a range of the estimated annual K178 generation quantity in Exhibit 3-6. Three facilities using the chloride-ilmenite process as generators of K178. None of the three facilities currently treat their waste in a manner which would be likely to meet the proposed LDR treatment standards. Therefore, EPA anticipates that the entire quantity of K178 waste will require commercial treatment capacity.

In its economic analysis to estimate the waste generation quantity (and applied here), EPA made several assumptions. First, EPA assumed that the K178 generation rate is related to production. All solids removed during production (e.g., from ore impurities) would settle as K178, or would meet the Bevill exclusion of 40 CFR 261.4(b)(7). In its economics and capacity

analyses, EPA estimated that the solids generation rate to be 4 percent (EPA found, however, that solids generation could range between 2 and 80 percent of titanium tetrachloride production and also conducted an analysis assuming a higher solids content). To estimate titanium tetrachloride production, EPA identified the titanium dioxide production capacity at each plant (226,000 tons per year for all three plants) and assumed production was 95 percent of this value, which is the average industry utilization rate as identified in www.chemexpo.com. The titanium tetrachloride capacity (537,000 tons per year) was assumed to be equal to the production capacity for titanium dioxide, after accounting for differences in molecular weight between the two titanium compounds.

As identified above, the generated solids were assumed to be either Bevill exempt, or would constitute K178. EPA assumed that a large portion, 90 percent, of the solids produced from the chloride-ilmenite process are subject to the Bevill exclusion and 10 percent would result in K178. This assumption forms the low end of the range in Exhibit 3-6.

EPA considered some of the above uncertainties in forming a high range estimate. First, as noted above, the solids generation rate of 4 percent of titanium tetrachloride production is one point within a wide range (for example, in its economic analysis, EPA also evaluated a case where the solids content could increase by a factor of three, to 12 percent). Additionally, a facility may not be able to segregate all of the Bevill excluded solids from the non-Bevill excluded solids (estimated as a 90:10 ratio above). To account for these uncertainties, EPA applied a factor of ten to form an upper end of the estimate in Exhibit 3-6.

EPA is proposing numerical treatment standards for K178 nonwastewaters, as well as an alternative treatment standard of combustion (CMBST) for the dioxin/furan components. EPA anticipates that commercially available incineration followed by stabilization, as well as other technologies, can be used in meeting these treatment standards. We estimate that the commercially available incineration and stabilization capacity is much greater than these estimated quantities and therefore sufficient to treat the proposed K178 hazardous wastes that would require treatment. Therefore, EPA is proposing not to grant a national capacity variance for K178 wastewaters or nonwastewaters.

Exhibit 3-6. Capacity Analysis Summary for K178

Step in Methodology	Quantity, tons
1. Annual Quantity Generated	7,300 - 73,000
2. Annual Quantity Currently Meeting LDR Standard	0
3. Annual Quantity that Could be Managed Using onsite Treatment or Recovery	0
4. Annual Quantity Requiring Commercial Treatment	7,300 - 73,000

3.4 WASTES SUBJECT TO REVISED UTS AND F039 STANDARDS

EPA is proposing to add numerical treatment standards for manganese to the UTS list (found at 40 CFR §268.48) and the F039 list (40 CFR §268.40). EPA evaluated the need for alternative treatment capacity for characteristically hazardous wastes or for F039 wastes affected by these proposed revisions.

To conduct its analysis, EPA used an approach similar to that used in the chlorinated aliphatics final rule for evaluating the impacts from adding five dioxin/furan congeners to the lists of F039/UTS. EPA considered the potential need for national capacity variances by determining what fraction of the hazardous wastes are required to meet these new requirements, the appropriate means of treatment (if any), and the sufficiency of national treatment capacity for these wastes.

EPA used existing publically available data sources such as BRS and TRI as a basis for estimating the waste quantities impacted by these changes to UTS and F039 treatment standards. These were used in the following manner:

- Available waste characterization data for manganese were obtained and qualitatively evaluated (Section 3.4.1).

- The total quantity of possible wastes generated were estimated using 1997 BRS (Section 3.4.2 for UTS wastes, and Section 3.4.4 for F039 wastes). Considerations were made for the EPA hazardous waste codes, and the management method.

- Industries likely to use or release manganese were identified using 1998 TRI, to identify if the BRS data could be narrowed to only include specific SIC codes (Section 3.4.3).

EPA first evaluated the universe of wastes that could be impacted by revisions to the F039 and UTS treatment standards. First, EPA notes that wastes are impacted by this change if they meet the following conditions: (1) the waste is managed using land disposal; (2) the waste is not already managed in an onsite or offsite treatment system capable of treating manganese; and (3) manganese is present at levels above the treatment standards. The initial analysis produces upper bound estimates because it is difficult to consider all factors simultaneously.

EPA estimated an upper bound of 70,000 tons per year of nonwastewaters mixed with other waste codes, the F039 leachate from which would be potentially impacted by the revision to the F039 treatment standards. In a similar fashion, we estimated that no more than 520,000 tons per year of characteristic nonwastewaters potentially might be affected by the proposed changes (*i.e.*, the addition of manganese to the F039 and UTS lists). For wastewaters, EPA estimated an upper bound of 6.7 million tons for F039 mixed with other waste codes, and also no more than 14 million tons for characteristic wastes mixed with other waste codes that potentially could be affected by the proposed changes. Details on this derivation and limitations of the analysis are presented below.

In Section 2 of this Background Document, EPA estimated that approximately 37 million tons per year of commercial wastewater treatment capacity are available, and that at least eight million tons per year of stabilization capacity are available. These are well above the quantities of wastewater and nonwastewater forms of F039 and wastes subject to UTS potentially requiring treatment even under the screening assumptions described below. As a result, EPA is proposing not to grant a capacity variance and not to delay the effective date for adding manganese to the lists of F039 and UTS.

3.4.1 Manganese Content of Landfill Leachate and Industrial Wastes

Landfill leachate data from the Office of Water's January 2000 final rule regarding wastewater generated by landfill operators were reviewed.[33] This report presented EPA sampling data analyzed for manganese for 15 samples from hazardous waste and Industrial D landfills generating leachate. The highest concentration in any sample was 9 mg/L, which is below the proposed treatment standard for wastewaters of 17.1 mg/L. As a result, the actual quantities of F039 requiring treatment may actually be much less than the upper bound because the concentration in many F039 wastes may be less than the proposed treatment standard.

To characterize other industrial wastes, EPA used data from its 1996 National Hazardous Waste Constituent Survey. Manganese data were available from seven facilities; these data are summarized in Exhibit 3-7. Due to the limited data only very general conclusions can be drawn from its use. First, for the one wastewater sample, the manganese concentration is below the proposed UTS. Second, for the nonwastewater samples, no TCLP data are available (only totals data). Third, there is a flammable liquid waste with elevated concentrations of manganese indicating that manganese may be present in predominantly organic wastes as well as in wastes where other metals may be present. Fourth, the totals data at three of the sites are much higher than the proposed (TCLP-based) treatment standard, indicating the possibility that manganese levels in leachate may be above the treatment standard. The data are not intended to be used in characterizing different types of wastes (e.g., listed wastes versus characteristic) due to the inherent variability of wastes, but to obtain a general idea of the concentrations potentially present in industrial hazardous wastes that could be subject to UTS and F039. Also, there is no indication that manganese concentrations in F039 or toxicity characteristic wastes would exceed the proposed treatment standards.

[33] US EPA, Development Document for Final Effluent Limitations Guidelines and Standards for the Landfills Point Source Category, EPA-821-R-99-019, January 2000. Available at: www.epa.gov/ostwater/guide/landfills/index.html.

Exhibit 3-7. Constituent Concentrations of Manganese in Hazardous Wastes			
Facility and Waste Stream Number	**Waste Description and Available Properties**	**Concentration of Manganese**	
		Total (mg/kg)	**mg/L TCLP**
Northwestern Steel and Wire, Sterling IL (ILD005263157) – 1	Nonwastewater; K061 scrubber sludge with 70% solids	11,400	Not available
Northwestern Steel and Wire (same facility as above) – 2	Nonwastewater; K061 scrubber sludge with 98% solids	6,400	Not available
Northwestern Steel and Wire (same facility as above) – 3	Nonwastewater; unspecified waste with 61% solids	Not available	Not available
Bethlehem Steel, Chesterton IN (IND003913423) – 1	No information	47	Not available
Dow Chemical, Plaquemine LA (LAD008187080) – 1	No information	1.1	Not available
Union Carbide, Taft LA (LAD041581422) – 1	Nonwastewater; nonaqueous waste with 90% TOC and 6% water	8.3	Not available
Union Carbide (same facility as above – 2	Nonwastewater; nonaqueous waste with 90% TOC and 2% water	0.2	Not available
Union Carbide (same facility as above) – 3	Nonwastewater; nonaqueous waste with 95% TOC and 4% water	1.9	Not available
3M, Cottage Grove MN (MND006172969) – 7	Nonwastewater; flammable liquid with 9% solids	2,400	Not available
Eastman Kodak, Rochester NY (NYD980592497) – 9	Nonwastewater; unspecified waste with 26% solids	4,900	Not available
Mill Service, Yukon PA (PAD004835146) – 1	Wastewater; unspecified waste with 100% water	1.3	Not available
Summary of streams that may contain manganese above UTS		4 of 10	

3.4.2 Quantities of Characteristically Hazardous Waste Generated and Potentially Impacted

A screening analysis of the 1997 BRS data was conducted to evaluate the potential impacts of adding manganese to UTS and to the F039 treatment standards. First, EPA notes that wastes are subject to UTS if they exhibit a characteristic of a hazardous waste (i.e., D001 to D043). EPA initially used the following assumptions to identify wastes that may require additional treatment:

- Wastes that are characteristic only for organics (D012 to D043) and ignitable wastes (D001) would be unlikely to contain TCLP levels of manganese above the proposed UTS. These were excluded from the analysis.

- Wastes that are TC hazardous for metals (D004 to D011) are assumed to be already undergoing treatment which would reduce any manganese levels to below the proposed UTS. These were also excluded from the analysis.

- All remaining wastes were included in the analysis. These include wastes that are corrosive (D002) and reactive (D003), but which also did not contain a TC metal waste code.

The results of this analysis of the 1997 BRS GM form indicated that a total quantity of 146 million tons of such wastes are managed onsite and a total quantity of 1.93 million tons of such wastes are managed offsite (quantities include wastewaters and nonwastewaters, combined, for all management practices). More detailed data are presented in Appendix B.

EPA then analyzed the data to assess if the waste already undergoes treatment in such a way as to reduce the mobility of manganese. For example, if the waste is managed using chemical precipitation, then it is assumed that manganese already can be treated or can be treated with minor adjustments to the system. In addition, EPA found that large quantities of wastes were managed using underground injection, and excluded from its capacity analysis wastes which were already managed in units with approved no-migration petitions.[34] To differentiate between wastes likely to be classified as wastewaters and nonwastewaters, the management quantities associated with each form code was investigated to make rough differentiations. Printouts from the Lotus spreadsheets containing the data used for this analysis are presented in Appendix B.

The resulting analysis summary is presented in Exhibit 3-8 for wastes managed onsite, and Exhibit 3-9 for wastes managed offsite. The results of this analysis show a total of 6.0 million tons of wastewaters (5.7 million tons managed onsite and 0.3 million tons managed offsite), and 520,000 tons of nonwastewaters (380,000 tons managed onsite and 140,000 tons managed offsite). These estimates represent the quantities of wastes which are presently managed in a system which would not appear to treat manganese in a manner that would meet the proposed manganese treatment standard, if the waste actually contained manganese above the proposed limit and was managed using land disposal.

Because the BRS does not report specific constituents, constituent concentrations, or detail all management techniques, it is not possible to positively identify the quantities of wastes potentially impacted. In addition, there may be some 'double counting' due to single wastes undergoing multiple, successive management methods such as precipitation followed by landfilling. As a result of these assumptions, EPA anticipates that this analysis represents an upper bound of the quantity of potentially impacted wastes.

Exhibit 3-8. Management Practices of Characteristically Hazardous Wastes that are Managed On the Generator Site

Management Practice	Quantity, Short Tons	Treats Manganese?	Wastewater Quantity,	Nonwastewater Quantity, Tons

[34] A list of facilities with approved no-migration petitions are in EPA's "Background Document for Analysis of the Land Disposal Restrictions Phase IV: Underground Injection Data and Issues, April 1998.

			Tons	
Metals Recovery for Reuse	126,998	Yes	0	0
Metals Recovery (unknown)	323	Yes	0	0
Fractionation/distillation	378	No	0	378
Thin Film Evaporation	507	No	0	507
Solvent Extraction	176	No	0	176
Solvent Recovery	134	No	0	134
Solvent Recovery (unknown)	422	No	422	0
Acid Regeneration	34,708	Yes	0	0
Other Recovery	13,941	Yes	0	0
Other Recovery (unknown)	411	Yes	0	0
Incineration - liquids	598,266	No	568,353	29,913
Incineration - sludges	828	No	580	248
Incineration - solids	2,197	No	0	2,197
Incineration - unknown	12,072	No	1,207	10,865
Energy Recovery - liquids	81,636	No	28,573	53,063
Energy Recovery - unknown	0	No	0	0
Fuel blending	3	No	0	3
Chrome reduction and precipitation	263,814	Yes	0	0
Cyanide destruction and precipitation	249,340	Yes	0	0
Cyanide destruction	122,421	Yes	0	0
Oxidation and precipitation	436,369	Yes	0	0
Oxidation	460	Yes	0	0
Wet air oxidation	12,458	No	12,458	0
Precipitation	2,976,325	Yes	0	0
Other aqueous inorganic	294,596	Yes	0	0
Aqueous inorganic - unknown	32,477	Yes	0	0
Biological treatment	6,706,138	Yes	0	0
Carbon adsorption	1,259	Yes	0	0
Air/steam stripping	2,601,419	No	2,601,419	0
Aqueous organic treatment	37,808	Yes	0	0
Precipitation and biological treatment	183,238	Yes	0	0
Precipitation and carbon adsorption	67	Yes	0	0
Wet air oxidation	2,936	No	2,642	294
Other organic/inorganic treatment	4,389,170	Yes	0	0
Aqueous organic and inorganic - unknown	373	Yes	0	0
Sludge dewatering	1,612	No	1,451	161
Addition of lime	4,204	Yes	0	0
Stabilization/fixation with cementitious/pozzolanic materials	887	Yes	0	0
Other stabilization	20	Yes	0	0
Neutralization	46,053,053	Yes	0	0
Evaporation	1,219	No	1,097	122
Settling/clarification	8,564,049	Yes	0	0
Phase separation	176,050	No	172,529	3,521
Other - known (treatment)	692,729	Yes	0	0
Other - unknown (treatment)	3,216	Yes	0	0
Land treatment/application/farming	221,051	No	221,051	0

Landfill	109,020	No	65,412	43,608
Surface impoundment	619,670	No	619,670	0
Deepwell/underground injection (A)	8,295,052	Yes	470,749	177,632
Discharge to sewer/POTW	28,911,637	Yes	0	0
Discharge to surface water (NPDES)	32,211,790	Yes	0	0
Other - known (disposal)	167,828	No	151,045	16,783
Transfer facility storage	813,995	No	773,295	40,700
TOTAL	146,030,752		5,691,953	380,304

Quantities represent D002 and D003 characteristically hazardous wastes only, which do not also have codes D004 through D011. In the BRS data investigated, most of the D002 and D003 codes are associated with other characteristic codes rather than with other listed hazardous waste codes.

The column entitled 'treats manganese' is an engineering judgement regarding whether manganese would be treated to below the proposed UTS, if present in the waste.

(A) Underground injection quantities do not include quantities associated with approved no-migration petitions. It is assumed such practices could continue.

Exhibit 3-9. Management Practices of Characteristically Hazardous Wastes that are Managed Off the Generator Site

Management Type	Short Tons	Treats Manganese?	WW Ton	NWW Ton
HTMR	39,630	Yes	0	0
Retorting	207	No	0	207
Secondary Smelting	31	Yes	0	0
Metals Recovery for Reuse	13,114	Yes	0	0
Metals Recovery (unknown)	5,409	Yes	0	0
Fractionation/distillation	3,552	No	1,776	1,776
Thin Film Evaporation	84	No	2	82
Solvent Extraction	62	No	47	16
Solvent Recovery (unknown)	73	No	18	55
Acid Regeneration	10,893	Yes	0	0
Other Recovery	3,094	Yes	0	0
Other Recovery (unknown)	1,621	Yes	0	0
Incineration - liquids	40,456	No	4,046	36,410
Incineration - sludges	2,630	No	263	2,367
Incineration - solids	7,150	No	715	6,435
Incineration - gases	17	No	0	17
Incineration - unknown	393	No	118	275
Energy Recovery - liquids	9,982	No	499	9,483
Energy Recovery - sludges	268	No	0	268
Energy Recovery - solids	633	No	0	633
Energy Recovery - unknown	19	No	0	19
Fuel blending	39,853	No	27,897	11,956
Chrome reduction and precipitation	3,007	Yes	0	0
Cyanide destruction and precipitation	1,267	Yes	0	0
Cyanide destruction	89	Yes	0	0
Oxidation and precipitation	3,336	Yes	0	0
Oxidation	610	Yes	0	0
Wet air oxidation	5	No	5	0
Precipitation	57,050	Yes	0	0
Other aqueous inorganic	1,440	Yes	0	0
Aqueous inorganic - unknown	2,403	Yes	0	0
Biological treatment	862,696	Yes	0	0
Carbon adsorption	53	Yes	0	0
Air/steam stripping	881	No	881	0
Wet air oxidation	7	No	7	0
Aqueous organic treatment	4,454	Yes	0	0
Aqueous organic treatment - unknown	447	Yes	0	0
Precipitation and biological treatment	469,594	Yes	0	0
Precipitation and carbon adsorption	850	Yes	0	0
Wet air oxidation	0	No	0	0
Other organic/inorganic treatment	5,653	Yes	0	0
Aqueous organic and inorganic - unknown	2,500	Yes	0	0
Sludge dewatering	7	Yes	0	0
Addition of lime	146	Yes	0	0
Absorption/adsorption	2	Yes	0	0
Solvent extraction	9	Yes	0	0
Sludge treatment - unknown	462	Yes	0	0
Stabilization/fixation with cementitious/pozzolanic materials	11,709	Yes	0	0

Exhibit 3-9. Management Practices of Characteristically Hazardous Wastes that are Managed Off the Generator Site				
Management Type	**Short Tons**	**Treats Manganese?**	**WW Ton**	**NWW Ton**
Other stabilization	1,476	Yes	0	0
Stabilization - unknown	262	Yes	0	0
Neutralization	28,418	Yes	0	0
Evaporation	26	Yes	0	0
Settling/clarification	1	No	0	0
Phase separation	2,559	No	51	2,507
Other - known (treatment)	5,309	No	2,654	2,654
Other - unknown (treatment)	5,273	No	1,055	4,218
Land treatment/application/farming	13	No	12	1
Landfill	4,421	No	884	3,537
Surface impoundment	453	No	449	5
Deepwell/underground injection	235,500	No	211,950	23,550
Discharge to sewer/POTW	87	Yes	0	0
Discharge to surface water (NPDES)	34	Yes	0	0
Other - known (disposal)	7,058	No	3,529	3,529
Transfer facility storage	31,386	No	3,139	28,248
TOTAL	1,930,127		259,998	138,249

Source: 1997 BRS. Quantities represent D002 and D003 characteristically hazardous wastes only, which do not also have codes D004 through D011. In the BRS data investigated, most of the D002 and D003 codes are associated with other characteristic codes rather than with other listed hazardous waste codes.
The column entitled 'treats manganese' is an engineering judgement regarding whether manganese would be treated to below the proposed UTS, if present in the waste.

3.4.3 Use of TRI Data to Identify Universe of Industries Generating Manganese-Containing Wastes

EPA attempted to use Toxics Release Inventory (TRI) data to further refine the estimates provided by the BRS data. The TRI data are different than BRS data in two important respects: 1) the data provided by the TRI database are specific to the chemical or chemical compound portion of a waste stream, while BRS data provides volumetric information about the entire hazardous waste stream. 2) TRI data provides information concerning only "covered" industries, primarily consisting of manufacturing industries, waste management companies, utilities, and facilities that wholesale distribute chemicals and petroleum products. EPA conducted this analysis to determine if the TRI data show that wastes with manganese are found in only a few different industries that also generate hazardous waste. With that information, EPA would be able to subtract from its overall estimate the BRS data from industries that do not report TRI releases of manganese and manganese compounds.

EPA investigated 1998 TRI data to identify industries likely to generate manganese-containing wastes. EPA assumed that industries reporting relatively high releases of manganese would potentially be impacted by the proposed addition of manganese to UTS, while industries reporting relatively low releases would not be. Data from the 1998 TRI for releases of 'manganese' or 'manganese compounds' are presented in Appendix B. The total nation-wide quantity of manganese released to the environment (including air, water, and solid waste media) in 1998 is 40 million pounds; the total quantity of manganese compounds released is 570 million

pounds. Industries reporting the highest incidence of release include:

- Paper (SIC 26)
- Chemicals (SIC 28)
- Primary metals (SC 33)
- Fabricated metals (SIC 34)
- Metal mining (SIC 10)
- Electric utilities (SIC 49)
- Solvent recovery (SIC 7389)

These industries account for 90 percent of all releases of manganese and 98 percent of all releases of manganese compounds.

EPA also investigated the BRS data for similar SIC code information. In Section 3.4.2, EPA estimated that the total quantity of D002 and D003 characteristically hazardous wastes generated and managed onsite is 1.9 million tons, and that the total quantity of characteristically hazardous wastes managed offsite is 146 million tons (these include wastewaters and nonwastewaters, combined). Exhibit 3-10 identifies these quantities by SIC code. For the seven industries identified above, a total of 518,000 tons of wastes (27 percent of the total) are managed onsite and 114 million tons (78 percent of the total) are managed offsite.

Industries reporting the release of manganese or manganese compounds in the 1998 TRI may or may not generate RCRA hazardous wastes subject to the proposed manganese LDR requirements. However, these results imply that the same industries that release manganese also generate a large percentage of hazardous wastes. As a result, we cannot conclude from the TRI data that manganese releases are related to only a few industries; instead, manganese releases appear to include many of the same industries that generate hazardous wastes potentially subject to UTS or the F039 treatment standards.

Exhibit 3-10. Industries Generating Characteristically Hazardous Wastes		
SIC Code	**Waste Quantities Managed Offsite, Short Tons**	**Waste Quantities Managed Onsite, Short Tons**
Unspecified	42,401	5,277,709
00	770,663	295
02 to 17	4,636	25,661
20	258	6,335
21	4	0
22	620	4,680
23	2	0
24	91	0
25	154	34,418
26	1,907	23,094,691
27	3,864	988
28	377,797	79,109,472
29	19,293	5,454,740
30	2,482	188,070
31	5	0
32	461,122	74,371
33	72,838	7,035,703
34	38,560	3,414,574
35	4,241	932,850
36	40,483	16,230,190
37	34,011	813,732
38	5,097	1,658,686
39	1,204	410,979
40	52	0
41 to 48	12,179	3,202
49	18,374	1,790,990
50	455	82
51 to 59	1,535	8,444
62 to 65	4	89,763
72 to 79	3,821	1,499
80 to 89	7,410	174,550
91 to 99	4,562	194,079
TOTAL	1,930,127	146,030,753

Source: 1997 BRS for D002 and D003 wastes which do not also contain exhibit the TC for a metal (i.e., D004 through D011).

3.4.4 Quantities of F039 Waste Generated and Potentially Impacted

EPA estimates that a total of 66 million tons of F039 are generated and managed onsite, and a much smaller quantity (436 thousand tons) of F039 are managed offsite. EPA does not expect these entire quantities to require treatment to meet the proposed F039 treatment standard for manganese. This is because some of the wastes would contain manganese below the proposed

treatment standard, or are expected to already be managed in a manner that treats manganese. For example, as shown in Section 3.4.1, EPA has not identified any examples of F039 being generated with levels of manganese higher than the proposed treatment standard.

In its final rule for the chlorinated aliphatics waste listing determination, EPA evaluated the quantities of F039 that are generated and which would be likely to require further treatment to additionally treat five dioxin/furan congeners proposed for addition to the list of constituents in F039, if initially present in the waste. EPA used the results of this analysis directly in its initial assessment of the quantities of F039 that may require additional treatment to meet the manganese treatment standard.

There is some overlap in the treatment methods that are applicable for dioxins/furans, and those which are applicable to treating manganese. Exhibit 3-11 summarizes this comparison. Exhibit 3-11 demonstrates that the estimated quantity of F039 that is not presently managed in a manner that treats dioxins and furans is 6.69 million tons, and the estimated quantity of F039 that is not presently managed in a manner that treats manganese is 7.41 million tons. These quantities are sufficiently similar to allow the use of the estimates developed for the chlorinated aliphatics analysis to result in a reasonable approximation of the quantities potentially affected by the addition of manganese to the F039 list. (Because the quantity of wastes managed onsite is much greater than the quantity of wastes managed offsite, only onsite quantities are considered here.)

For many of the same reasons identified in Section 3.4.2, this analysis represents an upper bound of potentially impacted wastes. Exhibit 3-12 summarizes the onsite management practices identified from the BRS data. The summary shows the management type and the quantity of waste managed in each manner by all generating facilities (in tons). For technologies determined unlikely to be effective in treating dioxin or manganese (and potentially involving land disposal), the quantities were further parsed into wastewater and nonwastewater forms.

Special attention was paid to wastes managed in onsite underground injection systems. The facilities managing these wastes were identified and their underground injection status was reviewed using EPA, “Background Document for Analysis of the Land Disposal Restrictions Phase IV: Underground Injection Data and Issues, April 1998. Facilities found to operate underground injection systems with approved no-migration petitions were assumed to continue to manage their wastes in underground injection if additional treatment standards are finalized for F039.

EPA estimates that a total of 67,600 tons of nonwastewaters are managed in onsite systems where treatment may be inadequate for manganese (assuming it is present), and a total of 6,600,000 tons of wastewaters are managed in onsite systems where treatment may be inadequate for manganese (assuming it is present). These quantities were assumed to equal the quantities of dioxins/furans requiring treatment, because Exhibit 3-11 demonstrates that these quantities are similar in magnitude. These quantities do not account for the likely fact that only a minority of F039 wastes have levels of manganese greater than the proposed numerical treatment standards and therefore would require treatment.

Exhibit 3-11. Comparison of Applicable Treatment Technologies for Manganese and Dioxins in F039 Wastes

Management Type	Quantity of F039 Managed Onsite, Short Tons	Does Management Method Treat Dioxin/Furans?	Does Management Method Treat Manganese?
Discharge to surface water (NPDES)	52,219,076	Yes	Yes
Deepwell/underground injection (A)	4,829,125	No	No
Air/steam stripping	4,060,819	No	No
Biological treatment	1,499,272	**Yes**	**No**
Discharge to sewer/POTW	1,206,868	Yes	Yes
Precipitation	510,045	**No**	**Yes**
Other organic/inorganic treatment	488,121	**No**	**Yes**
Aqueous organic treatment	470,996	No	No
Carbon adsorption	166,977	**Yes**	**No**
Precipitation and carbon adsorption	157,626	Yes	Yes
Neutralization	152,462	No	No
Other - known (disposal)	82,494	No	No
Precipitation and biological treatment	81,441	Yes	Yes
Landfill	44,464	No	No
Other - unknown (treatment)	38,708	No	No
Incineration - sludges	35,861	**Yes**	**No**
Other - known (treatment)	25,533	No	No
Incineration - solids	17,296	**Yes**	**No**
Oxidation and precipitation	15,181	Yes	Yes
Transfer facility storage	9,861	No	No
Stabilization/fixation with cementitious/pozzolanic materials	3,383	**No**	**Yes**
Phase separation	3,284	No	No
Surface impoundment	1,747	No	No
Settling/clarification	1,243	No	No
Incineration - liquids	1,089	**Yes**	**No**
Other Recovery	785	**Yes**	**No**
Evaporation	164	**Yes**	**No**
Energy Recovery - solids	70	**Yes**	**No**
Land treatment/application/farming	52	No	No
Fuel blending	0.35	**Yes**	**No**
TOTAL	66,124,000 tons	6,690,000 tons	7,409,000 tons

The columns entitled 'treats dioxin' and 'treats manganese' are engineering judgements regarding whether dioxins and furans would be treated to below the proposed UTS, if present in the waste. Bold identifies where treatment of dioxins and manganese are not consistent.

(A) For both the manganese and dioxin assessments, it is assumed that underground injection can continue for facilities with approved no-migration petitions, but could not continue for facilities without such a petition.

Exhibit 3-12. Onsite Management of Waste Streams Containing F039 in 1997 Using BRS				
Management Type	**Short Tons**	**Treats Dioxin?**	**WW Ton**	**NWW Ton**
Discharge to surface water (NPDES)	52,219,076	Yes		
Deepwell/underground injection (A)	4,829,125	No	796,000	0
Air/steam stripping	4,060,819	No	4,060,819	0
Biological treatment	1,499,272	Yes		
Discharge to sewer/POTW	1,206,868	Yes		
Precipitation	510,045	No	510,045	0
Other organic/inorganic treatment	488,121	No	488,121	0
Aqueous organic treatment	470,996	No	470,996	0
Carbon adsorption	166,977	Yes		
Precipitation and carbon adsorption	157,626	Yes		
Neutralization	152,462	No	152,462	0
Other - known (disposal)	82,494	No	82,494	0
Precipitation and biological treatment	81,441	Yes		
Landfill	44,464	No	108	44,356
Other - unknown (treatment)	38,708	No	38,708	0
Incineration - sludges	35,861	Yes		
Other - known (treatment)	25,533	No	6,099	19,434
Incineration - solids	17,296	Yes		
Oxidation and precipitation	15,181	Yes		
Transfer facility storage	9,861	No	9,498	363
Stabilization/fixation with cementitious/pozzolanic materials	3,383	No	8	3,376
Phase separation	3,284	No	3,284	0
Surface impoundment	1,747	No	1,747	0
Settling/clarification	1,243	No	1,243	0
Incineration - liquids	1,089	Yes		
Other Recovery	785	Yes		
Evaporation	164	Yes		
Energy Recovery - solids	70	Yes		
Land treatment/application/farming	52	No	0	52
Fuel blending	0.35	Yes		
Grand Total	66,124,045		6,621,632	67,581

The column entitled 'treats dioxin' is an engineering judgement regarding whether dioxins and furans would be treated to below the proposed UTS, if present in the waste. It is assumed that the total quantities approximately reflect the quantities which would be impacted by the proposed revisions to the manganese treatment standard.
(A) Underground injection quantities do not include quantities associated with approved no-migration petitions. It is assumed such practices could continue.

3.5 CONTAMINATED SOIL AND DEBRIS

In addition to the production wastes generated from inorganic chemicals manufacturers on a routine basis, EPA also considered the quantity of contaminated soil and debris present at these facilities. EPA believes that the majority of contaminated soil and debris can and will be managed onsite and therefore would not require substantial offsite commercial treatment capacity. Therefore, EPA is proposing to not grant a national capacity variance to hazardous soil and debris contaminated with the newly listed wastes covered under this rule.

EPA believes that a number of factors will help maintain adequate LDR treatment capacity for soil and debris contaminated with newly listed wastes. First, it is possible to treat and/or

manage hazardous waste without triggering LDR treatment standards. For LDR standards to be triggered, contaminated soil must be removed from the land (i.e., generated) and managed in a manner constituting land disposal. If the contaminated soil is not removed from the land via excavation (e.g., in-situ treatment), then the LDR standards will not be applied to these wastes. In addition, if hazardous soil is excavated, LDR standards will only apply if the subsequent management is considered "land disposal" for the purposes of the LDR program. If a contaminated soil is managed within an area of contamination (AOC), even if it is "removed from the land" within such an area, the soil would not be considered generated, and the LDR treatment requirements do not apply. (For more information, see the most recent EPA guidance, a March 13, 1996 EPA memo titled, "Use of the Area of Contamination Concept During RCRA Cleanups." (Available from the RCRA Hotline, or http://www.epa.gov/rcraonline or http://www.epa.gov/epaoswer/hazwaste/ldr/guidance.html.)

Contaminated soil can also be managed onsite through the use of a corrective action management unit (CAMU) and temporary unit (TU). This allows an area of land at a facility to be designated a CAMU and receive remediation wastes without triggering LDR standards or minimum technological requirements (MTRs). This rule was finalized on February 16, 1993 (58 *FR* 8659) and is codified in 40 CFR Part 264 Subpart S. On August 22, 2000 (65 FR 51080), EPA proposed amendments to the CAMU standards. If finalized, the proposed amendments would modify the types of waste that may be managed in CAMUs, the design standards that apply to CAMUs, the treatment requirements for wastes placed in CAMUs, information submission requirements for CAMU applications, responses to releases from CAMUs, and public participation requirements for CAMU decisions.[35] However, the CAMU would still be exempt from LDR and MTR standards.

Additionally there are new technologies becoming available to treat contaminated soil and debris that still might require further treatment. According to U.S. EPA's Capacity Analysis Background Document for Phase IV Wastes (U.S. EPA, 1998), currently there are 108 venders using innovative treatment technologies to treat contaminate soils onsite. These innovative treatment technologies being used include soil vapor extraction, thermal desorption, ex-situ bioremediation, in-situ bioremediation, soil washing, solvent extraction, dechlorination as well as other innovative treatment technologies.[36]

Second, for those contaminated soils for which the LDRs are triggered, recent EPA action will decrease demand for BDAT treatment capacity. Specifically, in the final Phase IV LDR rule (63 *FR* 28556, May 26, 1998), EPA promulgated alternative LDR treatment standards (10 times the universal treatment standard (UTS) or 90 percent reduction) for soils contaminated with hazardous wastes. EPA believes that these less stringent treatment standards will increase the availability of capacity to treat soil contaminated with newly proposed inorganic chemical

[35]On May 14, 1993, a petition for review was filed with the U.S. Court of Appeals for the District of Columbia Circuit. Environmental Defense Fund v. EPA, No. 93–1316 (D.C. Cir.). The proposed amendments are part of an EPA settlement with petitioners on the CAMU litigation. The current Part 264/265, Subpart S regulations are still in effect until the rule is finalized.

[36] US EPA Background Document for Capacity Analysis for Land Disposal Restrictions - Phase IV: Toxicity Characteristic Metal Wastes and Newly Identified Mineral Processing Wastes (Final Rule). Pages E-50 through E-72 April 1998.

production wastes. EPA recognizes that implementation of the alternative soil treatment standards probably will not be immediate because States are not required to adopt less stringent RCRA rules and because there will be some time between the selection and actual implementation of remedial treatment technologies. Nevertheless, EPA believes that these alternative treatment standards will provide another viable option for facilities with contaminated soils to comply with LDR requirements.

Third, the LDRs also provide flexibility in selecting treatment methods for debris contaminated with the proposed inorganic production wastes. EPA previously identified 17 different treatment methods as BDAT for hazardous debris; these methods fall into one of three categories; extraction (e.g., abrasive blasting, liquid or vapor phase solvent extraction, thermal desorption), destruction (e.g., biodegradation, chemical oxidation, thermal destruction), or immobilization (e.g., macroencapsulation or microencapsulation). 57 *FR* 37194 (August 18, 1992). Hazardous debris that has been treated using one of the specified extraction or destruction technologies and that does not exhibit a hazardous waste characteristic after treatment, is no longer a hazardous waste and need not be managed in a Subtitle C facility. Hazardous debris contaminated with a listed waste that has been treated by one of the specified immobilization technologies is still a hazardous wastes and must be managed in a Subtitle C facility (see 40 CFR 268.45 (c)). The hazardous debris rule also gives generators the option of treating the debris to the waste-specific treatment standards for the waste contaminating the debris, although the treated debris must then continue to be managed as a hazardous waste. EPA believes that this flexible approach for contaminated debris helps ensure adequate treatment capacity for these materials.

Fourth, the LDR program allows facilities to petition EPA to modify LDR requirements. If necessary, a facility can apply for a case-by-case extension or a treatability variance to manage or treat these soil and debris wastes.

Finally, given the current state of uncertainty surrounding certain pending EPA and Congressional actions, LDR treatment capacity for contaminated media is likely to remain adequate for at least the next few years. Until the CAMU litigation is resolved, there may continue to be some degree of unwillingness by hazardous waste generators to initiate voluntary remedial activities under the flexible approach authorized by the CAMU rule. Moreover, several bills are pending in Congress that would amend RCRA to provide EPA and the States with greater flexibility with respect to LDR treatment requirements for contaminated media. This uncertainty over regulatory requirements, in turn, has contributed to a decrease in the demand for commercial treatment for contaminated media.

3.6 MIXED RADIOACTIVE WASTES CONTAMINATED WITH K176, K177, and K178

EPA identified no quantities of K176, K177, and K178 destined for treatment as mixed radioactive wastes based on information from the RCRA 3007 surveys and site visits. EPA is proposing to not grant a national capacity variance for mixed radioactive wastes of for soil and debris contaminated with mixed radioactive wastes.

3.7 UNDERGROUND INJECTED WASTES

EPA identified no quantity of K176, K177, and K178 that is presently managed by underground injection from the RCRA 3007 surveys and site visits. EPA is proposing to not grant a national capacity variance for underground injected wastes.

4. CAPACITY ANALYSIS RESULTS

This section presents the results of capacity analysis for alternative commercial treatment of the proposed inorganic chemicals productions wastes (K176, K177, and K178). A brief summary of these results was presented in Section 1 of this document (see Exhibit 1-2). The capacity analysis is based on assessment of available treatment capacity (Section 2) and the required treatment capacity for treatment of K176, K177, and K178 (Section 3). This section compares estimates of required treatment capacity to that commercially available for these wastes proposed to be listed.

EPA is proposing to list two wastes from antimony oxide production: K176 and K177. EPA is proposing numerical treatment standards, equivalent to universal treatment standards, for each of these wastes. For K176, EPA is proposing that the waste meet numerical treatment standards for antimony, arsenic, cadmium, lead, and mercury. For K177, EPA is proposing that the waste meet numerical treatment standards for antimony, arsenic, and lead. From available data sources, required treatment capacity for K176 nonwastewaters is estimated to be eight tons per year and the required alternative treatment capacity for K177 is estimated to be 22 tons per year. No wastewater forms of K176 or K177 are expected to be generated and therefore, there is no quantity of the wastewater form of K176 or K177 that would require treatment. EPA anticipates that commercially available stabilization, as well as other technologies, can be used in meeting these treatment standards. We estimate that the commercially available stabilization capacity is about one million tons, or much greater then these estimated quantities and therefore sufficient to treat the proposed K176 and K177 hazardous wastes that would require treatment. Therefore, EPA is not proposing to grant a capacity variance for K176 and K177 hazardous wastes.

EPA is proposing to list one waste, K178, generated from titanium dioxide production using the chloride-ilmenite process. EPA is proposing that the waste meet numerical treatment standards for two metals (manganese and thallium) and for certain dioxin and furan congeners. The required alternative treatment capacity for K178 is estimated to be 7,300 tons per year. No wastewater forms of K178 are expected to be generated and therefore, there is no quantity of the wastewater form of K178 that would require treatment. The numerical treatment standards for dioxins and furans can likely be met using combustion, as discussed in Section 2.1 (the alternative treatment standard, CMBST, would also require combustion). This can be followed by stabilization if necessary to treat the metal constituents. EPA estimates that the commercially available sludge and solid combustion capacity is at least 300,000 tons per year and therefore sufficient to treat the nonwastewater forms of K178 that would require treatment. The stabilization capacity is about one million tons per year. Therefore, EPA is not proposing to grant a capacity variance for K178 nonwastewaters or wastewaters.

EPA has identified that several facilities manage or generate K178 in surface impoundments. The facilities may remove K178 waste before the effective date of the listing (if finalized), and therefore may not be subject to LDR requirements. However, if the waste is actively managed in unretrofitted impoundments (*i.e.*, impoundments not satisfying the minimum technology requirements (MTR) specified in RCRA sections 3004(o) and 3005(j)(11)) after the effective date if the rule is finalized, it would be land disposed in a prohibited manner. The

impoundment can be retrofitted, closed, or replaced with tank systems. If the impoundments continue to be used to actively manage K178 waste, the units will be subject to subtitle C requirements. In addition, any hazardous wastes that are actively managed in an impoundment (other than wastes removed from an impoundment as part of a one-time removal) after the effective date (if the rule is finalized) are subject to the land disposal prohibitions. EPA expects facilities that use surface impoundments to meet the terms of these regulations, or discontinue their use prior to the effective date of the listing and land disposal restrictions (if finalized). EPA requests comments concerning alternative management for any of these wastes managed in surface impoundments.

EPA also evaluated whether sufficient capacity would be available to treat F039 and wastes subject to UTS as a result of the proposed addition of manganese to these lists. Such a change would affect wastes outside of the inorganic chemicals industry. EPA estimated an upper bound of approximately 7 million tons of wastewater forms of F039, and 70,000 tons of nonwastewater forms of F039, that could potentially be affected by the proposed changes (this estimate is from waste streams containing F039, and not necessarily are solely F039). For characteristically hazardous wastes affected by UTS, EPA estimated an upper bound of 14 million tons wastewater and 520,000 tons nonwastewaters (this estimate is from waste streams that are hazardous only because they are characteristic wastes). EPA has previously estimated that approximately 37 million tons per year of commercial wastewater treatment capacity are available, and at least one million tons per year of commercial hazardous waste stabilization capacity are available. These are well above the quantities of wastewater and nonwastewater forms of F039 and characteristically hazardous wastes subject to UTS potentially requiring treatment even under the screening assumptions described above. For this reason, EPA is proposing not to delay the effective date for adding manganese to the lists of F039 and UTS.

The actual impacts of adding manganese to UTS and F039 may be much less than these upper bound estimates. For example, waste generators must already comply with treatment requirements for many other metals and additional treatment specifically for manganese may not be required. The upper bound estimate assumes that manganese is present at levels above the treatment standards in all wastes, when in fact available leachate characterization data indicate that none of 15 samples that were analyzed for manganese exceeded the proposed treatment standard. Therefore, for F039 wastes, the addition of manganese may not increase the quantity requiring treatment for the wastes previously regulated under LDR.

EPA believes that most soil and debris contaminated with K176, K177, and K178 can and will be managed on-site (if generated) and therefore would not require substantial off-site commercial treatment capacity. As discussed in detail in Section 3.5, if the contaminated soil is not excavated (e.g., in-situ treatment), then the LDRs will not be applied to these wastes. Even if removed, LDRs may not apply if the waste is managed within an area of contamination (AOC), or is managed onsite as a corrective action management unit (CAMU) and temporary unit (TU). Other factors will also limit the demand for commercial treatment capacity for contaminated soil and debris contaminated with these wastes, including the alternative treatment standards promulgated under the Phase IV LDR rule (63 *FR* 28556, May 26, 1998) and the “debris rule” codified in LDR Phase I (57 FR 37194, Aug. 18, 1992). EPA believes that adequate offsite commercial treatment capacity will be available for contaminated soil affected by today’s

proposed rule. Therefore, EPA is not granting a national capacity variance for these wastes. However, EPA recognizes that some wastes could possess unique properties that make them more difficult to treat than the wastes on which the standards are based. In such cases, the affected party may petition EPA for a treatability variance per 40 CFR 268.44. In addition, EPA established a new site-specific, risk-based variance for the technology-based alternative soil treatment standards promulgated in Phase IV. This variance can be used when treatment to concentrations of hazardous constituents are greater (i.e., higher) than those specified in the alternative soil treatment standards is shown to minimize short- and long-term threats to human health and the environment. In this way, on a case-by-case basis, risk-based LDR treatment standards approved through a variance process could "cap" the technology-based treatment standards (see 63 *FR* 28606, May 26, 1998). For these newly proposed wastes, the affected party may also request a capacity variance extension per 40 CFR 268.5 on a case-by-case basis.

In summary, EPA is not proposing to grant a national capacity variance for nonwastewater or wastewater forms of K176, K177, or K178 being surface-disposed or underground injected. EPA also is not proposing to grant a national capacity variance for soil and debris contaminated with K176, K177, or K178 wastes. EPA estimates that there are no generated quantities of mixed radioactive wastes contaminated with K176, K177, and K178 or soil and debris contaminated with radioactive mixed waste and EPA is not proposing to grant a national capacity variance for such wastes. Treatment capacity also will be sufficient to include the addition of manganese to the list of constituents in F039 treatment standards and UTS. Therefore, if finalized, the LDR standards become effective when the K176, K177, and K178 listings become effective. As discussed earlier in this document, the LDR treatment standards become effective essentially at the same time a listing does (usually six months after publication of the final rule in the Federal Register), unless EPA grants a national capacity variance (see RCRA Section 3004(h)(2)). RCRA allows generators to apply for an extension to the LDR effective date on a case-by-case basis for specific wastes generated at a specific facility for which there is not adequate capacity (RCRA Section 3004(h)(3)).

Appendix A. Analysis of Available Commercial Capacity for Combustion

In 1999, Laurenson et al.[37] estimated maximum practical, utilized, and available capacities for combustion of hazardous wastes. This appendix presents a summary of their efforts, as recorded in a memorandum to EPA. Section 1 discusses their methodology for identifying, collecting, and analyzing data pertaining to available capacity for combustion. Section 2 presents maximum practical, utilized, and available capacities. Section 3 briefly discusses caveats of the analysis.

1 METHODOLOGY FOR ESTIMATING MAXIMUM PRACTICAL, UTILIZED, AND AVAILABLE CAPACITIES

The analysis updates the capacity estimates that ICF developed for *Available Commercial Capacity for Selected Hazardous Waste Management Technologies* (September 30, 1998), hereafter referred to as the Available Capacity Report. Laurenson et al. (1999) also used the 1997 Biennial Reporting System (BRS) (September 1999) and the Resource Conservation and Recovery Information System (RCRIS) database in Envirofacts (November 1999).

Laurenson et al. (1999) defined the maximum practical capacity as the amount of hazardous waste that could be handled by a facility, given constraints of a calendar year, work shifts, and permits. They defined utilized capacity as the amount of hazardous waste that was actually managed in the year (i.e., the quantity managed according to the 1997 BRS). The available capacity is the difference between the maximum practical and the utilized capacities.

In analyzing the maximum practical, utilized, and available commercial capacity for combustion, Laurenson et al. (1999) included only those incineration and energy recovery (i.e., boiler and industrial furnaces, or BIFs) facilities included in a list provided by EPA. This list identifies hazardous waste combustion facilities that are commercial and operational as of May 27, 1999.

1.1 Maximum Practical Commercial Capacity Analysis

Step 1: Estimating the maximum operational commercial RCRA capacity from capacity data from the PS Form of the 1995 BRS

Capacity data for incineration and energy recovery, for each facility for which data were available, were extracted from the On-site Waste Treatment, Disposal, or Recycling Process System (PS) Form of the 1995 BRS. Data elements contained in the PS Form and used in the analysis include maximum RCRA operational capacity and percent capacity commercially available. The *1995 Hazardous Waste Report Instructions and Forms* (EPA Form 8700-13A/B (5-80) (8-95)) defines maximum RCRA operational capacity as the greatest RCRA quantity that could have entered the process system, assuming all of the following:

- No change in equipment;
- An unlimited supply of waste of the same typical mix managed in 1995;
- Willingness to add additional shifts;

[37] Laurenson, J., G. Light, K. Luck, and M. Rodríguez (ICF). December 22, 1999. Memorandum to C.P. Lee (EPA) regarding Analysis of Available Commercial Capacity for Combustion, Metals Recovery, and Fuel Blending; Task 2a; Work Assignment 108; Contract 68

- Necessary routine downtime;
- Effects of other process systems sharing the same units for competing for capacity;
- Limits in current permit will not be exceeded; and
- Regulatory limitations.

The maximum operational commercial RCRA capacity was estimated by multiplying the maximum RCRA operational capacity times the percent capacity commercially available. Laurenson et al. (1999) were only able to estimate the maximum operational commercial RCRA capacity for about 50 percent of the combustion facilities included in their analysis.[38]

Step 2: Extracting process design capacity data from the RCRIS database

Maximum RCRA operational capacity data obtained from the 1995 BRS were supplemented with process design capacity data obtained from the RCRIS database in Envirofacts (http://www.epa.gov/enviro/index_java.html). The *RCRIS Data Element Dictionary*[39] defines process design capacity as the amount of waste capacity handled in the unit or the capacity for which the unit is designed. This value does not factor in constraints of calendar year, work shifts, commercially available percentage, and the permitted amount of waste that can be treated in the unit. Thus, the process design capacity value, as obtained from RCRIS, cannot be used directly as the maximum practical commercial capacity estimate. Nevertheless, as described in Step 3, this value could be used to a limited extent.

Process design capacity data in RCRIS is reported in several units. In order to convert to tons per year, the following assumptions were made:

- 1 year = 7,008 operating hours[40];
- 1 gallon = 0.004 tons; and
- 1 BTU per hour = 0.876 pounds of waste/hour or 4.4E-04 tons of waste/year[41].

Process design capacity was not available for three of the combustion facilities included in the analysis (i.e., one incineration facility and two energy recovery facilities).

Step 3: Combining the data and estimate the maximum practical commercial capacity

Laurenson et al. (1999) assumed that maximum operational commercial capacity was equivalent to maximum practical commercial capacity. To estimate the maximum practical commercial capacity for the remaining combustion facilities, they first estimated the average process operational rate (i.e., the sum of the maximum operational commercial RCRA capacities ÷ the sum of the process design capacities) for facilities for which they had reliable maximum operational commercial RCRA capacity and process design

[38] The analysis included a total of 48 facilities (22 incineration and 26 BIF facilities). Of these, only 23 facilities (12 incineration and 11 BIF facilities) reported maximum RCRA operational capacity to the BRS in 1995.

[39] U.S. Environmental Protection Agency. 1998. Resource Conservation and Recovery Information System (RCRIS) Data Element Dictionary (v.7.1.0). Office of Solid Waste. Washington, D.C. August 1998.

[40] Assuming facilities operate 80 percent of a calendar year (i.e., 365 days/year × 24 hours/day × 0.80).

[41] ICF Incorporated. *Commercial Combustion Capacity for Hazardous Waste Sludges and Solids*. August 1990.

capacity data.[42] For incineration, the estimated average process operational rate is 71 percent. For energy recovery, the estimated average process operational rate is 73 percent. The average process operational rate was then multiplied by the facility-specific process design capacity to obtain the maximum practical commercial capacity for each incineration and energy recovery facility that lacked maximum operational commercial capacity data. They raised the maximum practical commercial capacity estimate to the utilized capacity estimate if the maximum practical commercial capacity estimate for a facility was less than its estimated utilized capacity.

Step 4: Estimate the maximum practical commercial capacity, by waste form

The maximum practical commercial capacity, at a facility level, was broken into three categories: (1) compressed gases, (2) liquids and pumpable sludges, and (3) solids and non-pumpable sludges. To categorize the data into these three waste forms, the average industry proportions of waste forms (based on liquid, solid, and gas utilized capacities; see next section) were calculated and multiplied by the facility maximum practical commercial capacity.

1.2 Utilized Capacity

Laurenson et al. (1999) extracted hazardous waste stream data for combustion facilities that reported to the 1997 BRS using the BRS system type codes for incineration (i.e., M041 through M049) and energy recovery (i.e., M051 through M059). For combustion facilities that managed hazardous waste generated on site (e.g., primary waste generation by the facility or residuals from pre-treatment), data were collected from their Waste Generation and Management (GM) Forms. For combustion facilities that received hazardous waste from off site for management, data were collected from their Waste Received from Off Site (WR) Forms. For each waste stream, the following data elements were extracted from the 1997 BRS:

- EPA ID of the facility managing the waste stream;
- System type code of management process used;
- Quantity of hazardous waste managed using system type code;
- EPA hazardous waste codes representing the hazardous waste; and
- Waste form code.

They categorized the utilized capacity, at a facility level, as (1) compressed gases, (2) liquids and pumpable sludges, or (3) solids and non-pumpable sludges, as follows:

- Gases (system code M044 for incineration) were assigned to Category 1;
- Liquids (system code M041 for incineration and system code M051 for energy recovery) were assigned to Category 2;
- Solids (system code M043 for incineration and system code M053 for energy recovery) were assigned to Category 3;
- Sludges (system code M042 for incineration and system code M052 for energy recovery) were categorized into pumpable and non-pumpable sludges based on the relative quantities of liquid and

[42] That is, for which these capacities were reasonably similar to those obtain for the Available Capacity Report.

solid managed at the facility, and assigned to Category 2 or 3, respectively[43]; and

- In cases where the system type did not indicate waste form (system type code M049 for incineration and system type code M059 for energy recovery), the waste was assigned to Category 2 or 3 based on the relative quantities of liquid and solid managed at the facility. (Note that the methodology used in categorizing these wastes is the same methodology that was used in categorizing sludges.)

The utilized capacity was calculated, by waste form, by adding all hazardous waste stream quantities managed at the facility.

1.3 Available Capacity

The available commercial capacity for combustion of hazardous waste was calculated, by waste form, by subtracting the utilized capacity from the maximum practical commercial capacity on a per facility basis. The results of this analysis are presented in Section 2.

2. RESULTS

There were 48 commercial combustion facilities in the nation with a combined maximum practical capacity of 2.8 million tons per year. Laurenson et al. (1999) determined that less than 1.3 million tons per year of the capacity was being utilized, leaving a total available capacity of almost 1.6 million tons per year.

Exhibit 1 gives a breakdown of the combustion capacity by type of system (i.e., incineration or energy recovery) and waste form. The total available capacity for the combustion of liquids and pumpable sludges is approximately 0.9 million tons per year. Of this capacity, approximately 0.3 million tons per year comes from incineration and 0.6 million tons per year comes from energy recovery. The total capacity for the combustion of solids and non-pumpable sludges is approximately 0.7 million tons per year. Approximately 0.6 million tons per year (or 99.6 percent of the total capacity for the combustion of solids) comes from incineration.

[43] For example, for a facility that reported managing 1 ton of hazardous waste with a system code for liquids, 2 tons of hazardous waste with a system code for solids, and 3 tons of hazardous waste with a system code for sludges, the following assumptions were made: (1) 1 ton of the 3 tons of hazardous waste managed with the system code for sludges was assigned to Category 2 and (2) 2 tons of the 3 tons of hazardous waste managed with the system code for sludges were assigned to Category 3.

Exhibit 1
Maximum Practical, Utilized, and Available Capacities (000s tons/year) for Combustion, by Waste Form, at a National Level

Waste Form	Incineration			Energy Recovery			Total Available Capacity
	Maximum Practical Capacity	Utilized Capacity	Available Capacity	Maximum Practical Capacity	Utilized Capacity	Available Capacity	
Compressed Gases	1	1	0	N/A	N/A	N/A	0
Liquids and Pumpable Sludges	513	237	275	1,359	722	637	913
Solids and Non-Pumpable Sludges	897	269	628	55	30	25	653
Total	1,411	507	903	1,414	752	662	1,566

Exhibits 2 and 3 present facility-specific maximum practical, utilized, and available capacities for incineration and energy recovery, respectively.

Exhibit 2
Maximum Practical, Utilized, and Available Capacities (tons/year), by Waste Form, for Incineration

Waste Form	Maximum Practical Capacity	Utilized Capacity	Available Capacity
Liquids	512,743	237,420	275,324
Solids	897,151	268,829	628,322
Gases	1,145	828	317

Notes: Maximum operational commercial RCRA capacity (PS Form of the 1995 BRS) and process design capacity (RCRIS) were used in estimating the average process operational rate.
Certain facilities did not report to the BRS in 1997.
Maximum operational commercial RCRA capacity and process design capacity were not available in some instances.
Maximum practical commercial capacity for liquids is equal to the utilized capacity (1997 BRS).

Exhibit 3
Maximum Practical, Utilized, and Available Capacities (tons/year) for Energy Recovery, by Waste Form

Waste Form	Maximum Practical Capacity	Utilized Capacity	Available Capacity
Liquids	1,359,261	721,997	637,264
Solids	54,790	30,148	24,642

Notes: Maximum operational commercial RCRA capacity (PS Form of the 1995 BRS) and process design capacity (RCRIS) were used in estimating the average process operational rate.
Certain facilities included in the analysis did not report to the BRS in 1997.

3. CAVEATS

Several caveats should be noted regarding the data used in this analysis:

- Capacity information used in this analysis is primarily based on information provided by the industry in the PS, WR, and GM forms of the BRS database and the RCRIS database. Because some of the information provided in these databases are voluntary (e.g., PS Forms) or dated (RCRIS, 1995 and 1997 BRS), these data may not accurately reflect the current maximum and available treatment capacity.

- The average process operational rate used to calculate the maximum and available capacity for combustion may not provide an accurate statistical representation of the national average.

- Because nonhazardous wastes are not required to be reported in the BRS, the utilized capacity data only refer to the hazardous waste capacity. Therefore, the available capacity could be an overestimate. In addition, wastes excluded from the definition of solid waste and permitting requirements are not reported in the BRS. These factors could significantly influence the metals recovery capacity estimates.

Appendix B. Supporting Tables for UTS and F039 Analysis

Data were extracted from the 1997 BRS to support the UTS and F039 analysis presented in Chapter 3 of this report, for evaluating the impact of adding a manganese treatment standard. The following tables are included in this appendix:

- Summary of D002 and D003 wastes managed onsite. This is intended to be used in estimating quantities of characteristically hazardous wastes subject to UTS.
- Summary of D002 and D003 wastes managed offsite. This is intended to be used in estimating quantities of characteristically hazardous wastes subject to UTS.
- Detailed identification of the composition (form) of D002 and D003 wastes managed onsite. This is used to help estimate wastewater versus nonwastewater quantities.
- Detailed identification of the composition (form) of D002 and D003 wastes managed offsite. This is used to help estimate wastewater versus nonwastewater quantities.
- Detailed list of facilities managing D002 and D003 wastes onsite using underground injection.

Data were also extracted from the 1998 Toxics Release Inventory (TRI). Two tables are presented here:

- Summary of releases for manganese, organized by SIC code.
- Summary of releases for manganese compounds, organized by SIC code.

Summary of D002 and D003 Wastes Managed Onsite.

On-Site System Code	Short Tons	Management Type	Treats Manganese? 0=yes; 1=no	WW %	NWW %	WW Ton	NWW Ton
M014	126,998.4	Metals Recovery for Reuse	0			0	0
M019	322.7	Metals Recovery (unknown)	0			0	0
M021	377.8	Fractionation/distillation	1	0	100	0	378
M022	507.1	Thin Film Evaporation	1	0	100	0	507
M023	175.7	Solvent Extraction	1	0	100	0	176
M024	133.9	Solvent Recovery	1	0	100	0	134
M029	422.4	Solvent Recovery (unknown)	1	100	0	422	0
M031	34,708.3	Acid Regeneration	0			0	0
M032	13,940.6	Other Recovery	0			0	0
M039	411.3	Other Recovery (unknown)	0			0	0
M041	598,265.9	Incineration - liquids	1	95	5	568,353	29,913
M042	828.3	Incineration - sludges	1	70	30	580	248
M043	2,197.1	Incineration - solids	1	0	100	0	2,197
M049	12,071.8	Incineration - unknown	1	10	90	1,207	10,865
M051	81,635.8	Energy Recovery - liquids	1	35	65	28,573	53,063
M059	0.2	Energy Recovery - unknown	1	0	100	0	0
M061	2.8	Fuel blending	1	0	100	0	3
M071	263,814.4	Chrome reduction and precipitation	0			0	0
M072	249,340.2	Cyanide destruction and precipitation	0			0	0
M073	122,421.2	Cyanide destruction	0			0	0
M074	436,369.1	Oxidation and precipitation	0			0	0
M075	460.3	Oxidation	0			0	0
M076	12,458.2	Wet air oxidation	1	100	0	12,458	0
M077	2,976,324.7	Precipitation	0			0	0
M078	294,595.9	Other aqueous inorganic	0			0	0
M079	32,476.7	Aqueous inorganic - unknown	0			0	0
M081	6,706,138.3	Biological treatment	0			0	0
M082	1,258.8	Carbon adsorption	0			0	0
M083	2,601,419.3	Air/steam stripping	1	100	0	2,601,419	0
M085	37,808.5	Aqueous organic treatment	0			0	0
M091	183,238.4	Precipitation and biological treatment	0			0	0
M092	67.0	Precipitation and carbon adsorption	0			0	0
M093	2,935.5	Wet air oxidation	1	90	10	2,642	294
M094	4,389,170.1	Other organic/inorganic treatment	0			0	0
M099	373.4	Aqueous organic and inorganic - unknown	0			0	0
M101	1,612.3	Sludge dewatering	1	90	10	1,451	161
M102	4,204.0	Addition of lime	0			0	0
M111	886.8	Stabilization/fixation with cementitious/pozzolanic materials	0			0	0
M112	19.5	Other stabilization	0			0	0
M121	46,053,053.4	Neutralization	0			0	0
M122	1,219.3	Evaporation	1	90	10	1,097	122
M123	8,564,049.0	Settling/clarification	0			0	0
M124	176,049.6	Phase separation	1	98	2	172,529	3,521
M125	692,729.5	Other - known (treatment)	0			0	0
M129	3,215.6	Other - unknown (treatment)	0			0	0
M131	221,051.0	Land treatment/application/farming	1	100	0	221,051	0
M132	109,019.9	Landfill	1	60	40	65,412	43,608
M133	619,670.0	Surface impoundment	1	100	0	619,670	0
M134	8,295,052.5	Deepwell/underground injection	0			0	0
M135	28,911,637.0	Discharge to sewer/POTW	0			0	0
M136	32,211,790.1	Discharge to surface water (NPDES)	0			0	0
M137	167,828.3	Other - known (disposal)	1	90	10	151,045	16,783
M141	813,994.6	Transfer facility storage	1	95	5	773,295	40,700
	146,030,752		Subtotal			5,221,204	202,672
			Additional UIC			470,749	177,632
			TOTAL			5,691,953	380,304

Summary of D002 and D003 Wastes Managed Offsite.

Off-site System Type	Short Tons	Management Type	Treats Manganese? 0=yes; 1=no	WW %	NWW %	WW Ton	NWW Ton
M011	39,630.0	HTMR	0			0	0
M012	206.7	Retorting	1	0	100	0	207
M013	30.9	Secondary Smelting	0			0	0
M014	13,114.0	Metals Recovery for Reuse	0			0	0
M019	5,408.8	Metals Recovery (unknown)	0			0	0
M021	3,552.0	Fractionation/distillation	1	50	50	1,776	1,776
M022	83.9	Thin Film Evaporation	1	2	98	2	82
M023	62.0	Solvent Extraction	1	75	25	47	16
M029	73.2	Solvent Recovery (unknown)	1	25	75	18	55
M031	10,893.3	Acid Regeneration	0			0	0
M032	3,094.5	Other Recovery	0			0	0
M039	1,620.6	Other Recovery (unknown)	0			0	0
M041	40,456.1	Incineration - liquids	1	10	90	4,046	36,410
M042	2,630.1	Incineration - sludges	1	10	90	263	2,367
M043	7,149.7	Incineration - solids	1	10	90	715	6,435
M044	16.6	Incineration - gases	1	0	100	0	17
M049	393.3	Incineration - unknown	1	30	70	118	275
M051	9,981.8	Energy Recovery - liquids	1	5	95	499	9,483
M052	268.2	Energy Recovery - sludges	1	0	100	0	268
M053	633.1	Energy Recovery - solids	1	0	100	0	633
M059	19.3	Energy Recovery - unknown	1	0	100	0	19
M061	39,853.4	Fuel blending	1	70	30	27,897	11,956
M071	3,007.1	Chrome reduction and precipitation	0			0	0
M072	1,267.2	Cyanide destruction and precipitation	0			0	0
M073	88.8	Cyanide destruction	0			0	0
M074	3,336.5	Oxidation and precipitation	0			0	0
M075	609.8	Oxidation	0			0	0
M076	5.1	Wet air oxidation	1	100	0	5	0
M077	57,050.1	Precipitation	0			0	0
M078	1,440.0	Other aqueous inorganic	0			0	0
M079	2,402.7	Aqueous inorganic - unknown	0			0	0
M081	862,696.0	Biological treatment	0			0	0
M082	52.6	Carbon adsorption	0			0	0
M083	881.4	Air/steam stripping	1	100	0	881	0
M084	7.2	Wet air oxidation	1	100	0	7	0
M085	4,454.2	Aqueous organic treatment	0			0	0
M089	447.3	Aqueous organic treatment - unknown	0			0	0
M091	469,594.3	Precipitation and biological treatment	0			0	0
M092	850.0	Precipitation and carbon adsorption	0			0	0
M093	0.0	Wet air oxidation	1	100	0	0	0
M094	5,653.2	Other organic/inorganic treatment	0			0	0
M099	2,499.9	Aqueous organic and inorganic - unknown	0			0	0
M101	7.0	Sludge dewatering	0			0	0
M102	146.4	Addition of lime	0			0	0
M103	2.4	Absorption/adsorption	0			0	0
M104	9.2	Solvent extraction	0			0	0
M109	461.6	Sludge treatment - unknown	0			0	0
M111	11,709.4	Stabilization/fixation with cementitious/pozzolanic materia	0			0	0
M112	1,475.9	Other stabilization	0			0	0
M119	261.7	Stabilization - unknown	0			0	0
M121	28,417.8	Neutralization	0			0	0
M122	26.0	Evaporation	0			0	0
M123	0.9	Settling/clarification	1	50	50	0	0
M124	2,558.6	Phase separation	1	2	98	51	2,507
M125	5,308.8	Other - known (treatment)	1	50	50	2,654	2,654
M129	5,273.0	Other - unknown (treatment)	1	20	80	1,055	4,218
M131	13.4	Land treatment/application/farming	1	90	10	12	1
M132	4,421.4	Landfill	1	20	80	884	3,537
M133	453.5	Surface impoundment	1	99	1	449	5
M134	235,499.6	Deepwell/underground injection	1	90	10	211,950	23,550
M135	87.2	Discharge to sewer/POTW	0			0	0
M136	34.1	Discharge to surface water (NPDES)	0			0	0
M137	7,058.2	Other - known (disposal)	1	50	50	3,529	3,529
M141	31,386.1	Transfer facility storage	1	10	90	3,139	28,248
	1,930,127					259,998	138,249

Detailed Identification of the Composition (Form) of D002 and D003 Wastes Managed Onsite.

On-Site System Code	Short Tons	Management Type	Waste Form Code	Waste Form Code Description
M014	6,773.1	Metals Recovery for Reuse	B103	Spent acid with metals
M014	225.5	Metals Recovery for Reuse	B104	Spent acid without metals
M014	11,501.8	Metals Recovery for Reuse	B105	Acidic aqueous waste
M014	659.1	Metals Recovery for Reuse	B106	Caustic solution with metals but no cyanides
M014	79.2	Metals Recovery for Reuse	B107	Caustic solution with metals and cyanides
M014	41,739.6	Metals Recovery for Reuse	B114	Other aqueous waste with low dissolved solids
M014	66,012.8	Metals Recovery for Reuse	B119	Other inorganic liquids (Specify in Comments)
M014	0.9	Metals Recovery for Reuse	B310	Spent solid filters or adsorbents
M014	6.5	Metals Recovery for Reuse	B319	Other waste inorganic solids (Specify in Comments)
M019	322.7	Metals Recovery (unknown)	B107	Caustic solution with metals and cyanides
M021	3.2	Fractionation/distillation	B102	Aqueous waste with low other toxic organics
M021	242.6	Fractionation/distillation	B203	Nonhalogenated solvent
M021	17.7	Fractionation/distillation	B211	Paint thinner or petroleum distillates
M021	114.3	Fractionation/distillation	B219	Other organic liquids (Specify in Comments)
M022	507.1	Thin Film Evaporation	B203	Nonhalogenated solvent
M023	175.7	Solvent Extraction	B211	Paint thinner or petroleum distillates
M024	76.0	Solvent Recovery	B201	Concentrated solvent-water solution
M024	42.9	Solvent Recovery	B202	Halogenated (e.g., chlorinated) solvent
M024	15.0	Solvent Recovery	B203	Nonhalogenated solvent
M029	422.4	Solvent Recovery (unknown)	B105	Acidic aqueous waste
M029	0.0	Solvent Recovery (unknown)	B315	Other reactive salts/chemicals
M031	32,106.3	Acid Regeneration	B103	Spent acid with metals
M031	2,502.0	Acid Regeneration	B110	Caustic aqueous waste
M031	100.0	Acid Regeneration	B519	Other inorganic sludges (Specify in Comments)
M032	331.0	Other Recovery	B102	Aqueous waste with low other toxic organics
M032	277.8	Other Recovery	B103	Spent acid with metals
M032	9,978.3	Other Recovery	B105	Acidic aqueous waste
M032	338.1	Other Recovery	B106	Caustic solution with metals but no cyanides
M032	121.9	Other Recovery	B110	Caustic aqueous waste
M032	172.0	Other Recovery	B111	Aqueous waste with reactive sulfides
M032	6.8	Other Recovery	B212	Reactive or polymerizable organic liquid
M032	2,076.0	Other Recovery	B314	Reactive sulfide salts/chemicals
M032	638.8	Other Recovery	B801	Organic gases
M039	0.3	Other Recovery (unknown)	B003	Mixed lab packs
M039	0.6	Other Recovery (unknown)	B103	Spent acid with metals
M039	1.6	Other Recovery (unknown)	B104	Spent acid without metals
M039	0.7	Other Recovery (unknown)	B110	Caustic aqueous waste
M039	407.8	Other Recovery (unknown)	B315	Other reactive salts/chemicals
M039	0.4	Other Recovery (unknown)	B405	Reactive organic solid
M041	1.2	Incineration - liquids	B001	Lab packs of old chemicals only
M041	26.8	Incineration - liquids	B003	Mixed lab packs
M041	0.2	Incineration - liquids	B004	Lab packs containing acute hazardous wastes
M041	3.2	Incineration - liquids	B009	Other lab packs (Specify in Comments)
M041	211,813.2	Incineration - liquids	B101	Aqueous waste with low solvents
M041	270,935.5	Incineration - liquids	B102	Aqueous waste with low other toxic organics

M041	62.6	Incineration - liquids	B104	Spent acid without metals
M041	66,476.5	Incineration - liquids	B105	Acidic aqueous waste
M041	388.8	Incineration - liquids	B109	Spent caustic
M041	12,700.5	Incineration - liquids	B110	Caustic aqueous waste
M041	7,422.8	Incineration - liquids	B111	Aqueous waste with reactive sulfides
M041	134.0	Incineration - liquids	B112	Aqueous waste with other reactives (e.g., explosives)
M041	0.6	Incineration - liquids	B114	Other aqueous waste with low dissolved solids
M041	18.9	Incineration - liquids	B115	Scrubber water
M041	182.7	Incineration - liquids	B119	Other inorganic liquids (Specify in Comments)
M041	10,888.4	Incineration - liquids	B201	Concentrated solvent-water solution
M041	58.3	Incineration - liquids	B202	Halogenated (e.g., chlorinated) solvent
M041	1,603.9	Incineration - liquids	B203	Nonhalogenated solvent
M041	311.1	Incineration - liquids	B204	Halogenated/nonhalogenated solvent mixture
M041	761.8	Incineration - liquids	B205	Oil-water emulsion or mixture
M041	1,367.2	Incineration - liquids	B206	Waste oil
M041	6,211.6	Incineration - liquids	B207	Concentrated aqueous solution of other organics
M041	376.0	Incineration - liquids	B208	Concentrated phenolics
M041	5.8	Incineration - liquids	B211	Paint thinner or petroleum distillates
M041	2,939.9	Incineration - liquids	B212	Reactive or polymerizable organic liquid
M041	1,896.3	Incineration - liquids	B219	Other organic liquids (Specify in Comments)
M041	0.1	Incineration - liquids	B301	Soil contaminated with organics
M041	0.8	Incineration - liquids	B310	Spent solid filters or adsorbents
M041	1,676.5	Incineration - liquids	B601	Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
M041	0.9	Incineration - liquids	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M042	0.0	Incineration - sludges	B001	Lab packs of old chemicals only
M042	0.7	Incineration - sludges	B003	Mixed lab packs
M042	0.0	Incineration - sludges	B004	Lab packs containing acute hazardous wastes
M042	5.2	Incineration - sludges	B108	Caustic solution with cyanides but no metals
M042	540.9	Incineration - sludges	B110	Caustic aqueous waste
M042	217.7	Incineration - sludges	B219	Other organic liquids (Specify in Comments)
M042	24.0	Incineration - sludges	B519	Other inorganic sludges (Specify in Comments)
M042	0.0	Incineration - sludges	B603	Oily sludge
M042	39.9	Incineration - sludges	B609	Other organic sludges (Specify in Comments)
M043	3.0	Incineration - solids	B001	Lab packs of old chemicals only
M043	0.1	Incineration - solids	B002	Lab packs of debris only
M043	23.4	Incineration - solids	B003	Mixed lab packs
M043	0.1	Incineration - solids	B009	Other lab packs (Specify in Comments)
M043	0.1	Incineration - solids	B101	Aqueous waste with low solvents
M043	3.4	Incineration - solids	B102	Aqueous waste with low other toxic organics
M043	0.0	Incineration - solids	B104	Spent acid without metals
M043	0.0	Incineration - solids	B105	Acidic aqueous waste
M043	0.0	Incineration - solids	B110	Caustic aqueous waste
M043	0.1	Incineration - solids	B113	Other aqueous waste with high dissolved solids
M043	31.5	Incineration - solids	B203	Nonhalogenated solvent
M043	0.1	Incineration - solids	B204	Halogenated/nonhalogenated solvent mixture
M043	0.1	Incineration - solids	B207	Concentrated aqueous solution of other organics
M043	1.3	Incineration - solids	B212	Reactive or polymerizable organic liquid

M043	1.0	Incineration - solids	B219	Other organic liquids (Specify in Comments)
M043	34.0	Incineration - solids	B301	Soil contaminated with organics
M043	0.9	Incineration - solids	B302	Soil contaminated with inorganics only
M043	0.3	Incineration - solids	B303	Ash, slag, or other residue from incineration of wastes
M043	6.5	Incineration - solids	B307	Metal scale, filings, or scrap
M043	14.0	Incineration - solids	B310	Spent solid filters or adsorbents
M043	0.3	Incineration - solids	B312	Metal-cyanide salts/chemicals
M043	0.3	Incineration - solids	B313	Reactive cyanide salts/chemicals
M043	57.1	Incineration - solids	B315	Other reactive salts/chemicals
M043	627.2	Incineration - solids	B319	Other waste inorganic solids (Specify in Comments)
M043	346.9	Incineration - solids	B403	Solid resins or polymerized organics
M043	19.3	Incineration - solids	B404	Spent carbon
M043	443.9	Incineration - solids	B405	Reactive organic solid
M043	0.2	Incineration - solids	B407	Other halogenated organic solids (Specify in Comments)
M043	552.5	Incineration - solids	B409	Other nonhalogenated organic solids (Specify in Comments)
M043	1.0	Incineration - solids	B504	Other wastewater treatment sludge
M043	14.7	Incineration - solids	B519	Other inorganic sludges (Specify in Comments)
M043	14.0	Incineration - solids	B609	Other organic sludges (Specify in Comments)
M049	1,580.0	Incineration - unknown	B101	Aqueous waste with low solvents
M049	9,823.0	Incineration - unknown	B201	Concentrated solvent-water solution
M049	16.7	Incineration - unknown	B212	Reactive or polymerizable organic liquid
M049	3.0	Incineration - unknown	B310	Spent solid filters or adsorbents
M049	587.6	Incineration - unknown	B319	Other waste inorganic solids (Specify in Comments)
M049	0.0	Incineration - unknown	B405	Reactive organic solid
M049	1.4	Incineration - unknown	B409	Other nonhalogenated organic solids (Specify in Comments)
M049	60.0	Incineration - unknown	B609	Other organic sludges (Specify in Comments)
M051	2.0	Energy Recovery - liquids	B003	Mixed lab packs
M051	411.2	Energy Recovery - liquids	B101	Aqueous waste with low solvents
M051	1,298.0	Energy Recovery - liquids	B102	Aqueous waste with low other toxic organics
M051	18.6	Energy Recovery - liquids	B109	Spent caustic
M051	2.0	Energy Recovery - liquids	B115	Scrubber water
M051	61.7	Energy Recovery - liquids	B202	Halogenated (e.g., chlorinated) solvent
M051	63.2	Energy Recovery - liquids	B203	Nonhalogenated solvent
M051	25,865.8	Energy Recovery - liquids	B204	Halogenated/nonhalogenated solvent mixture
M051	1.5	Energy Recovery - liquids	B206	Waste oil
M051	27,894.6	Energy Recovery - liquids	B207	Concentrated aqueous solution of other organics
M051	8,281.0	Energy Recovery - liquids	B212	Reactive or polymerizable organic liquid
M051	15,432.0	Energy Recovery - liquids	B219	Other organic liquids (Specify in Comments)
M051	2,304.2	Energy Recovery - liquids	B606	Resins, tars, or tarry sludge
M059	0.2	Energy Recovery - unknown	B309	Batteries or battery parts, casings, cores
M061	0.1	Fuel blending	B003	Mixed lab packs
M061	0.3	Fuel blending	B110	Caustic aqueous waste
M061	2.3	Fuel blending	B204	Halogenated/nonhalogenated solvent mixture
M061	0.0	Fuel blending	B801	Organic gases
M071	55.9	Chrome reduction and precipitation	B101	Aqueous waste with low solvents
M071	136,012.5	Chrome reduction and precipitation	B102	Aqueous waste with low other toxic organics
M071	0.8	Chrome reduction and precipitation	B103	Spent acid with metals

M071	967.7	Chrome reduction and precipitation	B104	Spent acid without metals
M071	39,857.6	Chrome reduction and precipitation	B105	Acidic aqueous waste
M071	51,628.3	Chrome reduction and precipitation	B106	Caustic solution with metals but no cyanides
M071	1.0	Chrome reduction and precipitation	B107	Caustic solution with metals and cyanides
M071	6.3	Chrome reduction and precipitation	B109	Spent caustic
M071	260.2	Chrome reduction and precipitation	B110	Caustic aqueous waste
M071	31,323.8	Chrome reduction and precipitation	B113	Other aqueous waste with high dissolved solids
M071	3,700.3	Chrome reduction and precipitation	B119	Other inorganic liquids (Specify in Comments)
M072	140,762.4	Cyanide destruction and precipitation	B103	Spent acid with metals
M072	15.0	Cyanide destruction and precipitation	B104	Spent acid without metals
M072	15,769.0	Cyanide destruction and precipitation	B105	Acidic aqueous waste
M072	80,886.6	Cyanide destruction and precipitation	B107	Caustic solution with metals and cyanides
M072	1,400.7	Cyanide destruction and precipitation	B108	Caustic solution with cyanides but no metals
M072	353.6	Cyanide destruction and precipitation	B112	Aqueous waste with other reactives (e.g., explosives)
M072	25.5	Cyanide destruction and precipitation	B115	Scrubber water
M072	10,127.3	Cyanide destruction and precipitation	B119	Other inorganic liquids (Specify in Comments)
M073	74,520.0	Cyanide destruction	B102	Aqueous waste with low other toxic organics
M073	63.5	Cyanide destruction	B107	Caustic solution with metals and cyanides
M073	47,837.7	Cyanide destruction	B108	Caustic solution with cyanides but no metals
M073	0.0	Cyanide destruction	B112	Aqueous waste with other reactives (e.g., explosives)
M074	74.5	Oxidation and precipitation	B103	Spent acid with metals
M074	11.1	Oxidation and precipitation	B104	Spent acid without metals
M074	215,630.2	Oxidation and precipitation	B105	Acidic aqueous waste
M074	1.0	Oxidation and precipitation	B106	Caustic solution with metals but no cyanides
M074	16.3	Oxidation and precipitation	B107	Caustic solution with metals and cyanides
M074	0.2	Oxidation and precipitation	B110	Caustic aqueous waste
M074	162,650.4	Oxidation and precipitation	B113	Other aqueous waste with high dissolved solids
M074	57,985.4	Oxidation and precipitation	B119	Other inorganic liquids (Specify in Comments)
M075	142.8	Oxidation	B104	Spent acid without metals
M075	143.3	Oxidation	B110	Caustic aqueous waste
M075	174.1	Oxidation	B112	Aqueous waste with other reactives (e.g., explosives)
M076	11,369.0	Wet air oxidation	B109	Spent caustic
M076	1,089.2	Wet air oxidation	B111	Aqueous waste with reactive sulfides
M077	4.0	Precipitation	B101	Aqueous waste with low solvents
M077	50.4	Precipitation	B102	Aqueous waste with low other toxic organics
M077	205,872.7	Precipitation	B103	Spent acid with metals
M077	5,624.5	Precipitation	B104	Spent acid without metals
M077	2,243,533.1	Precipitation	B105	Acidic aqueous waste
M077	26,511.8	Precipitation	B106	Caustic solution with metals but no cyanides
M077	1,761.5	Precipitation	B107	Caustic solution with metals and cyanides
M077	474.9	Precipitation	B109	Spent caustic
M077	62,158.3	Precipitation	B110	Caustic aqueous waste
M077	2,949.1	Precipitation	B111	Aqueous waste with reactive sulfides
M077	44,569.3	Precipitation	B113	Other aqueous waste with high dissolved solids
M077	241,236.1	Precipitation	B114	Other aqueous waste with low dissolved solids
M077	76,551.9	Precipitation	B119	Other inorganic liquids (Specify in Comments)
M077	0.0	Precipitation	B201	Concentrated solvent-water solution

M077	15.4	Precipitation	B316	Other metal salts/chemicals
M077	65,011.8	Precipitation	B502	Lime sludge with metals/metal hydroxide sludge
M078	97,626.7	Other aqueous inorganic	B103	Spent acid with metals
M078	707.4	Other aqueous inorganic	B105	Acidic aqueous waste
M078	83.7	Other aqueous inorganic	B106	Caustic solution with metals but no cyanides
M078	18.2	Other aqueous inorganic	B107	Caustic solution with metals and cyanides
M078	4,203.5	Other aqueous inorganic	B110	Caustic aqueous waste
M078	94,984.7	Other aqueous inorganic	B113	Other aqueous waste with high dissolved solids
M078	96,971.5	Other aqueous inorganic	B119	Other inorganic liquids (Specify in Comments)
M078	0.2	Other aqueous inorganic	B315	Other reactive salts/chemicals
M079	221.5	Aqueous inorganic - unknown	B101	Aqueous waste with low solvents
M079	8,195.3	Aqueous inorganic - unknown	B105	Acidic aqueous waste
M079	0.0	Aqueous inorganic - unknown	B109	Spent caustic
M079	59.9	Aqueous inorganic - unknown	B110	Caustic aqueous waste
M079	24,000.0	Aqueous inorganic - unknown	B119	Other inorganic liquids (Specify in Comments)
M079	0.0	Aqueous inorganic - unknown	B319	Other waste inorganic solids (Specify in Comments)
M081	2,409,037.0	Biological treatment	B102	Aqueous waste with low other toxic organics
M081	1.0	Biological treatment	B104	Spent acid without metals
M081	270,489.9	Biological treatment	B105	Acidic aqueous waste
M081	56.0	Biological treatment	B109	Spent caustic
M081	321,744.2	Biological treatment	B110	Caustic aqueous waste
M081	36.7	Biological treatment	B111	Aqueous waste with reactive sulfides
M081	117.0	Biological treatment	B114	Other aqueous waste with low dissolved solids
M081	21,560.3	Biological treatment	B115	Scrubber water
M081	919,108.0	Biological treatment	B119	Other inorganic liquids (Specify in Comments)
M081	3.0	Biological treatment	B201	Concentrated solvent-water solution
M081	296.5	Biological treatment	B203	Nonhalogenated solvent
M081	2.0	Biological treatment	B208	Concentrated phenolics
M081	53.8	Biological treatment	B212	Reactive or polymerizable organic liquid
M081	2,763,547.0	Biological treatment	B219	Other organic liquids (Specify in Comments)
M081	85.6	Biological treatment	B314	Reactive sulfide salts/chemicals
M081	0.3	Biological treatment	B405	Reactive organic solid
M082	181.0	Carbon adsorption	B102	Aqueous waste with low other toxic organics
M082	430.0	Carbon adsorption	B109	Spent caustic
M082	647.8	Carbon adsorption	B110	Caustic aqueous waste
M083	4,047.3	Air/steam stripping	B101	Aqueous waste with low solvents
M083	2,493,565.0	Air/steam stripping	B102	Aqueous waste with low other toxic organics
M083	76,215.0	Air/steam stripping	B111	Aqueous waste with reactive sulfides
M083	122.0	Air/steam stripping	B115	Scrubber water
M083	27,470.0	Air/steam stripping	B119	Other inorganic liquids (Specify in Comments)
M085	37,805.0	Aqueous organic treatment	B108	Caustic solution with cyanides but no metals
M085	3.5	Aqueous organic treatment	B207	Concentrated aqueous solution of other organics
M091	432.0	Precipitation and biological treatment	B104	Spent acid without metals
M091	182,795.5	Precipitation and biological treatment	B105	Acidic aqueous waste
M091	10.8	Precipitation and biological treatment	B110	Caustic aqueous waste
M092	67.0	Precipitation and carbon adsorption	B103	Spent acid with metals
M093	10.9	Wet air oxidation	B111	Aqueous waste with reactive sulfides

M093	2,729.0	Wet air oxidation	B119	Other inorganic liquids (Specify in Comments)
M093	195.6	Wet air oxidation	B508	Sludge with reactive sulfides
M094	1,856,721.8	Other organic/inorganic treatment	B102	Aqueous waste with low other toxic organics
M094	338.8	Other organic/inorganic treatment	B103	Spent acid with metals
M094	1,944,103.0	Other organic/inorganic treatment	B105	Acidic aqueous waste
M094	10.8	Other organic/inorganic treatment	B106	Caustic solution with metals but no cyanides
M094	5,205.0	Other organic/inorganic treatment	B109	Spent caustic
M094	462,413.2	Other organic/inorganic treatment	B110	Caustic aqueous waste
M094	120,295.0	Other organic/inorganic treatment	B207	Concentrated aqueous solution of other organics
M094	58.5	Other organic/inorganic treatment	B212	Reactive or polymerizable organic liquid
M094	24.0	Other organic/inorganic treatment	B405	Reactive organic solid
M099	125.1	Aqueous organic and inorganic - unknown	B105	Acidic aqueous waste
M099	248.3	Aqueous organic and inorganic - unknown	B110	Caustic aqueous waste
M101	25.1	Sludge dewatering	B103	Spent acid with metals
M101	153.4	Sludge dewatering	B105	Acidic aqueous waste
M101	5.0	Sludge dewatering	B106	Caustic solution with metals but no cyanides
M101	22.6	Sludge dewatering	B107	Caustic solution with metals and cyanides
M101	0.2	Sludge dewatering	B110	Caustic aqueous waste
M101	1,404.3	Sludge dewatering	B114	Other aqueous waste with low dissolved solids
M101	0.8	Sludge dewatering	B506	Untreated plating sludge with cyanides
M101	1.0	Sludge dewatering	B519	Other inorganic sludges (Specify in Comments)
M102	4,200.0	Addition of lime	B301	Soil contaminated with organics
M102	4.0	Addition of lime	B505	Untreated plating sludge without cyanides
M111	3.0	Stabilization/fixation with cementitious/pozzolanic materials	B101	Aqueous waste with low solvents
M111	66.7	Stabilization/fixation with cementitious/pozzolanic materials	B103	Spent acid with metals
M111	5.6	Stabilization/fixation with cementitious/pozzolanic materials	B105	Acidic aqueous waste
M111	220.0	Stabilization/fixation with cementitious/pozzolanic materials	B109	Spent caustic
M111	12.2	Stabilization/fixation with cementitious/pozzolanic materials	B315	Other reactive salts/chemicals
M111	55.0	Stabilization/fixation with cementitious/pozzolanic materials	B319	Other waste inorganic solids (Specify in Comments)
M111	524.3	Stabilization/fixation with cementitious/pozzolanic materials	B519	Other inorganic sludges (Specify in Comments)
M112	19.5	Other stabilization	B502	Lime sludge with metals/metal hydroxide sludge
M121	3.0	Neutralization	B003	Mixed lab packs
M121	0.4	Neutralization	B009	Other lab packs (Specify in Comments)
M121	425,513.3	Neutralization	B101	Aqueous waste with low solvents
M121	1,778.1	Neutralization	B102	Aqueous waste with low other toxic organics
M121	21,269.3	Neutralization	B103	Spent acid with metals
M121	2,295,207.4	Neutralization	B104	Spent acid without metals
M121	11,319,358.2	Neutralization	B105	Acidic aqueous waste
M121	19,523.4	Neutralization	B106	Caustic solution with metals but no cyanides
M121	22,867,454.6	Neutralization	B109	Spent caustic
M121	6,709,434.4	Neutralization	B110	Caustic aqueous waste
M121	42,125.8	Neutralization	B113	Other aqueous waste with high dissolved solids
M121	547,546.1	Neutralization	B114	Other aqueous waste with low dissolved solids
M121	341,771.8	Neutralization	B115	Scrubber water
M121	5,179.0	Neutralization	B116	Leachate
M121	1,158,323.4	Neutralization	B119	Other inorganic liquids (Specify in Comments)
M121	6.9	Neutralization	B201	Concentrated solvent-water solution

M121	371.8	Neutralization	B203	Nonhalogenated solvent
M121	182,713.0	Neutralization	B207	Concentrated aqueous solution of other organics
M121	36.0	Neutralization	B210	Adhesives or epoxies
M121	115.3	Neutralization	B212	Reactive or polymerizable organic liquid
M121	113,205.0	Neutralization	B219	Other organic liquids (Specify in Comments)
M121	0.1	Neutralization	B302	Soil contaminated with inorganics only
M121	4.0	Neutralization	B306	"Dry" lime or metal hydroxide solids not "fixed"
M121	430.1	Neutralization	B319	Other waste inorganic solids (Specify in Comments)
M121	3.5	Neutralization	B404	Spent carbon
M121	1,170.3	Neutralization	B409	Other nonhalogenated organic solids (Specify in Comments)
M121	0.0	Neutralization	B505	Untreated plating sludge without cyanides
M121	509.0	Neutralization	B519	Other inorganic sludges (Specify in Comments)
M121	0.2	Neutralization	B609	Other organic sludges (Specify in Comments)
M122	372.0	Evaporation	B103	Spent acid with metals
M122	106.1	Evaporation	B105	Acidic aqueous waste
M122	73.3	Evaporation	B106	Caustic solution with metals but no cyanides
M122	271.1	Evaporation	B107	Caustic solution with metals and cyanides
M122	231.1	Evaporation	B109	Spent caustic
M122	24.4	Evaporation	B110	Caustic aqueous waste
M122	6.4	Evaporation	B119	Other inorganic liquids (Specify in Comments)
M122	15.0	Evaporation	B219	Other organic liquids (Specify in Comments)
M122	120.0	Evaporation	B302	Soil contaminated with inorganics only
M123	14,454.0	Settling/clarification	B103	Spent acid with metals
M123	1.0	Settling/clarification	B104	Spent acid without metals
M123	260,800.0	Settling/clarification	B105	Acidic aqueous waste
M123	56.0	Settling/clarification	B109	Spent caustic
M123	14,181.0	Settling/clarification	B110	Caustic aqueous waste
M123	117.0	Settling/clarification	B114	Other aqueous waste with low dissolved solids
M123	21,647.0	Settling/clarification	B115	Scrubber water
M123	55.0	Settling/clarification	B119	Other inorganic liquids (Specify in Comments)
M123	33.0	Settling/clarification	B210	Adhesives or epoxies
M123	8,252,705.0	Settling/clarification	B219	Other organic liquids (Specify in Comments)
M124	2,253.1	Phase separation	B101	Aqueous waste with low solvents
M124	2,734.0	Phase separation	B102	Aqueous waste with low other toxic organics
M124	0.3	Phase separation	B104	Spent acid without metals
M124	38.4	Phase separation	B105	Acidic aqueous waste
M124	59.2	Phase separation	B106	Caustic solution with metals but no cyanides
M124	11.0	Phase separation	B109	Spent caustic
M124	2.0	Phase separation	B110	Caustic aqueous waste
M124	170,949.0	Phase separation	B119	Other inorganic liquids (Specify in Comments)
M124	1.4	Phase separation	B201	Concentrated solvent-water solution
M124	1.1	Phase separation	B206	Waste oil
M125	0.1	Other - known (treatment)	B001	Lab packs of old chemicals only
M125	0.0	Other - known (treatment)	B003	Mixed lab packs
M125	3,741.0	Other - known (treatment)	B101	Aqueous waste with low solvents
M125	69,211.0	Other - known (treatment)	B102	Aqueous waste with low other toxic organics
M125	2,828.0	Other - known (treatment)	B103	Spent acid with metals

M125	1,707.0	Other - known (treatment)	B104	Spent acid without metals
M125	247,104.4	Other - known (treatment)	B105	Acidic aqueous waste
M125	1.8	Other - known (treatment)	B106	Caustic solution with metals but no cyanides
M125	29,775.1	Other - known (treatment)	B107	Caustic solution with metals and cyanides
M125	84.5	Other - known (treatment)	B109	Spent caustic
M125	3,795.3	Other - known (treatment)	B110	Caustic aqueous waste
M125	0.4	Other - known (treatment)	B112	Aqueous waste with other reactives (e.g., explosives)
M125	1,768.0	Other - known (treatment)	B113	Other aqueous waste with high dissolved solids
M125	1,119.0	Other - known (treatment)	B114	Other aqueous waste with low dissolved solids
M125	300,683.9	Other - known (treatment)	B119	Other inorganic liquids (Specify in Comments)
M125	4.5	Other - known (treatment)	B202	Halogenated (e.g., chlorinated) solvent
M125	2.0	Other - known (treatment)	B204	Halogenated/nonhalogenated solvent mixture
M125	0.2	Other - known (treatment)	B206	Waste oil
M125	0.4	Other - known (treatment)	B207	Concentrated aqueous solution of other organics
M125	510.1	Other - known (treatment)	B212	Reactive or polymerizable organic liquid
M125	7,708.4	Other - known (treatment)	B219	Other organic liquids (Specify in Comments)
M125	1.0	Other - known (treatment)	B307	Metal scale, filings, or scrap
M125	6.0	Other - known (treatment)	B309	Batteries or battery parts, casings, cores
M125	1,744.3	Other - known (treatment)	B315	Other reactive salts/chemicals
M125	8.0	Other - known (treatment)	B316	Other metal salts/chemicals
M125	16,580.2	Other - known (treatment)	B319	Other waste inorganic solids (Specify in Comments)
M125	1.2	Other - known (treatment)	B401	Halogenated pesticide solid
M125	3,923.9	Other - known (treatment)	B405	Reactive organic solid
M125	0.9	Other - known (treatment)	B407	Other halogenated organic solids (Specify in Comments)
M125	238.6	Other - known (treatment)	B409	Other nonhalogenated organic solids (Specify in Comments)
M125	0.0	Other - known (treatment)	B504	Other wastewater treatment sludge
M125	10.7	Other - known (treatment)	B510	Degreasing sludge with metal scale or filings
M125	146.8	Other - known (treatment)	B519	Other inorganic sludges (Specify in Comments)
M125	22.7	Other - known (treatment)	B605	Reactive or polymerizable organics
M129	0.1	Other - unknown (treatment)	B003	Mixed lab packs
M129	117.0	Other - unknown (treatment)	B102	Aqueous waste with low other toxic organics
M129	11.3	Other - unknown (treatment)	B103	Spent acid with metals
M129	63.6	Other - unknown (treatment)	B105	Acidic aqueous waste
M129	328.5	Other - unknown (treatment)	B110	Caustic aqueous waste
M129	2,287.5	Other - unknown (treatment)	B114	Other aqueous waste with low dissolved solids
M129	213.0	Other - unknown (treatment)	B119	Other inorganic liquids (Specify in Comments)
M129	132.0	Other - unknown (treatment)	B201	Concentrated solvent-water solution
M129	9.0	Other - unknown (treatment)	B319	Other waste inorganic solids (Specify in Comments)
M129	53.7	Other - unknown (treatment)	B405	Reactive organic solid
M131	221,051.0	Land treatment/application/farming	B105	Acidic aqueous waste
M132	69,835.5	Landfill	B103	Spent acid with metals
M132	31.2	Landfill	B109	Spent caustic
M132	667.0	Landfill	B112	Aqueous waste with other reactives (e.g., explosives)
M132	19.6	Landfill	B113	Other aqueous waste with high dissolved solids
M132	7.5	Landfill	B207	Concentrated aqueous solution of other organics
M132	3.0	Landfill	B301	Soil contaminated with organics
M132	6,282.0	Landfill	B304	Other "dry" ash, slag, or thermal residue

M132	891.0	Landfill	B316	Other metal salts/chemicals
M132	0.0	Landfill	B319	Other waste inorganic solids (Specify in Comments)
M132	28,312.0	Landfill	B405	Reactive organic solid
M132	2,971.0	Landfill	B605	Reactive or polymerizable organics
M133	619,670.0	Surface impoundment	B119	Other inorganic liquids (Specify in Comments)
M134	177,871.1	Deepwell/underground injection	B101	Aqueous waste with low solvents
M134	735,614.0	Deepwell/underground injection	B102	Aqueous waste with low other toxic organics
M134	67,221.7	Deepwell/underground injection	B103	Spent acid with metals
M134	57,157.0	Deepwell/underground injection	B104	Spent acid without metals
M134	3,320,540.1	Deepwell/underground injection	B105	Acidic aqueous waste
M134	11,836.0	Deepwell/underground injection	B109	Spent caustic
M134	115,141.1	Deepwell/underground injection	B110	Caustic aqueous waste
M134	489,251.8	Deepwell/underground injection	B111	Aqueous waste with reactive sulfides
M134	441,255.8	Deepwell/underground injection	B114	Other aqueous waste with low dissolved solids
M134	233,979.0	Deepwell/underground injection	B115	Scrubber water
M134	10.0	Deepwell/underground injection	B119	Other inorganic liquids (Specify in Comments)
M134	455,848.0	Deepwell/underground injection	B207	Concentrated aqueous solution of other organics
M134	2,186,767.0	Deepwell/underground injection	B208	Concentrated phenolics
M134	2,560.0	Deepwell/underground injection	B219	Other organic liquids (Specify in Comments)
M135	2,869,579.7	Discharge to sewer/POTW	B101	Aqueous waste with low solvents
M135	74,051.5	Discharge to sewer/POTW	B102	Aqueous waste with low other toxic organics
M135	1,666,673.6	Discharge to sewer/POTW	B103	Spent acid with metals
M135	1,108,847.0	Discharge to sewer/POTW	B104	Spent acid without metals
M135	17,470,452.4	Discharge to sewer/POTW	B105	Acidic aqueous waste
M135	135,639.1	Discharge to sewer/POTW	B106	Caustic solution with metals but no cyanides
M135	318,571.0	Discharge to sewer/POTW	B107	Caustic solution with metals and cyanides
M135	2.3	Discharge to sewer/POTW	B108	Caustic solution with cyanides but no metals
M135	3,733.7	Discharge to sewer/POTW	B109	Spent caustic
M135	1,178,971.6	Discharge to sewer/POTW	B110	Caustic aqueous waste
M135	3,123.0	Discharge to sewer/POTW	B112	Aqueous waste with other reactives (e.g., explosives)
M135	91,238.8	Discharge to sewer/POTW	B113	Other aqueous waste with high dissolved solids
M135	850,963.9	Discharge to sewer/POTW	B114	Other aqueous waste with low dissolved solids
M135	111,063.3	Discharge to sewer/POTW	B115	Scrubber water
M135	3,754.6	Discharge to sewer/POTW	B116	Leachate
M135	3,007,836.4	Discharge to sewer/POTW	B119	Other inorganic liquids (Specify in Comments)
M135	1.6	Discharge to sewer/POTW	B201	Concentrated solvent-water solution
M135	9,409.3	Discharge to sewer/POTW	B207	Concentrated aqueous solution of other organics
M135	1.3	Discharge to sewer/POTW	B212	Reactive or polymerizable organic liquid
M135	2.5	Discharge to sewer/POTW	B310	Spent solid filters or adsorbents
M135	0.0	Discharge to sewer/POTW	B315	Other reactive salts/chemicals
M135	7,086.5	Discharge to sewer/POTW	B319	Other waste inorganic solids (Specify in Comments)
M135	17.9	Discharge to sewer/POTW	B403	Solid resins or polymerized organics
M135	17.0	Discharge to sewer/POTW	B502	Lime sludge with metals/metal hydroxide sludge
M135	79.8	Discharge to sewer/POTW	B505	Untreated plating sludge without cyanides
M135	1.1	Discharge to sewer/POTW	B506	Untreated plating sludge with cyanides
M135	518.0	Discharge to sewer/POTW	B519	Other inorganic sludges (Specify in Comments)
M136	0.1	Discharge to surface water (NPDES)	B001	Lab packs of old chemicals only

M136	0.5	Discharge to surface water (NPDES)	B009	Other lab packs (Specify in Comments)
M136	3,163,121.1	Discharge to surface water (NPDES)	B101	Aqueous waste with low solvents
M136	8,670,081.5	Discharge to surface water (NPDES)	B102	Aqueous waste with low other toxic organics
M136	1,168,621.2	Discharge to surface water (NPDES)	B103	Spent acid with metals
M136	4,812.1	Discharge to surface water (NPDES)	B104	Spent acid without metals
M136	12,243,471.9	Discharge to surface water (NPDES)	B105	Acidic aqueous waste
M136	50,698.7	Discharge to surface water (NPDES)	B106	Caustic solution with metals but no cyanides
M136	14,657.5	Discharge to surface water (NPDES)	B107	Caustic solution with metals and cyanides
M136	10,894.6	Discharge to surface water (NPDES)	B108	Caustic solution with cyanides but no metals
M136	12,322.2	Discharge to surface water (NPDES)	B109	Spent caustic
M136	747,845.4	Discharge to surface water (NPDES)	B110	Caustic aqueous waste
M136	33,174.2	Discharge to surface water (NPDES)	B112	Aqueous waste with other reactives (e.g., explosives)
M136	10.6	Discharge to surface water (NPDES)	B113	Other aqueous waste with high dissolved solids
M136	907,283.9	Discharge to surface water (NPDES)	B114	Other aqueous waste with low dissolved solids
M136	1,066,474.7	Discharge to surface water (NPDES)	B115	Scrubber water
M136	265,655.8	Discharge to surface water (NPDES)	B116	Leachate
M136	3,601,289.9	Discharge to surface water (NPDES)	B119	Other inorganic liquids (Specify in Comments)
M136	0.0	Discharge to surface water (NPDES)	B201	Concentrated solvent-water solution
M136	6,039.6	Discharge to surface water (NPDES)	B203	Nonhalogenated solvent
M136	483.1	Discharge to surface water (NPDES)	B207	Concentrated aqueous solution of other organics
M136	25.4	Discharge to surface water (NPDES)	B219	Other organic liquids (Specify in Comments)
M136	2.1	Discharge to surface water (NPDES)	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M136	0.5	Discharge to surface water (NPDES)	B313	Reactive cyanide salts/chemicals
M136	488.5	Discharge to surface water (NPDES)	B314	Reactive sulfide salts/chemicals
M136	244,335.0	Discharge to surface water (NPDES)	B502	Lime sludge with metals/metal hydroxide sludge
M137	147,321.0	Other - known (disposal)	B101	Aqueous waste with low solvents
M137	50.0	Other - known (disposal)	B103	Spent acid with metals
M137	11.5	Other - known (disposal)	B104	Spent acid without metals
M137	16,782.0	Other - known (disposal)	B201	Concentrated solvent-water solution
M137	2,089.0	Other - known (disposal)	B212	Reactive or polymerizable organic liquid
M137	1,278.2	Other - known (disposal)	B319	Other waste inorganic solids (Specify in Comments)
M137	295.7	Other - known (disposal)	B405	Reactive organic solid
M137	1.0	Other - known (disposal)	B609	Other organic sludges (Specify in Comments)
M141	3.0	Transfer facility storage	B001	Lab packs of old chemicals only
M141	2.0	Transfer facility storage	B003	Mixed lab packs
M141	0.3	Transfer facility storage	B009	Other lab packs (Specify in Comments)
M141	18.0	Transfer facility storage	B101	Aqueous waste with low solvents
M141	749,032.7	Transfer facility storage	B102	Aqueous waste with low other toxic organics
M141	535.1	Transfer facility storage	B103	Spent acid with metals
M141	15.2	Transfer facility storage	B104	Spent acid without metals
M141	2,238.5	Transfer facility storage	B105	Acidic aqueous waste
M141	0.0	Transfer facility storage	B107	Caustic solution with metals and cyanides
M141	9,816.0	Transfer facility storage	B108	Caustic solution with cyanides but no metals
M141	1,109.0	Transfer facility storage	B109	Spent caustic
M141	11,119.4	Transfer facility storage	B110	Caustic aqueous waste
M141	1,213.0	Transfer facility storage	B111	Aqueous waste with reactive sulfides
M141	237.0	Transfer facility storage	B113	Other aqueous waste with high dissolved solids

M141	0.0	Transfer facility storage	B114	Other aqueous waste with low dissolved solids
M141	103.0	Transfer facility storage	B115	Scrubber water
M141	1,872.0	Transfer facility storage	B119	Other inorganic liquids (Specify in Comments)
M141	77.0	Transfer facility storage	B201	Concentrated solvent-water solution
M141	0.0	Transfer facility storage	B202	Halogenated (e.g., chlorinated) solvent
M141	101.1	Transfer facility storage	B203	Nonhalogenated solvent
M141	3.0	Transfer facility storage	B204	Halogenated/nonhalogenated solvent mixture
M141	3,234.0	Transfer facility storage	B206	Waste oil
M141	160.1	Transfer facility storage	B207	Concentrated aqueous solution of other organics
M141	4,455.0	Transfer facility storage	B208	Concentrated phenolics
M141	0.0	Transfer facility storage	B209	Organic paint, ink, lacquer, or varnish
M141	8.0	Transfer facility storage	B211	Paint thinner or petroleum distillates
M141	15.0	Transfer facility storage	B212	Reactive or polymerizable organic liquid
M141	27,919.3	Transfer facility storage	B219	Other organic liquids (Specify in Comments)
M141	54.0	Transfer facility storage	B301	Soil contaminated with organics
M141	2.0	Transfer facility storage	B302	Soil contaminated with inorganics only
M141	0.0	Transfer facility storage	B306	"Dry" lime or metal hydroxide solids not "fixed"
M141	0.0	Transfer facility storage	B307	Metal scale, filings, or scrap
M141	12.0	Transfer facility storage	B309	Batteries or battery parts, casings, cores
M141	22.0	Transfer facility storage	B310	Spent solid filters or adsorbents
M141	0.0	Transfer facility storage	B312	Metal-cyanide salts/chemicals
M141	308.0	Transfer facility storage	B314	Reactive sulfide salts/chemicals
M141	0.0	Transfer facility storage	B315	Other reactive salts/chemicals
M141	1.0	Transfer facility storage	B316	Other metal salts/chemicals
M141	37.0	Transfer facility storage	B319	Other waste inorganic solids (Specify in Comments)
M141	1.0	Transfer facility storage	B403	Solid resins or polymerized organics
M141	1.0	Transfer facility storage	B405	Reactive organic solid
M141	5.0	Transfer facility storage	B409	Other nonhalogenated organic solids (Specify in Comments)
M141	36.0	Transfer facility storage	B501	Lime sludge without metals
M141	1.0	Transfer facility storage	B505	Untreated plating sludge without cyanides
M141	15.0	Transfer facility storage	B508	Sludge with reactive sulfides
M141	7.0	Transfer facility storage	B519	Other inorganic sludges (Specify in Comments)
M141	11.0	Transfer facility storage	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M141	0.0	Transfer facility storage	B603	Oily sludge
M141	174.0	Transfer facility storage	B606	Resins, tars, or tarry sludge
M141	21.0	Transfer facility storage	B609	Other organic sludges (Specify in Comments)
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Detailed Identification of the Composition (Form) of D002 and D003 Wastes Managed Offsite.

Off-site System Type	Short Tons	Management Type	Waste Form Code	Waste Form Code Description
M011	0.0	HTMR	B001	Lab packs of old chemicals only
M011	0.3	HTMR	B009	Other lab packs (Specify in Comments)
M011	1,396.5	HTMR	B103	Spent acid with metals
M011	3.0	HTMR	B104	Spent acid without metals
M011	37,903.8	HTMR	B105	Acidic aqueous waste
M011	9.1	HTMR	B106	Caustic solution with metals but no cyanides
M011	28.2	HTMR	B107	Caustic solution with metals and cyanides
M011	7.0	HTMR	B109	Spent caustic
M011	0.0	HTMR	B110	Caustic aqueous waste
M011	0.9	HTMR	B112	Aqueous waste with other reactives (e.g., explosives)
M011	0.0	HTMR	B117	Waste liquid mercury
M011	5.0	HTMR	B119	Other inorganic liquids (Specify in Comments)
M011	0.0	HTMR	B203	Nonhalogenated solvent
M011	0.1	HTMR	B207	Concentrated aqueous solution of other organics
M011	0.1	HTMR	B209	Organic paint, ink, lacquer, or varnish
M011	0.0	HTMR	B210	Adhesives or epoxies
M011	3.1	HTMR	B304	Other "dry" ash, slag, or thermal residue
M011	1.8	HTMR	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M011	20.0	HTMR	B307	Metal scale, filings, or scrap
M011	0.8	HTMR	B309	Batteries or battery parts, casings, cores
M011	28.8	HTMR	B310	Spent solid filters or adsorbents
M011	2.4	HTMR	B312	Metal-cyanide salts/chemicals
M011	0.1	HTMR	B313	Reactive cyanide salts/chemicals
M011	0.3	HTMR	B315	Other reactive salts/chemicals
M011	11.8	HTMR	B319	Other waste inorganic solids (Specify in Comments)
M011	1.8	HTMR	B403	Solid resins or polymerized organics
M011	2.2	HTMR	B404	Spent carbon
M011	34.0	HTMR	B409	Other nonhalogenated organic solids (Specify in Comments)
M011	24.7	HTMR	B504	Other wastewater treatment sludge
M011	0.1	HTMR	B506	Untreated plating sludge with cyanides
M011	143.8	HTMR	B519	Other inorganic sludges (Specify in Comments)
M011	0.3	HTMR	B606	Resins, tars, or tarry sludge
M012	0.6	Retorting	B001	Lab packs of old chemicals only
M012	0.3	Retorting	B003	Mixed lab packs
M012	0.2	Retorting	B103	Spent acid with metals
M012	10.2	Retorting	B104	Spent acid without metals
M012	0.4	Retorting	B109	Spent caustic
M012	191.3	Retorting	B113	Other aqueous waste with high dissolved solids
M012	0.0	Retorting	B204	Halogenated/nonhalogenated solvent mixture
M012	0.5	Retorting	B212	Reactive or polymerizable organic liquid
M012	3.0	Retorting	B309	Batteries or battery parts, casings, cores
M012	0.1	Retorting	B315	Other reactive salts/chemicals
M012	0.1	Retorting	B319	Other waste inorganic solids (Specify in Comments)
M013	0.1	Secondary Smelting	B001	Lab packs of old chemicals only
M013	2.8	Secondary Smelting	B103	Spent acid with metals
M013	0.2	Secondary Smelting	B104	Spent acid without metals
M013	2.5	Secondary Smelting	B106	Caustic solution with metals but no cyanides
M013	0.0	Secondary Smelting	B110	Caustic aqueous waste
M013	1.4	Secondary Smelting	B119	Other inorganic liquids (Specify in Comments)
M013	7.4	Secondary Smelting	B309	Batteries or battery parts, casings, cores
M013	0.1	Secondary Smelting	B310	Spent solid filters or adsorbents
M013	10.5	Secondary Smelting	B316	Other metal salts/chemicals
M013	5.9	Secondary Smelting	B319	Other waste inorganic solids (Specify in Comments)
M013	0.1	Secondary Smelting	B507	Other sludge with cyanides
M014	0.8	Metals Recovery for Reuse	B003	Mixed lab packs
M014	0.1	Metals Recovery for Reuse	B009	Other lab packs (Specify in Comments)
M014	3,785.0	Metals Recovery for Reuse	B103	Spent acid with metals
M014	107.0	Metals Recovery for Reuse	B104	Spent acid without metals
M014	242.5	Metals Recovery for Reuse	B105	Acidic aqueous waste
M014	4,004.2	Metals Recovery for Reuse	B106	Caustic solution with metals but no cyanides
M014	345.7	Metals Recovery for Reuse	B107	Caustic solution with metals and cyanides
M014	6.3	Metals Recovery for Reuse	B108	Caustic solution with cyanides but no metals
M014	0.3	Metals Recovery for Reuse	B110	Caustic aqueous waste
M014	59.7	Metals Recovery for Reuse	B113	Other aqueous waste with high dissolved solids
M014	2.1	Metals Recovery for Reuse	B114	Other aqueous waste with low dissolved solids
M014	3,434.5	Metals Recovery for Reuse	B119	Other inorganic liquids (Specify in Comments)
M014	2.0	Metals Recovery for Reuse	B201	Concentrated solvent-water solution
M014	51.5	Metals Recovery for Reuse	B219	Other organic liquids (Specify in Comments)
M014	1.0	Metals Recovery for Reuse	B306	"Dry" lime or metal hydroxide solids not "fixed"
M014	2.4	Metals Recovery for Reuse	B309	Batteries or battery parts, casings, cores
M014	0.8	Metals Recovery for Reuse	B310	Spent solid filters or adsorbents
M014	7.1	Metals Recovery for Reuse	B312	Metal-cyanide salts/chemicals
M014	0.0	Metals Recovery for Reuse	B313	Reactive cyanide salts/chemicals
M014	0.4	Metals Recovery for Reuse	B315	Other reactive salts/chemicals
M014	18.1	Metals Recovery for Reuse	B316	Other metal salts/chemicals
M014	993.5	Metals Recovery for Reuse	B319	Other waste inorganic solids (Specify in Comments)
M014	0.8	Metals Recovery for Reuse	B403	Solid resins or polymerized organics
M014	0.0	Metals Recovery for Reuse	B409	Other nonhalogenated organic solids (Specify in Comments)
M014	41.6	Metals Recovery for Reuse	B504	Other wastewater treatment sludge
M014	5.5	Metals Recovery for Reuse	B505	Untreated plating sludge without cyanides
M014	0.6	Metals Recovery for Reuse	B506	Untreated plating sludge with cyanides
M014	0.3	Metals Recovery for Reuse	B507	Other sludge with cyanides
M019	0.7	Metals Recovery (unknown)	B001	Lab packs of old chemicals only
M019	0.2	Metals Recovery (unknown)	B003	Mixed lab packs
M019	1.6	Metals Recovery (unknown)	B101	Aqueous waste with low solvents
M019	0.2	Metals Recovery (unknown)	B102	Aqueous waste with low other toxic organics
M019	2,408.4	Metals Recovery (unknown)	B103	Spent acid with metals
M019	52.8	Metals Recovery (unknown)	B104	Spent acid without metals
M019	430.7	Metals Recovery (unknown)	B105	Acidic aqueous waste
M019	1,544.5	Metals Recovery (unknown)	B106	Caustic solution with metals but no cyanides
M019	259.7	Metals Recovery (unknown)	B107	Caustic solution with metals and cyanides
M019	41.0	Metals Recovery (unknown)	B109	Spent caustic
M019	429.6	Metals Recovery (unknown)	B110	Caustic aqueous waste

M019	6.2	Metals Recovery (unknown)	B112	Aqueous waste with other reactives (e.g., explosives)
M019	19.3	Metals Recovery (unknown)	B113	Other aqueous waste with high dissolved solids
M019	2.6	Metals Recovery (unknown)	B114	Other aqueous waste with low dissolved solids
M019	50.0	Metals Recovery (unknown)	B119	Other inorganic liquids (Specify in Comments)
M019	0.7	Metals Recovery (unknown)	B210	Adhesives or epoxies
M019	34.5	Metals Recovery (unknown)	B219	Other organic liquids (Specify in Comments)
M019	9.6	Metals Recovery (unknown)	B307	Metal scale, filings, or scrap
M019	26.3	Metals Recovery (unknown)	B309	Batteries or battery parts, casings, cores
M019	3.5	Metals Recovery (unknown)	B310	Spent solid filters or adsorbents
M019	2.2	Metals Recovery (unknown)	B312	Metal-cyanide salts/chemicals
M019	0.6	Metals Recovery (unknown)	B315	Other reactive salts/chemicals
M019	11.2	Metals Recovery (unknown)	B316	Other metal salts/chemicals
M019	58.0	Metals Recovery (unknown)	B319	Other waste inorganic solids (Specify in Comments)
M019	0.8	Metals Recovery (unknown)	B403	Solid resins or polymerized organics
M019	8.9	Metals Recovery (unknown)	B409	Other nonhalogenated organic solids (Specify in Comments)
M019	4.8	Metals Recovery (unknown)	B507	Other sludge with cyanides
M021	0.2	Fractionation/distillation	B001	Lab packs of old chemicals only
M021	0.9	Fractionation/distillation	B003	Mixed lab packs
M021	1,623.1	Fractionation/distillation	B101	Aqueous waste with low solvents
M021	2.1	Fractionation/distillation	B103	Spent acid with metals
M021	5.0	Fractionation/distillation	B104	Spent acid without metals
M021	0.7	Fractionation/distillation	B105	Acidic aqueous waste
M021	0.5	Fractionation/distillation	B109	Spent caustic
M021	97.5	Fractionation/distillation	B110	Caustic aqueous waste
M021	17.2	Fractionation/distillation	B119	Other inorganic liquids (Specify in Comments)
M021	1.6	Fractionation/distillation	B201	Concentrated solvent-water solution
M021	417.1	Fractionation/distillation	B202	Halogenated (e.g., chlorinated) solvent
M021	124.7	Fractionation/distillation	B203	Nonhalogenated solvent
M021	637.8	Fractionation/distillation	B204	Halogenated/nonhalogenated solvent mixture
M021	0.5	Fractionation/distillation	B207	Concentrated aqueous solution of other organics
M021	3.2	Fractionation/distillation	B211	Paint thinner or petroleum distillates
M021	619.6	Fractionation/distillation	B212	Reactive or polymerizable organic liquid
M022	1.3	Thin Film Evaporation	B103	Spent acid with metals
M022	0.2	Thin Film Evaporation	B109	Spent caustic
M022	82.3	Thin Film Evaporation	B204	Halogenated/nonhalogenated solvent mixture
M023	44.6	Solvent Extraction	B106	Caustic solution with metals but no cyanides
M023	0.0	Solvent Extraction	B202	Halogenated (e.g., chlorinated) solvent
M023	11.2	Solvent Extraction	B203	Nonhalogenated solvent
M023	6.2	Solvent Extraction	B601	Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
M029	0.0	Solvent Recovery (unknown)	B001	Lab packs of old chemicals only
M029	19.7	Solvent Recovery (unknown)	B101	Aqueous waste with low solvents
M029	0.5	Solvent Recovery (unknown)	B102	Aqueous waste with low other toxic organics
M029	9.0	Solvent Recovery (unknown)	B103	Spent acid with metals
M029	0.2	Solvent Recovery (unknown)	B105	Acidic aqueous waste
M029	5.1	Solvent Recovery (unknown)	B110	Caustic aqueous waste
M029	0.0	Solvent Recovery (unknown)	B114	Other aqueous waste with low dissolved solids
M029	1.4	Solvent Recovery (unknown)	B119	Other inorganic liquids (Specify in Comments)
M029	0.2	Solvent Recovery (unknown)	B201	Concentrated solvent-water solution
M029	4.2	Solvent Recovery (unknown)	B203	Nonhalogenated solvent
M029	17.1	Solvent Recovery (unknown)	B204	Halogenated/nonhalogenated solvent mixture
M029	1.4	Solvent Recovery (unknown)	B206	Waste oil
M029	0.0	Solvent Recovery (unknown)	B210	Adhesives or epoxies
M029	2.6	Solvent Recovery (unknown)	B211	Paint thinner or petroleum distillates
M029	10.3	Solvent Recovery (unknown)	B212	Reactive or polymerizable organic liquid
M029	1.1	Solvent Recovery (unknown)	B219	Other organic liquids (Specify in Comments)
M029	0.4	Solvent Recovery (unknown)	B609	Other organic sludges (Specify in Comments)
M031	0.1	Acid Regeneration	B001	Lab packs of old chemicals only
M031	0.3	Acid Regeneration	B003	Mixed lab packs
M031	8,631.2	Acid Regeneration	B103	Spent acid with metals
M031	124.4	Acid Regeneration	B104	Spent acid without metals
M031	1,997.5	Acid Regeneration	B105	Acidic aqueous waste
M031	1.8	Acid Regeneration	B109	Spent caustic
M031	0.7	Acid Regeneration	B110	Caustic aqueous waste
M031	13.3	Acid Regeneration	B111	Aqueous waste with reactive sulfides
M031	40.1	Acid Regeneration	B119	Other inorganic liquids (Specify in Comments)
M031	0.1	Acid Regeneration	B207	Concentrated aqueous solution of other organics
M031	0.4	Acid Regeneration	B219	Other organic liquids (Specify in Comments)
M031	83.5	Acid Regeneration	B309	Batteries or battery parts, casings, cores
M032	0.4	Other Recovery	B001	Lab packs of old chemicals only
M032	79.3	Other Recovery	B103	Spent acid with metals
M032	0.2	Other Recovery	B104	Spent acid without metals
M032	2.0	Other Recovery	B105	Acidic aqueous waste
M032	111.2	Other Recovery	B106	Caustic solution with metals but no cyanides
M032	26.0	Other Recovery	B109	Spent caustic
M032	1.4	Other Recovery	B114	Other aqueous waste with low dissolved solids
M032	0.0	Other Recovery	B115	Scrubber water
M032	252.5	Other Recovery	B205	Oil-water emulsion or mixture
M032	766.5	Other Recovery	B301	Soil contaminated with organics
M032	67.1	Other Recovery	B319	Other waste inorganic solids (Specify in Comments)
M032	1,787.9	Other Recovery	B603	Oily sludge
M039	0.1	Other Recovery (unknown)	B001	Lab packs of old chemicals only
M039	2.2	Other Recovery (unknown)	B003	Mixed lab packs
M039	5.2	Other Recovery (unknown)	B009	Other lab packs (Specify in Comments)
M039	0.3	Other Recovery (unknown)	B101	Aqueous waste with low solvents
M039	6.6	Other Recovery (unknown)	B102	Aqueous waste with low other toxic organics
M039	352.3	Other Recovery (unknown)	B103	Spent acid with metals
M039	3.3	Other Recovery (unknown)	B104	Spent acid without metals
M039	136.4	Other Recovery (unknown)	B105	Acidic aqueous waste
M039	866.0	Other Recovery (unknown)	B106	Caustic solution with metals but no cyanides
M039	1.8	Other Recovery (unknown)	B109	Spent caustic
M039	75.8	Other Recovery (unknown)	B110	Caustic aqueous waste
M039	63.5	Other Recovery (unknown)	B113	Other aqueous waste with high dissolved solids
M039	2.1	Other Recovery (unknown)	B114	Other aqueous waste with low dissolved solids
M039	8.6	Other Recovery (unknown)	B119	Other inorganic liquids (Specify in Comments)
M039	0.2	Other Recovery (unknown)	B207	Concentrated aqueous solution of other organics

M039	0.0	Other Recovery (unknown)	B210	Adhesives or epoxies
M039	0.5	Other Recovery (unknown)	B211	Paint thinner or petroleum distillates
M039	1.5	Other Recovery (unknown)	B212	Reactive or polymerizable organic liquid
M039	4.1	Other Recovery (unknown)	B219	Other organic liquids (Specify in Comments)
M039	2.8	Other Recovery (unknown)	B309	Batteries or battery parts, casings, cores
M039	0.2	Other Recovery (unknown)	B310	Spent solid filters or adsorbents
M039	0.0	Other Recovery (unknown)	B313	Reactive cyanide salts/chemicals
M039	86.6	Other Recovery (unknown)	B319	Other waste inorganic solids (Specify in Comments)
M039	0.5	Other Recovery (unknown)	B409	Other nonhalogenated organic solids (Specify in Comments)
M041	348.5	Incineration - liquids	B001	Lab packs of old chemicals only
M041	20.3	Incineration - liquids	B002	Lab packs of debris only
M041	3,509.8	Incineration - liquids	B003	Mixed lab packs
M041	6.0	Incineration - liquids	B004	Lab packs containing acute hazardous wastes
M041	31.0	Incineration - liquids	B009	Other lab packs (Specify in Comments)
M041	2,413.7	Incineration - liquids	B101	Aqueous waste with low solvents
M041	621.9	Incineration - liquids	B102	Aqueous waste with low other toxic organics
M041	91.0	Incineration - liquids	B103	Spent acid with metals
M041	197.6	Incineration - liquids	B104	Spent acid without metals
M041	468.5	Incineration - liquids	B105	Acidic aqueous waste
M041	89.3	Incineration - liquids	B106	Caustic solution with metals but no cyanides
M041	59.1	Incineration - liquids	B107	Caustic solution with metals and cyanides
M041	17.8	Incineration - liquids	B108	Caustic solution with cyanides but no metals
M041	325.9	Incineration - liquids	B109	Spent caustic
M041	1,265.0	Incineration - liquids	B110	Caustic aqueous waste
M041	1,746.8	Incineration - liquids	B111	Aqueous waste with reactive sulfides
M041	33.0	Incineration - liquids	B112	Aqueous waste with other reactives (e.g., explosives)
M041	1.9	Incineration - liquids	B113	Other aqueous waste with high dissolved solids
M041	42.6	Incineration - liquids	B114	Other aqueous waste with low dissolved solids
M041	17.7	Incineration - liquids	B115	Scrubber water
M041	596.4	Incineration - liquids	B119	Other inorganic liquids (Specify in Comments)
M041	827.4	Incineration - liquids	B201	Concentrated solvent-water solution
M041	691.6	Incineration - liquids	B202	Halogenated (e.g., chlorinated) solvent
M041	5,033.1	Incineration - liquids	B203	Nonhalogenated solvent
M041	4,113.3	Incineration - liquids	B204	Halogenated/nonhalogenated solvent mixture
M041	48.4	Incineration - liquids	B205	Oil-water emulsion or mixture
M041	24.4	Incineration - liquids	B206	Waste oil
M041	848.1	Incineration - liquids	B207	Concentrated aqueous solution of other organics
M041	3.5	Incineration - liquids	B208	Concentrated phenolics
M041	38.1	Incineration - liquids	B209	Organic paint, ink, lacquer, or varnish
M041	1,111.8	Incineration - liquids	B210	Adhesives or epoxies
M041	39.7	Incineration - liquids	B211	Paint thinner or petroleum distillates
M041	5,530.8	Incineration - liquids	B212	Reactive or polymerizable organic liquid
M041	4,145.9	Incineration - liquids	B219	Other organic liquids (Specify in Comments)
M041	2.7	Incineration - liquids	B301	Soil contaminated with organics
M041	0.0	Incineration - liquids	B302	Soil contaminated with inorganics only
M041	1.4	Incineration - liquids	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M041	0.1	Incineration - liquids	B308	Empty or crushed metal drums or containers
M041	2.1	Incineration - liquids	B309	Batteries or battery parts, casings, cores
M041	23.0	Incineration - liquids	B310	Spent solid filters or adsorbents
M041	0.1	Incineration - liquids	B313	Reactive cyanide salts/chemicals
M041	16.7	Incineration - liquids	B314	Reactive sulfide salts/chemicals
M041	3,882.4	Incineration - liquids	B315	Other reactive salts/chemicals
M041	11.3	Incineration - liquids	B316	Other metal salts/chemicals
M041	13.9	Incineration - liquids	B319	Other waste inorganic solids (Specify in Comments)
M041	0.1	Incineration - liquids	B401	Halogenated pesticide solid
M041	0.1	Incineration - liquids	B402	Nonhalogenated pesticide solid
M041	60.0	Incineration - liquids	B403	Solid resins or polymerized organics
M041	8.3	Incineration - liquids	B405	Reactive organic solid
M041	0.3	Incineration - liquids	B406	Empty fiber or plastic containers
M041	21.5	Incineration - liquids	B407	Other halogenated organic solids (Specify in Comments)
M041	130.8	Incineration - liquids	B409	Other nonhalogenated organic solids (Specify in Comments)
M041	1.8	Incineration - liquids	B505	Untreated plating sludge without cyanides
M041	1.0	Incineration - liquids	B506	Untreated plating sludge with cyanides
M041	19.0	Incineration - liquids	B508	Sludge with reactive sulfides
M041	7.4	Incineration - liquids	B509	Sludge with other reactives
M041	7.8	Incineration - liquids	B519	Other inorganic sludges (Specify in Comments)
M041	397.7	Incineration - liquids	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M041	1,441.2	Incineration - liquids	B603	Oily sludge
M041	2.9	Incineration - liquids	B604	Organic paint or ink sludge
M041	5.7	Incineration - liquids	B605	Reactive or polymerizable organics
M041	36.9	Incineration - liquids	B609	Other organic sludges (Specify in Comments)
M041	0.0	Incineration - liquids	B701	Inorganic gases
M041	0.1	Incineration - liquids	B801	Organic gases
M042	0.9	Incineration - sludges	B001	Lab packs of old chemicals only
M042	0.2	Incineration - sludges	B002	Lab packs of debris only
M042	51.9	Incineration - sludges	B003	Mixed lab packs
M042	0.0	Incineration - sludges	B004	Lab packs containing acute hazardous wastes
M042	0.1	Incineration - sludges	B009	Other lab packs (Specify in Comments)
M042	3.0	Incineration - sludges	B101	Aqueous waste with low solvents
M042	4.7	Incineration - sludges	B103	Spent acid with metals
M042	3.8	Incineration - sludges	B104	Spent acid without metals
M042	7.4	Incineration - sludges	B105	Acidic aqueous waste
M042	2.0	Incineration - sludges	B106	Caustic solution with metals but no cyanides
M042	1.4	Incineration - sludges	B107	Caustic solution with metals and cyanides
M042	9.7	Incineration - sludges	B108	Caustic solution with cyanides but no metals
M042	55.7	Incineration - sludges	B109	Spent caustic
M042	225.3	Incineration - sludges	B110	Caustic aqueous waste
M042	2.4	Incineration - sludges	B111	Aqueous waste with reactive sulfides
M042	1.2	Incineration - sludges	B114	Other aqueous waste with low dissolved solids
M042	42.8	Incineration - sludges	B119	Other inorganic liquids (Specify in Comments)
M042	0.8	Incineration - sludges	B201	Concentrated solvent-water solution
M042	14.3	Incineration - sludges	B202	Halogenated (e.g., chlorinated) solvent
M042	21.9	Incineration - sludges	B203	Nonhalogenated solvent
M042	10.2	Incineration - sludges	B204	Halogenated/nonhalogenated solvent mixture
M042	6.1	Incineration - sludges	B206	Waste oil

M042	9.2	Incineration - sludges	B207	Concentrated aqueous solution of other organics
M042	6.4	Incineration - sludges	B209	Organic paint, ink, lacquer, or varnish
M042	0.0	Incineration - sludges	B210	Adhesives or epoxies
M042	0.6	Incineration - sludges	B211	Paint thinner or petroleum distillates
M042	22.2	Incineration - sludges	B219	Other organic liquids (Specify in Comments)
M042	10.9	Incineration - sludges	B306	"Dry" lime or metal hydroxide solids not "fixed"
M042	0.2	Incineration - sludges	B307	Metal scale, filings, or scrap
M042	0.7	Incineration - sludges	B310	Spent solid filters or adsorbents
M042	1.6	Incineration - sludges	B312	Metal-cyanide salts/chemicals
M042	1.3	Incineration - sludges	B313	Reactive cyanide salts/chemicals
M042	0.1	Incineration - sludges	B315	Other reactive salts/chemicals
M042	1.9	Incineration - sludges	B316	Other metal salts/chemicals
M042	35.3	Incineration - sludges	B319	Other waste inorganic solids (Specify in Comments)
M042	0.2	Incineration - sludges	B403	Solid resins or polymerized organics
M042	2.6	Incineration - sludges	B405	Reactive organic solid
M042	148.6	Incineration - sludges	B407	Other halogenated organic solids (Specify in Comments)
M042	0.1	Incineration - sludges	B409	Other nonhalogenated organic solids (Specify in Comments)
M042	40.6	Incineration - sludges	B504	Other wastewater treatment sludge
M042	0.3	Incineration - sludges	B505	Untreated plating sludge without cyanides
M042	7.9	Incineration - sludges	B506	Untreated plating sludge with cyanides
M042	7.5	Incineration - sludges	B507	Other sludge with cyanides
M042	28.7	Incineration - sludges	B508	Sludge with reactive sulfides
M042	19.7	Incineration - sludges	B509	Sludge with other reactives
M042	61.8	Incineration - sludges	B519	Other inorganic sludges (Specify in Comments)
M042	1,120.6	Incineration - sludges	B601	Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
M042	71.1	Incineration - sludges	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M042	14.5	Incineration - sludges	B603	Oily sludge
M042	1.0	Incineration - sludges	B604	Organic paint or ink sludge
M042	6.3	Incineration - sludges	B605	Reactive or polymerizable organics
M042	73.7	Incineration - sludges	B606	Resins, tars, or tarry sludge
M042	1.3	Incineration - sludges	B608	Sewage or other untreated biological sludge
M042	467.3	Incineration - sludges	B609	Other organic sludges (Specify in Comments)
M042	0.0	Incineration - sludges	B801	Organic gases
M043	42.5	Incineration - solids	B001	Lab packs of old chemicals only
M043	0.4	Incineration - solids	B002	Lab packs of debris only
M043	138.1	Incineration - solids	B003	Mixed lab packs
M043	7.1	Incineration - solids	B004	Lab packs containing acute hazardous wastes
M043	7.0	Incineration - solids	B009	Other lab packs (Specify in Comments)
M043	185.0	Incineration - solids	B101	Aqueous waste with low solvents
M043	42.4	Incineration - solids	B102	Aqueous waste with low other toxic organics
M043	1.3	Incineration - solids	B103	Spent acid with metals
M043	100.0	Incineration - solids	B104	Spent acid without metals
M043	4.6	Incineration - solids	B105	Acidic aqueous waste
M043	6.8	Incineration - solids	B106	Caustic solution with metals but no cyanides
M043	3.5	Incineration - solids	B107	Caustic solution with metals and cyanides
M043	19.0	Incineration - solids	B108	Caustic solution with cyanides but no metals
M043	3.6	Incineration - solids	B109	Spent caustic
M043	252.5	Incineration - solids	B110	Caustic aqueous waste
M043	0.2	Incineration - solids	B111	Aqueous waste with reactive sulfides
M043	0.0	Incineration - solids	B112	Aqueous waste with other reactives (e.g., explosives)
M043	1.3	Incineration - solids	B113	Other aqueous waste with high dissolved solids
M043	3.0	Incineration - solids	B114	Other aqueous waste with low dissolved solids
M043	4.8	Incineration - solids	B115	Scrubber water
M043	81.8	Incineration - solids	B119	Other inorganic liquids (Specify in Comments)
M043	3.1	Incineration - solids	B202	Halogenated (e.g., chlorinated) solvent
M043	19.0	Incineration - solids	B203	Nonhalogenated solvent
M043	7.0	Incineration - solids	B204	Halogenated/nonhalogenated solvent mixture
M043	24.6	Incineration - solids	B205	Oil-water emulsion or mixture
M043	25.5	Incineration - solids	B207	Concentrated aqueous solution of other organics
M043	1.0	Incineration - solids	B208	Concentrated phenolics
M043	25.4	Incineration - solids	B209	Organic paint, ink, lacquer, or varnish
M043	2.1	Incineration - solids	B210	Adhesives or epoxies
M043	3.5	Incineration - solids	B211	Paint thinner or petroleum distillates
M043	37.7	Incineration - solids	B212	Reactive or polymerizable organic liquid
M043	118.3	Incineration - solids	B219	Other organic liquids (Specify in Comments)
M043	392.4	Incineration - solids	B301	Soil contaminated with organics
M043	21.1	Incineration - solids	B302	Soil contaminated with inorganics only
M043	22.2	Incineration - solids	B304	Other "dry" ash, slag, or thermal residue
M043	1.2	Incineration - solids	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M043	4.5	Incineration - solids	B306	"Dry" lime or metal hydroxide solids not "fixed"
M043	39.0	Incineration - solids	B307	Metal scale, filings, or scrap
M043	404.5	Incineration - solids	B308	Empty or crushed metal drums or containers
M043	242.3	Incineration - solids	B309	Batteries or battery parts, casings, cores
M043	197.7	Incineration - solids	B310	Spent solid filters or adsorbents
M043	2.3	Incineration - solids	B311	Asbestos solids and debris
M043	87.2	Incineration - solids	B312	Metal-cyanide salts/chemicals
M043	23.3	Incineration - solids	B313	Reactive cyanide salts/chemicals
M043	210.4	Incineration - solids	B314	Reactive sulfide salts/chemicals
M043	796.7	Incineration - solids	B315	Other reactive salts/chemicals
M043	38.8	Incineration - solids	B316	Other metal salts/chemicals
M043	1,507.3	Incineration - solids	B319	Other waste inorganic solids (Specify in Comments)
M043	14.7	Incineration - solids	B401	Halogenated pesticide solid
M043	824.9	Incineration - solids	B403	Solid resins or polymerized organics
M043	58.8	Incineration - solids	B404	Spent carbon
M043	254.1	Incineration - solids	B405	Reactive organic solid
M043	9.9	Incineration - solids	B406	Empty fiber or plastic containers
M043	73.8	Incineration - solids	B407	Other halogenated organic solids (Specify in Comments)
M043	355.5	Incineration - solids	B409	Other nonhalogenated organic solids (Specify in Comments)
M043	5.3	Incineration - solids	B501	Lime sludge without metals
M043	29.4	Incineration - solids	B503	Wastewater treatment sludge with toxic organics
M043	3.5	Incineration - solids	B505	Untreated plating sludge without cyanides
M043	0.6	Incineration - solids	B506	Untreated plating sludge with cyanides
M043	0.0	Incineration - solids	B507	Other sludge with cyanides
M043	123.9	Incineration - solids	B508	Sludge with reactive sulfides
M043	12.2	Incineration - solids	B509	Sludge with other reactives

M043	1.6	Incineration - solids	B511	Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
M043	0.8	Incineration - solids	B519	Other inorganic sludges (Specify in Comments)
M043	17.4	Incineration - solids	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M043	33.7	Incineration - solids	B603	Oily sludge
M043	39.7	Incineration - solids	B604	Organic paint or ink sludge
M043	22.5	Incineration - solids	B606	Resins, tars, or tarry sludge
M043	104.1	Incineration - solids	B609	Other organic sludges (Specify in Comments)
M043	0.1	Incineration - solids	B701	Inorganic gases
M043	0.1	Incineration - solids	B801	Organic gases
M044	0.8	Incineration - gases	B001	Lab packs of old chemicals only
M044	2.2	Incineration - gases	B003	Mixed lab packs
M044	0.0	Incineration - gases	B004	Lab packs containing acute hazardous wastes
M044	0.1	Incineration - gases	B009	Other lab packs (Specify in Comments)
M044	0.9	Incineration - gases	B207	Concentrated aqueous solution of other organics
M044	0.1	Incineration - gases	B211	Paint thinner or petroleum distillates
M044	0.0	Incineration - gases	B212	Reactive or polymerizable organic liquid
M044	4.0	Incineration - gases	B319	Other waste inorganic solids (Specify in Comments)
M044	4.2	Incineration - gases	B701	Inorganic gases
M044	4.4	Incineration - gases	B801	Organic gases
M049	13.7	Incineration - unknown	B001	Lab packs of old chemicals only
M049	0.2	Incineration - unknown	B002	Lab packs of debris only
M049	47.4	Incineration - unknown	B003	Mixed lab packs
M049	0.2	Incineration - unknown	B004	Lab packs containing acute hazardous wastes
M049	9.0	Incineration - unknown	B009	Other lab packs (Specify in Comments)
M049	2.4	Incineration - unknown	B101	Aqueous waste with low solvents
M049	35.1	Incineration - unknown	B104	Spent acid without metals
M049	7.2	Incineration - unknown	B105	Acidic aqueous waste
M049	1.4	Incineration - unknown	B109	Spent caustic
M049	11.5	Incineration - unknown	B110	Caustic aqueous waste
M049	110.8	Incineration - unknown	B119	Other inorganic liquids (Specify in Comments)
M049	111.3	Incineration - unknown	B201	Concentrated solvent-water solution
M049	1.4	Incineration - unknown	B203	Nonhalogenated solvent
M049	0.3	Incineration - unknown	B204	Halogenated/nonhalogenated solvent mixture
M049	1.6	Incineration - unknown	B207	Concentrated aqueous solution of other organics
M049	0.9	Incineration - unknown	B209	Organic paint, ink, lacquer, or varnish
M049	0.1	Incineration - unknown	B210	Adhesives or epoxies
M049	2.7	Incineration - unknown	B212	Reactive or polymerizable organic liquid
M049	6.1	Incineration - unknown	B219	Other organic liquids (Specify in Comments)
M049	0.5	Incineration - unknown	B308	Empty or crushed metal drums or containers
M049	0.1	Incineration - unknown	B309	Batteries or battery parts, casings, cores
M049	0.2	Incineration - unknown	B310	Spent solid filters or adsorbents
M049	1.0	Incineration - unknown	B315	Other reactive salts/chemicals
M049	0.5	Incineration - unknown	B319	Other waste inorganic solids (Specify in Comments)
M049	21.1	Incineration - unknown	B405	Reactive organic solid
M049	2.3	Incineration - unknown	B503	Wastewater treatment sludge with toxic organics
M049	1.4	Incineration - unknown	B609	Other organic sludges (Specify in Comments)
M049	3.0	Incineration - unknown	B701	Inorganic gases
M051	1.3	Energy Recovery - liquids	B001	Lab packs of old chemicals only
M051	19.6	Energy Recovery - liquids	B003	Mixed lab packs
M051	0.4	Energy Recovery - liquids	B009	Other lab packs (Specify in Comments)
M051	6.8	Energy Recovery - liquids	B101	Aqueous waste with low solvents
M051	427.2	Energy Recovery - liquids	B102	Aqueous waste with low other toxic organics
M051	0.1	Energy Recovery - liquids	B103	Spent acid with metals
M051	4.8	Energy Recovery - liquids	B104	Spent acid without metals
M051	53.9	Energy Recovery - liquids	B105	Acidic aqueous waste
M051	2.3	Energy Recovery - liquids	B106	Caustic solution with metals but no cyanides
M051	0.8	Energy Recovery - liquids	B109	Spent caustic
M051	5.2	Energy Recovery - liquids	B110	Caustic aqueous waste
M051	118.3	Energy Recovery - liquids	B119	Other inorganic liquids (Specify in Comments)
M051	239.1	Energy Recovery - liquids	B201	Concentrated solvent-water solution
M051	0.2	Energy Recovery - liquids	B202	Halogenated (e.g., chlorinated) solvent
M051	162.4	Energy Recovery - liquids	B203	Nonhalogenated solvent
M051	239.3	Energy Recovery - liquids	B204	Halogenated/nonhalogenated solvent mixture
M051	3.6	Energy Recovery - liquids	B206	Waste oil
M051	1,443.1	Energy Recovery - liquids	B207	Concentrated aqueous solution of other organics
M051	34.4	Energy Recovery - liquids	B209	Organic paint, ink, lacquer, or varnish
M051	0.4	Energy Recovery - liquids	B210	Adhesives or epoxies
M051	0.2	Energy Recovery - liquids	B211	Paint thinner or petroleum distillates
M051	1,669.1	Energy Recovery - liquids	B212	Reactive or polymerizable organic liquid
M051	5,164.7	Energy Recovery - liquids	B219	Other organic liquids (Specify in Comments)
M051	0.2	Energy Recovery - liquids	B309	Batteries or battery parts, casings, cores
M051	17.2	Energy Recovery - liquids	B403	Solid resins or polymerized organics
M051	93.3	Energy Recovery - liquids	B407	Other halogenated organic solids (Specify in Comments)
M051	217.4	Energy Recovery - liquids	B601	Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
M051	43.3	Energy Recovery - liquids	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M051	0.5	Energy Recovery - liquids	B603	Oily sludge
M051	5.7	Energy Recovery - liquids	B605	Reactive or polymerizable organics
M051	7.1	Energy Recovery - liquids	B606	Resins, tars, or tarry sludge
M052	0.5	Energy Recovery - sludges	B104	Spent acid without metals
M052	0.2	Energy Recovery - sludges	B110	Caustic aqueous waste
M052	1.2	Energy Recovery - sludges	B204	Halogenated/nonhalogenated solvent mixture
M052	3.9	Energy Recovery - sludges	B212	Reactive or polymerizable organic liquid
M052	24.8	Energy Recovery - sludges	B219	Other organic liquids (Specify in Comments)
M052	10.3	Energy Recovery - sludges	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M052	8.8	Energy Recovery - sludges	B604	Organic paint or ink sludge
M052	0.6	Energy Recovery - sludges	B606	Resins, tars, or tarry sludge
M052	217.9	Energy Recovery - sludges	B609	Other organic sludges (Specify in Comments)
M053	0.8	Energy Recovery - solids	B001	Lab packs of old chemicals only
M053	1.4	Energy Recovery - solids	B003	Mixed lab packs
M053	0.1	Energy Recovery - solids	B201	Concentrated solvent-water solution
M053	23.2	Energy Recovery - solids	B212	Reactive or polymerizable organic liquid
M053	534.5	Energy Recovery - solids	B219	Other organic liquids (Specify in Comments)
M053	0.4	Energy Recovery - solids	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M053	0.9	Energy Recovery - solids	B308	Empty or crushed metal drums or containers
M053	8.5	Energy Recovery - solids	B310	Spent solid filters or adsorbents

M053	0.3	Energy Recovery - solids	B319	Other waste inorganic solids (Specify in Comments)
M053	26.5	Energy Recovery - solids	B403	Solid resins or polymerized organics
M053	0.4	Energy Recovery - solids	B404	Spent carbon
M053	17.2	Energy Recovery - solids	B407	Other halogenated organic solids (Specify in Comments)
M053	2.2	Energy Recovery - solids	B409	Other nonhalogenated organic solids (Specify in Comments)
M053	0.3	Energy Recovery - solids	B505	Untreated plating sludge without cyanides
M053	16.3	Energy Recovery - solids	B603	Oily sludge
M053	0.2	Energy Recovery - solids	B609	Other organic sludges (Specify in Comments)
M059	2.4	Energy Recovery - unknown	B001	Lab packs of old chemicals only
M059	2.6	Energy Recovery - unknown	B104	Spent acid without metals
M059	0.1	Energy Recovery - unknown	B105	Acidic aqueous waste
M059	0.2	Energy Recovery - unknown	B106	Caustic solution with metals but no cyanides
M059	1.2	Energy Recovery - unknown	B209	Organic paint, ink, lacquer, or varnish
M059	0.2	Energy Recovery - unknown	B315	Other reactive salts/chemicals
M059	1.6	Energy Recovery - unknown	B319	Other waste inorganic solids (Specify in Comments)
M059	11.0	Energy Recovery - unknown	B504	Other wastewater treatment sludge
M061	66.9	Fuel blending	B001	Lab packs of old chemicals only
M061	42.2	Fuel blending	B003	Mixed lab packs
M061	0.1	Fuel blending	B004	Lab packs containing acute hazardous wastes
M061	69.8	Fuel blending	B009	Other lab packs (Specify in Comments)
M061	170.1	Fuel blending	B101	Aqueous waste with low solvents
M061	164.2	Fuel blending	B102	Aqueous waste with low other toxic organics
M061	43.5	Fuel blending	B103	Spent acid with metals
M061	72.5	Fuel blending	B104	Spent acid without metals
M061	146.0	Fuel blending	B105	Acidic aqueous waste
M061	42.1	Fuel blending	B106	Caustic solution with metals but no cyanides
M061	90.7	Fuel blending	B109	Spent caustic
M061	27,043.0	Fuel blending	B110	Caustic aqueous waste
M061	1.0	Fuel blending	B111	Aqueous waste with reactive sulfides
M061	2.2	Fuel blending	B112	Aqueous waste with other reactives (e.g., explosives)
M061	25.1	Fuel blending	B114	Other aqueous waste with low dissolved solids
M061	9.9	Fuel blending	B115	Scrubber water
M061	50.5	Fuel blending	B119	Other inorganic liquids (Specify in Comments)
M061	178.0	Fuel blending	B201	Concentrated solvent-water solution
M061	53.8	Fuel blending	B202	Halogenated (e.g., chlorinated) solvent
M061	1,290.9	Fuel blending	B203	Nonhalogenated solvent
M061	1,726.3	Fuel blending	B204	Halogenated/nonhalogenated solvent mixture
M061	703.2	Fuel blending	B205	Oil-water emulsion or mixture
M061	502.9	Fuel blending	B206	Waste oil
M061	297.7	Fuel blending	B207	Concentrated aqueous solution of other organics
M061	0.2	Fuel blending	B208	Concentrated phenolics
M061	562.2	Fuel blending	B209	Organic paint, ink, lacquer, or varnish
M061	155.2	Fuel blending	B210	Adhesives or epoxies
M061	285.4	Fuel blending	B211	Paint thinner or petroleum distillates
M061	147.0	Fuel blending	B212	Reactive or polymerizable organic liquid
M061	3,461.8	Fuel blending	B219	Other organic liquids (Specify in Comments)
M061	0.8	Fuel blending	B301	Soil contaminated with organics
M061	17.3	Fuel blending	B302	Soil contaminated with inorganics only
M061	0.9	Fuel blending	B306	"Dry" lime or metal hydroxide solids not "fixed"
M061	0.1	Fuel blending	B308	Empty or crushed metal drums or containers
M061	1.7	Fuel blending	B309	Batteries or battery parts, casings, cores
M061	43.5	Fuel blending	B310	Spent solid filters or adsorbents
M061	0.0	Fuel blending	B313	Reactive cyanide salts/chemicals
M061	0.0	Fuel blending	B314	Reactive sulfide salts/chemicals
M061	3.3	Fuel blending	B316	Other metal salts/chemicals
M061	28.1	Fuel blending	B319	Other waste inorganic solids (Specify in Comments)
M061	202.1	Fuel blending	B403	Solid resins or polymerized organics
M061	1.1	Fuel blending	B404	Spent carbon
M061	2.3	Fuel blending	B405	Reactive organic solid
M061	0.1	Fuel blending	B407	Other halogenated organic solids (Specify in Comments)
M061	639.1	Fuel blending	B409	Other nonhalogenated organic solids (Specify in Comments)
M061	0.3	Fuel blending	B504	Other wastewater treatment sludge
M061	0.7	Fuel blending	B505	Untreated plating sludge without cyanides
M061	0.2	Fuel blending	B506	Untreated plating sludge with cyanides
M061	28.0	Fuel blending	B509	Sludge with other reactives
M061	7.5	Fuel blending	B510	Degreasing sludge with metal scale or filings
M061	55.7	Fuel blending	B519	Other inorganic sludges (Specify in Comments)
M061	122.5	Fuel blending	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M061	132.0	Fuel blending	B603	Oily sludge
M061	176.9	Fuel blending	B604	Organic paint or ink sludge
M061	871.5	Fuel blending	B606	Resins, tars, or tarry sludge
M061	23.9	Fuel blending	B609	Other organic sludges (Specify in Comments)
M061	2.6	Fuel blending	B701	Inorganic gases
M061	86.9	Fuel blending	B801	Organic gases
M071	0.3	Chrome reduction and precipitation	B001	Lab packs of old chemicals only
M071	1.2	Chrome reduction and precipitation	B003	Mixed lab packs
M071	0.5	Chrome reduction and precipitation	B101	Aqueous waste with low solvents
M071	654.1	Chrome reduction and precipitation	B103	Spent acid with metals
M071	87.7	Chrome reduction and precipitation	B104	Spent acid without metals
M071	2,185.5	Chrome reduction and precipitation	B105	Acidic aqueous waste
M071	36.1	Chrome reduction and precipitation	B106	Caustic solution with metals but no cyanides
M071	4.4	Chrome reduction and precipitation	B109	Spent caustic
M071	0.2	Chrome reduction and precipitation	B110	Caustic aqueous waste
M071	0.4	Chrome reduction and precipitation	B111	Aqueous waste with reactive sulfides
M071	15.8	Chrome reduction and precipitation	B119	Other inorganic liquids (Specify in Comments)
M071	5.1	Chrome reduction and precipitation	B207	Concentrated aqueous solution of other organics
M071	1.4	Chrome reduction and precipitation	B219	Other organic liquids (Specify in Comments)
M071	1.2	Chrome reduction and precipitation	B306	"Dry" lime or metal hydroxide solids not "fixed"
M071	9.1	Chrome reduction and precipitation	B310	Spent solid filters or adsorbents
M071	2.8	Chrome reduction and precipitation	B315	Other reactive salts/chemicals
M071	0.2	Chrome reduction and precipitation	B316	Other metal salts/chemicals
M071	1.1	Chrome reduction and precipitation	B507	Other sludge with cyanides
M072	0.1	Cyanide destruction and precipitation	B001	Lab packs of old chemicals only
M072	0.0	Cyanide destruction and precipitation	B003	Mixed lab packs
M072	0.1	Cyanide destruction and precipitation	B009	Other lab packs (Specify in Comments)

M072	2.3	Cyanide destruction and precipitation	B101	Aqueous waste with low solvents
M072	51.5	Cyanide destruction and precipitation	B102	Aqueous waste with low other toxic organics
M072	12.7	Cyanide destruction and precipitation	B103	Spent acid with metals
M072	4.2	Cyanide destruction and precipitation	B105	Acidic aqueous waste
M072	4.4	Cyanide destruction and precipitation	B106	Caustic solution with metals but no cyanides
M072	949.9	Cyanide destruction and precipitation	B107	Caustic solution with metals and cyanides
M072	58.6	Cyanide destruction and precipitation	B108	Caustic solution with cyanides but no metals
M072	1.4	Cyanide destruction and precipitation	B109	Spent caustic
M072	5.5	Cyanide destruction and precipitation	B110	Caustic aqueous waste
M072	0.3	Cyanide destruction and precipitation	B111	Aqueous waste with reactive sulfides
M072	4.5	Cyanide destruction and precipitation	B113	Other aqueous waste with high dissolved solids
M072	2.7	Cyanide destruction and precipitation	B114	Other aqueous waste with low dissolved solids
M072	51.9	Cyanide destruction and precipitation	B119	Other inorganic liquids (Specify in Comments)
M072	2.2	Cyanide destruction and precipitation	B310	Spent solid filters or adsorbents
M072	2.9	Cyanide destruction and precipitation	B312	Metal-cyanide salts/chemicals
M072	70.6	Cyanide destruction and precipitation	B313	Reactive cyanide salts/chemicals
M072	0.2	Cyanide destruction and precipitation	B314	Reactive sulfide salts/chemicals
M072	11.0	Cyanide destruction and precipitation	B319	Other waste inorganic solids (Specify in Comments)
M072	3.3	Cyanide destruction and precipitation	B505	Untreated plating sludge without cyanides
M072	17.8	Cyanide destruction and precipitation	B506	Untreated plating sludge with cyanides
M072	9.1	Cyanide destruction and precipitation	B507	Other sludge with cyanides
M073	10.0	Cyanide destruction	B001	Lab packs of old chemicals only
M073	0.0	Cyanide destruction	B004	Lab packs containing acute hazardous wastes
M073	0.0	Cyanide destruction	B105	Acidic aqueous waste
M073	72.2	Cyanide destruction	B107	Caustic solution with metals and cyanides
M073	0.1	Cyanide destruction	B108	Caustic solution with cyanides but no metals
M073	0.1	Cyanide destruction	B111	Aqueous waste with reactive sulfides
M073	0.2	Cyanide destruction	B119	Other inorganic liquids (Specify in Comments)
M073	1.3	Cyanide destruction	B310	Spent solid filters or adsorbents
M073	0.0	Cyanide destruction	B312	Metal-cyanide salts/chemicals
M073	0.6	Cyanide destruction	B313	Reactive cyanide salts/chemicals
M073	4.3	Cyanide destruction	B506	Untreated plating sludge with cyanides
M074	0.4	Oxidation and precipitation	B001	Lab packs of old chemicals only
M074	0.8	Oxidation and precipitation	B003	Mixed lab packs
M074	0.4	Oxidation and precipitation	B004	Lab packs containing acute hazardous wastes
M074	0.5	Oxidation and precipitation	B101	Aqueous waste with low solvents
M074	828.1	Oxidation and precipitation	B102	Aqueous waste with low other toxic organics
M074	587.1	Oxidation and precipitation	B103	Spent acid with metals
M074	11.3	Oxidation and precipitation	B104	Spent acid without metals
M074	90.0	Oxidation and precipitation	B105	Acidic aqueous waste
M074	21.7	Oxidation and precipitation	B106	Caustic solution with metals but no cyanides
M074	255.2	Oxidation and precipitation	B107	Caustic solution with metals and cyanides
M074	0.8	Oxidation and precipitation	B108	Caustic solution with cyanides but no metals
M074	50.1	Oxidation and precipitation	B109	Spent caustic
M074	435.6	Oxidation and precipitation	B110	Caustic aqueous waste
M074	21.1	Oxidation and precipitation	B111	Aqueous waste with reactive sulfides
M074	1.1	Oxidation and precipitation	B112	Aqueous waste with other reactives (e.g., explosives)
M074	0.4	Oxidation and precipitation	B113	Other aqueous waste with high dissolved solids
M074	1.1	Oxidation and precipitation	B114	Other aqueous waste with low dissolved solids
M074	1,011.8	Oxidation and precipitation	B115	Scrubber water
M074	4.1	Oxidation and precipitation	B119	Other inorganic liquids (Specify in Comments)
M074	0.2	Oxidation and precipitation	B204	Halogenated/nonhalogenated solvent mixture
M074	0.6	Oxidation and precipitation	B207	Concentrated aqueous solution of other organics
M074	1.6	Oxidation and precipitation	B212	Reactive or polymerizable organic liquid
M074	2.8	Oxidation and precipitation	B219	Other organic liquids (Specify in Comments)
M074	0.1	Oxidation and precipitation	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M074	0.7	Oxidation and precipitation	B307	Metal scale, filings, or scrap
M074	1.3	Oxidation and precipitation	B309	Batteries or battery parts, casings, cores
M074	0.1	Oxidation and precipitation	B313	Reactive cyanide salts/chemicals
M074	0.0	Oxidation and precipitation	B314	Reactive sulfide salts/chemicals
M074	0.2	Oxidation and precipitation	B315	Other reactive salts/chemicals
M074	0.5	Oxidation and precipitation	B316	Other metal salts/chemicals
M074	0.0	Oxidation and precipitation	B319	Other waste inorganic solids (Specify in Comments)
M074	0.6	Oxidation and precipitation	B506	Untreated plating sludge with cyanides
M074	1.7	Oxidation and precipitation	B507	Other sludge with cyanides
M074	4.6	Oxidation and precipitation	B519	Other inorganic sludges (Specify in Comments)
M075	0.0	Oxidation	B001	Lab packs of old chemicals only
M075	0.0	Oxidation	B002	Lab packs of debris only
M075	0.2	Oxidation	B104	Spent acid without metals
M075	447.0	Oxidation	B105	Acidic aqueous waste
M075	11.4	Oxidation	B109	Spent caustic
M075	0.1	Oxidation	B110	Caustic aqueous waste
M075	99.0	Oxidation	B111	Aqueous waste with reactive sulfides
M075	0.0	Oxidation	B119	Other inorganic liquids (Specify in Comments)
M075	0.0	Oxidation	B309	Batteries or battery parts, casings, cores
M075	0.4	Oxidation	B315	Other reactive salts/chemicals
M075	0.0	Oxidation	B319	Other waste inorganic solids (Specify in Comments)
M075	51.6	Oxidation	B404	Spent carbon
M075	0.0	Oxidation	B405	Reactive organic solid
M075	0.1	Oxidation	B701	Inorganic gases
M075	0.0	Oxidation	B801	Organic gases
M076	5.0	Wet air oxidation	B103	Spent acid with metals
M076	0.0	Wet air oxidation	B104	Spent acid without metals
M076	0.0	Wet air oxidation	B110	Caustic aqueous waste
M077	318.2	Precipitation	B001	Lab packs of old chemicals only
M077	1.5	Precipitation	B003	Mixed lab packs
M077	0.0	Precipitation	B009	Other lab packs (Specify in Comments)
M077	48.2	Precipitation	B101	Aqueous waste with low solvents
M077	6.1	Precipitation	B102	Aqueous waste with low other toxic organics
M077	25,930.0	Precipitation	B103	Spent acid with metals
M077	7,473.8	Precipitation	B104	Spent acid without metals
M077	8,947.9	Precipitation	B105	Acidic aqueous waste
M077	5,112.2	Precipitation	B106	Caustic solution with metals but no cyanides
M077	55.4	Precipitation	B107	Caustic solution with metals and cyanides
M077	80.3	Precipitation	B108	Caustic solution with cyanides but no metals

M077	1,611.6	Precipitation	B109	Spent caustic
M077	4,917.4	Precipitation	B110	Caustic aqueous waste
M077	575.5	Precipitation	B111	Aqueous waste with reactive sulfides
M077	33.0	Precipitation	B112	Aqueous waste with other reactives (e.g., explosives)
M077	8.8	Precipitation	B113	Other aqueous waste with high dissolved solids
M077	544.6	Precipitation	B114	Other aqueous waste with low dissolved solids
M077	39.0	Precipitation	B115	Scrubber water
M077	103.7	Precipitation	B116	Leachate
M077	27.4	Precipitation	B119	Other inorganic liquids (Specify in Comments)
M077	36.7	Precipitation	B201	Concentrated solvent-water solution
M077	2.4	Precipitation	B203	Nonhalogenated solvent
M077	110.6	Precipitation	B207	Concentrated aqueous solution of other organics
M077	36.1	Precipitation	B211	Paint thinner or petroleum distillates
M077	0.2	Precipitation	B212	Reactive or polymerizable organic liquid
M077	70.4	Precipitation	B219	Other organic liquids (Specify in Comments)
M077	5.1	Precipitation	B301	Soil contaminated with organics
M077	0.8	Precipitation	B302	Soil contaminated with inorganics only
M077	24.5	Precipitation	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M077	7.9	Precipitation	B306	"Dry" lime or metal hydroxide solids not "fixed"
M077	1.7	Precipitation	B307	Metal scale, filings, or scrap
M077	1.9	Precipitation	B310	Spent solid filters or adsorbents
M077	10.7	Precipitation	B315	Other reactive salts/chemicals
M077	29.4	Precipitation	B316	Other metal salts/chemicals
M077	25.6	Precipitation	B319	Other waste inorganic solids (Specify in Comments)
M077	0.4	Precipitation	B403	Solid resins or polymerized organics
M077	11.8	Precipitation	B501	Lime sludge without metals
M077	0.7	Precipitation	B502	Lime sludge with metals/metal hydroxide sludge
M077	54.0	Precipitation	B504	Other wastewater treatment sludge
M077	6.2	Precipitation	B505	Untreated plating sludge without cyanides
M077	65.4	Precipitation	B508	Sludge with reactive sulfides
M077	3.6	Precipitation	B509	Sludge with other reactives
M077	352.4	Precipitation	B510	Degreasing sludge with metal scale or filings
M077	356.8	Precipitation	B519	Other inorganic sludges (Specify in Comments)
M078	0.3	Other aqueous inorganic	B001	Lab packs of old chemicals only
M078	0.1	Other aqueous inorganic	B003	Mixed lab packs
M078	0.0	Other aqueous inorganic	B004	Lab packs containing acute hazardous wastes
M078	24.3	Other aqueous inorganic	B101	Aqueous waste with low solvents
M078	612.8	Other aqueous inorganic	B103	Spent acid with metals
M078	16.3	Other aqueous inorganic	B104	Spent acid without metals
M078	12.2	Other aqueous inorganic	B105	Acidic aqueous waste
M078	186.2	Other aqueous inorganic	B106	Caustic solution with metals but no cyanides
M078	94.4	Other aqueous inorganic	B107	Caustic solution with metals and cyanides
M078	40.7	Other aqueous inorganic	B109	Spent caustic
M078	389.9	Other aqueous inorganic	B110	Caustic aqueous waste
M078	0.9	Other aqueous inorganic	B112	Aqueous waste with other reactives (e.g., explosives)
M078	14.5	Other aqueous inorganic	B113	Other aqueous waste with high dissolved solids
M078	1.2	Other aqueous inorganic	B114	Other aqueous waste with low dissolved solids
M078	0.3	Other aqueous inorganic	B119	Other inorganic liquids (Specify in Comments)
M078	0.0	Other aqueous inorganic	B201	Concentrated solvent-water solution
M078	0.9	Other aqueous inorganic	B205	Oil-water emulsion or mixture
M078	0.5	Other aqueous inorganic	B207	Concentrated aqueous solution of other organics
M078	2.9	Other aqueous inorganic	B309	Batteries or battery parts, casings, cores
M078	0.1	Other aqueous inorganic	B310	Spent solid filters or adsorbents
M078	34.8	Other aqueous inorganic	B316	Other metal salts/chemicals
M078	6.6	Other aqueous inorganic	B319	Other waste inorganic solids (Specify in Comments)
M079	1.4	Aqueous inorganic - unknown	B001	Lab packs of old chemicals only
M079	4.9	Aqueous inorganic - unknown	B003	Mixed lab packs
M079	0.0	Aqueous inorganic - unknown	B004	Lab packs containing acute hazardous wastes
M079	60.5	Aqueous inorganic - unknown	B101	Aqueous waste with low solvents
M079	0.2	Aqueous inorganic - unknown	B102	Aqueous waste with low other toxic organics
M079	780.2	Aqueous inorganic - unknown	B103	Spent acid with metals
M079	11.7	Aqueous inorganic - unknown	B104	Spent acid without metals
M079	263.3	Aqueous inorganic - unknown	B105	Acidic aqueous waste
M079	660.6	Aqueous inorganic - unknown	B106	Caustic solution with metals but no cyanides
M079	2.1	Aqueous inorganic - unknown	B107	Caustic solution with metals and cyanides
M079	190.8	Aqueous inorganic - unknown	B109	Spent caustic
M079	289.3	Aqueous inorganic - unknown	B110	Caustic aqueous waste
M079	1.6	Aqueous inorganic - unknown	B111	Aqueous waste with reactive sulfides
M079	0.2	Aqueous inorganic - unknown	B112	Aqueous waste with other reactives (e.g., explosives)
M079	1.5	Aqueous inorganic - unknown	B114	Other aqueous waste with low dissolved solids
M079	103.9	Aqueous inorganic - unknown	B115	Scrubber water
M079	18.7	Aqueous inorganic - unknown	B119	Other inorganic liquids (Specify in Comments)
M079	0.2	Aqueous inorganic - unknown	B205	Oil-water emulsion or mixture
M079	0.8	Aqueous inorganic - unknown	B219	Other organic liquids (Specify in Comments)
M079	0.5	Aqueous inorganic - unknown	B306	"Dry" lime or metal hydroxide solids not "fixed"
M079	0.3	Aqueous inorganic - unknown	B313	Reactive cyanide salts/chemicals
M079	2.3	Aqueous inorganic - unknown	B319	Other waste inorganic solids (Specify in Comments)
M079	5.3	Aqueous inorganic - unknown	B502	Lime sludge with metals/metal hydroxide sludge
M079	2.4	Aqueous inorganic - unknown	B605	Reactive or polymerizable organics
M079	0.0	Aqueous inorganic - unknown	B701	Inorganic gases
M081	469,758.8	Biological treatment	B101	Aqueous waste with low solvents
M081	174.4	Biological treatment	B102	Aqueous waste with low other toxic organics
M081	39.9	Biological treatment	B104	Spent acid without metals
M081	346,643.5	Biological treatment	B105	Acidic aqueous waste
M081	65.7	Biological treatment	B106	Caustic solution with metals but no cyanides
M081	386.4	Biological treatment	B109	Spent caustic
M081	39,220.6	Biological treatment	B110	Caustic aqueous waste
M081	16.6	Biological treatment	B113	Other aqueous waste with high dissolved solids
M081	6,335.1	Biological treatment	B115	Scrubber water
M081	25.3	Biological treatment	B119	Other inorganic liquids (Specify in Comments)
M081	13.9	Biological treatment	B201	Concentrated solvent-water solution
M081	14.7	Biological treatment	B202	Halogenated (e.g., chlorinated) solvent
M081	1.2	Biological treatment	B207	Concentrated aqueous solution of other organics
M081	0.1	Biological treatment	B306	"Dry" lime or metal hydroxide solids not "fixed"
M082	2.0	Carbon adsorption	B103	Spent acid with metals

M082	2.1	Carbon adsorption	B105	Acidic aqueous waste
M082	34.8	Carbon adsorption	B110	Caustic aqueous waste
M082	1.4	Carbon adsorption	B114	Other aqueous waste with low dissolved solids
M082	10.8	Carbon adsorption	B119	Other inorganic liquids (Specify in Comments)
M082	1.1	Carbon adsorption	B212	Reactive or polymerizable organic liquid
M082	0.4	Carbon adsorption	B801	Organic gases
M083	233.8	Air/steam stripping	B101	Aqueous waste with low solvents
M083	356.3	Air/steam stripping	B103	Spent acid with metals
M083	291.3	Air/steam stripping	B110	Caustic aqueous waste
M084	7.2	Wet air oxidation	B119	Other inorganic liquids (Specify in Comments)
M084	0.0	Wet air oxidation	B310	Spent solid filters or adsorbents
M085	0.0	Aqueous organic treatment	B001	Lab packs of old chemicals only
M085	0.0	Aqueous organic treatment	B003	Mixed lab packs
M085	325.0	Aqueous organic treatment	B101	Aqueous waste with low solvents
M085	0.3	Aqueous organic treatment	B103	Spent acid with metals
M085	1,973.1	Aqueous organic treatment	B104	Spent acid without metals
M085	178.6	Aqueous organic treatment	B105	Acidic aqueous waste
M085	26.9	Aqueous organic treatment	B109	Spent caustic
M085	1,332.3	Aqueous organic treatment	B110	Caustic aqueous waste
M085	0.6	Aqueous organic treatment	B113	Other aqueous waste with high dissolved solids
M085	1.4	Aqueous organic treatment	B114	Other aqueous waste with low dissolved solids
M085	139.7	Aqueous organic treatment	B119	Other inorganic liquids (Specify in Comments)
M085	367.3	Aqueous organic treatment	B201	Concentrated solvent-water solution
M085	108.9	Aqueous organic treatment	B207	Concentrated aqueous solution of other organics
M089	0.8	Aqueous organic treatment - unknown	B001	Lab packs of old chemicals only
M089	0.0	Aqueous organic treatment - unknown	B002	Lab packs of debris only
M089	0.1	Aqueous organic treatment - unknown	B003	Mixed lab packs
M089	102.6	Aqueous organic treatment - unknown	B101	Aqueous waste with low solvents
M089	1.2	Aqueous organic treatment - unknown	B102	Aqueous waste with low other toxic organics
M089	36.6	Aqueous organic treatment - unknown	B104	Spent acid without metals
M089	2.8	Aqueous organic treatment - unknown	B105	Acidic aqueous waste
M089	0.5	Aqueous organic treatment - unknown	B106	Caustic solution with metals but no cyanides
M089	8.8	Aqueous organic treatment - unknown	B109	Spent caustic
M089	10.4	Aqueous organic treatment - unknown	B110	Caustic aqueous waste
M089	272.5	Aqueous organic treatment - unknown	B119	Other inorganic liquids (Specify in Comments)
M089	2.2	Aqueous organic treatment - unknown	B202	Halogenated (e.g., chlorinated) solvent
M089	1.0	Aqueous organic treatment - unknown	B207	Concentrated aqueous solution of other organics
M089	0.0	Aqueous organic treatment - unknown	B208	Concentrated phenolics
M089	0.0	Aqueous organic treatment - unknown	B210	Adhesives or epoxies
M089	5.4	Aqueous organic treatment - unknown	B212	Reactive or polymerizable organic liquid
M089	0.4	Aqueous organic treatment - unknown	B219	Other organic liquids (Specify in Comments)
M089	0.2	Aqueous organic treatment - unknown	B409	Other nonhalogenated organic solids (Specify in Comments)
M089	1.2	Aqueous organic treatment - unknown	B519	Other inorganic sludges (Specify in Comments)
M089	0.6	Aqueous organic treatment - unknown	B609	Other organic sludges (Specify in Comments)
M091	0.5	Precipitation and biological treatment	B001	Lab packs of old chemicals only
M091	0.0	Precipitation and biological treatment	B003	Mixed lab packs
M091	2,276.3	Precipitation and biological treatment	B101	Aqueous waste with low solvents
M091	253.4	Precipitation and biological treatment	B102	Aqueous waste with low other toxic organics
M091	318.8	Precipitation and biological treatment	B103	Spent acid with metals
M091	7.9	Precipitation and biological treatment	B104	Spent acid without metals
M091	225.1	Precipitation and biological treatment	B105	Acidic aqueous waste
M091	459,006.1	Precipitation and biological treatment	B106	Caustic solution with metals but no cyanides
M091	819.8	Precipitation and biological treatment	B108	Caustic solution with cyanides but no metals
M091	130.2	Precipitation and biological treatment	B109	Spent caustic
M091	604.3	Precipitation and biological treatment	B110	Caustic aqueous waste
M091	3,313.4	Precipitation and biological treatment	B111	Aqueous waste with reactive sulfides
M091	136.4	Precipitation and biological treatment	B114	Other aqueous waste with low dissolved solids
M091	560.5	Precipitation and biological treatment	B115	Scrubber water
M091	305.0	Precipitation and biological treatment	B119	Other inorganic liquids (Specify in Comments)
M091	1.0	Precipitation and biological treatment	B201	Concentrated solvent-water solution
M091	1,503.7	Precipitation and biological treatment	B203	Nonhalogenated solvent
M091	50.6	Precipitation and biological treatment	B207	Concentrated aqueous solution of other organics
M091	0.6	Precipitation and biological treatment	B212	Reactive or polymerizable organic liquid
M091	80.6	Precipitation and biological treatment	B219	Other organic liquids (Specify in Comments)
M092	0.7	Precipitation and carbon adsorption	B001	Lab packs of old chemicals only
M092	6.0	Precipitation and carbon adsorption	B101	Aqueous waste with low solvents
M092	9.3	Precipitation and carbon adsorption	B102	Aqueous waste with low other toxic organics
M092	20.4	Precipitation and carbon adsorption	B103	Spent acid with metals
M092	2.5	Precipitation and carbon adsorption	B104	Spent acid without metals
M092	73.8	Precipitation and carbon adsorption	B105	Acidic aqueous waste
M092	507.4	Precipitation and carbon adsorption	B106	Caustic solution with metals but no cyanides
M092	41.5	Precipitation and carbon adsorption	B109	Spent caustic
M092	95.3	Precipitation and carbon adsorption	B110	Caustic aqueous waste
M092	75.3	Precipitation and carbon adsorption	B115	Scrubber water
M092	17.4	Precipitation and carbon adsorption	B119	Other inorganic liquids (Specify in Comments)
M092	0.3	Precipitation and carbon adsorption	B519	Other inorganic sludges (Specify in Comments)
M093	0.0	Wet air oxidation	B001	Lab packs of old chemicals only
M094	11.2	Other organic/inorganic treatment	B001	Lab packs of old chemicals only
M094	2.3	Other organic/inorganic treatment	B003	Mixed lab packs
M094	897.0	Other organic/inorganic treatment	B101	Aqueous waste with low solvents
M094	168.1	Other organic/inorganic treatment	B103	Spent acid with metals
M094	111.7	Other organic/inorganic treatment	B104	Spent acid without metals
M094	2,263.3	Other organic/inorganic treatment	B105	Acidic aqueous waste
M094	314.3	Other organic/inorganic treatment	B106	Caustic solution with metals but no cyanides
M094	383.5	Other organic/inorganic treatment	B109	Spent caustic
M094	1,305.7	Other organic/inorganic treatment	B110	Caustic aqueous waste
M094	22.2	Other organic/inorganic treatment	B113	Other aqueous waste with high dissolved solids
M094	0.1	Other organic/inorganic treatment	B114	Other aqueous waste with low dissolved solids
M094	16.0	Other organic/inorganic treatment	B115	Scrubber water
M094	1.8	Other organic/inorganic treatment	B116	Leachate
M094	16.3	Other organic/inorganic treatment	B119	Other inorganic liquids (Specify in Comments)
M094	1.4	Other organic/inorganic treatment	B201	Concentrated solvent-water solution
M094	4.5	Other organic/inorganic treatment	B205	Oil-water emulsion or mixture
M094	10.9	Other organic/inorganic treatment	B219	Other organic liquids (Specify in Comments)
M094	0.0	Other organic/inorganic treatment	B315	Other reactive salts/chemicals

M094	0.0	Other organic/inorganic treatment	B316	Other metal salts/chemicals
M094	0.2	Other organic/inorganic treatment	B319	Other waste inorganic solids (Specify in Comments)
M094	122.3	Other organic/inorganic treatment	B504	Other wastewater treatment sludge
M094	0.4	Other organic/inorganic treatment	B505	Untreated plating sludge without cyanides
M094	0.0	Other organic/inorganic treatment	B519	Other inorganic sludges (Specify in Comments)
M099	15.7	Aqueous organic and inorganic - unknown	B001	Lab packs of old chemicals only
M099	3.2	Aqueous organic and inorganic - unknown	B003	Mixed lab packs
M099	0.2	Aqueous organic and inorganic - unknown	B009	Other lab packs (Specify in Comments)
M099	7.1	Aqueous organic and inorganic - unknown	B101	Aqueous waste with low solvents
M099	15.5	Aqueous organic and inorganic - unknown	B102	Aqueous waste with low other toxic organics
M099	94.6	Aqueous organic and inorganic - unknown	B103	Spent acid with metals
M099	30.8	Aqueous organic and inorganic - unknown	B104	Spent acid without metals
M099	93.5	Aqueous organic and inorganic - unknown	B105	Acidic aqueous waste
M099	0.2	Aqueous organic and inorganic - unknown	B108	Caustic solution with cyanides but no metals
M099	25.8	Aqueous organic and inorganic - unknown	B109	Spent caustic
M099	2,055.7	Aqueous organic and inorganic - unknown	B110	Caustic aqueous waste
M099	19.4	Aqueous organic and inorganic - unknown	B111	Aqueous waste with reactive sulfides
M099	0.2	Aqueous organic and inorganic - unknown	B113	Other aqueous waste with high dissolved solids
M099	20.3	Aqueous organic and inorganic - unknown	B114	Other aqueous waste with low dissolved solids
M099	2.5	Aqueous organic and inorganic - unknown	B119	Other inorganic liquids (Specify in Comments)
M099	0.6	Aqueous organic and inorganic - unknown	B201	Concentrated solvent-water solution
M099	1.2	Aqueous organic and inorganic - unknown	B204	Halogenated/nonhalogenated solvent mixture
M099	100.3	Aqueous organic and inorganic - unknown	B207	Concentrated aqueous solution of other organics
M099	0.1	Aqueous organic and inorganic - unknown	B208	Concentrated phenolics
M099	12.6	Aqueous organic and inorganic - unknown	B219	Other organic liquids (Specify in Comments)
M099	0.2	Aqueous organic and inorganic - unknown	B302	Soil contaminated with inorganics only
M099	0.5	Aqueous organic and inorganic - unknown	B409	Other nonhalogenated organic solids (Specify in Comments)
M101	0.0	Sludge dewatering	B001	Lab packs of old chemicals only
M101	0.6	Sludge dewatering	B103	Spent acid with metals
M101	1.3	Sludge dewatering	B109	Spent caustic
M101	3.8	Sludge dewatering	B110	Caustic aqueous waste
M101	1.3	Sludge dewatering	B609	Other organic sludges (Specify in Comments)
M102	145.6	Addition of lime	B110	Caustic aqueous waste
M102	0.8	Addition of lime	B316	Other metal salts/chemicals
M103	0.7	Absorption/adsorption	B001	Lab packs of old chemicals only
M103	0.1	Absorption/adsorption	B103	Spent acid with metals
M103	0.2	Absorption/adsorption	B105	Acidic aqueous waste
M103	1.3	Absorption/adsorption	B113	Other aqueous waste with high dissolved solids
M103	0.1	Absorption/adsorption	B309	Batteries or battery parts, casings, cores
M104	7.6	Solvent extraction	B504	Other wastewater treatment sludge
M104	1.7	Solvent extraction	B516	Chloride or other brine sludge
M109	0.5	Sludge treatment - unknown	B001	Lab packs of old chemicals only
M109	349.2	Sludge treatment - unknown	B103	Spent acid with metals
M109	2.7	Sludge treatment - unknown	B104	Spent acid without metals
M109	7.1	Sludge treatment - unknown	B105	Acidic aqueous waste
M109	0.3	Sludge treatment - unknown	B109	Spent caustic
M109	1.2	Sludge treatment - unknown	B119	Other inorganic liquids (Specify in Comments)
M109	2.1	Sludge treatment - unknown	B312	Metal-cyanide salts/chemicals
M109	7.6	Sludge treatment - unknown	B315	Other reactive salts/chemicals
M109	5.4	Sludge treatment - unknown	B319	Other waste inorganic solids (Specify in Comments)
M109	35.4	Sludge treatment - unknown	B503	Wastewater treatment sludge with toxic organics
M109	20.0	Sludge treatment - unknown	B504	Other wastewater treatment sludge
M109	0.2	Sludge treatment - unknown	B508	Sludge with reactive sulfides
M109	1.7	Sludge treatment - unknown	B509	Sludge with other reactives
M109	3.6	Sludge treatment - unknown	B510	Degreasing sludge with metal scale or filings
M109	24.5	Sludge treatment - unknown	B519	Other inorganic sludges (Specify in Comments)
M109	0.2	Sludge treatment - unknown	B605	Reactive or polymerizable organics
M111	5.9	Stabilization/fixation with cementitious/pozzolanic materials	B001	Lab packs of old chemicals only
M111	0.4	Stabilization/fixation with cementitious/pozzolanic materials	B002	Lab packs of debris only
M111	17.0	Stabilization/fixation with cementitious/pozzolanic materials	B003	Mixed lab packs
M111	0.3	Stabilization/fixation with cementitious/pozzolanic materials	B004	Lab packs containing acute hazardous wastes
M111	0.0	Stabilization/fixation with cementitious/pozzolanic materials	B009	Other lab packs (Specify in Comments)
M111	146.4	Stabilization/fixation with cementitious/pozzolanic materials	B101	Aqueous waste with low solvents
M111	35.9	Stabilization/fixation with cementitious/pozzolanic materials	B102	Aqueous waste with low other toxic organics
M111	3,367.4	Stabilization/fixation with cementitious/pozzolanic materials	B103	Spent acid with metals
M111	203.3	Stabilization/fixation with cementitious/pozzolanic materials	B104	Spent acid without metals
M111	1,300.5	Stabilization/fixation with cementitious/pozzolanic materials	B105	Acidic aqueous waste
M111	473.4	Stabilization/fixation with cementitious/pozzolanic materials	B106	Caustic solution with metals but no cyanides
M111	92.3	Stabilization/fixation with cementitious/pozzolanic materials	B107	Caustic solution with metals and cyanides
M111	35.3	Stabilization/fixation with cementitious/pozzolanic materials	B108	Caustic solution with cyanides but no metals
M111	732.2	Stabilization/fixation with cementitious/pozzolanic materials	B109	Spent caustic
M111	814.4	Stabilization/fixation with cementitious/pozzolanic materials	B110	Caustic aqueous waste
M111	7.1	Stabilization/fixation with cementitious/pozzolanic materials	B111	Aqueous waste with reactive sulfides
M111	0.8	Stabilization/fixation with cementitious/pozzolanic materials	B112	Aqueous waste with other reactives (e.g., explosives)
M111	34.5	Stabilization/fixation with cementitious/pozzolanic materials	B113	Other aqueous waste with high dissolved solids
M111	3.9	Stabilization/fixation with cementitious/pozzolanic materials	B114	Other aqueous waste with low dissolved solids
M111	15.0	Stabilization/fixation with cementitious/pozzolanic materials	B115	Scrubber water
M111	89.9	Stabilization/fixation with cementitious/pozzolanic materials	B119	Other inorganic liquids (Specify in Comments)
M111	2.7	Stabilization/fixation with cementitious/pozzolanic materials	B201	Concentrated solvent-water solution
M111	14.9	Stabilization/fixation with cementitious/pozzolanic materials	B202	Halogenated (e.g., chlorinated) solvent
M111	0.8	Stabilization/fixation with cementitious/pozzolanic materials	B203	Nonhalogenated solvent
M111	10.2	Stabilization/fixation with cementitious/pozzolanic materials	B204	Halogenated/nonhalogenated solvent mixture
M111	0.9	Stabilization/fixation with cementitious/pozzolanic materials	B205	Oil-water emulsion or mixture
M111	6.7	Stabilization/fixation with cementitious/pozzolanic materials	B207	Concentrated aqueous solution of other organics
M111	0.3	Stabilization/fixation with cementitious/pozzolanic materials	B209	Organic paint, ink, lacquer, or varnish
M111	0.5	Stabilization/fixation with cementitious/pozzolanic materials	B210	Adhesives or epoxies
M111	4.8	Stabilization/fixation with cementitious/pozzolanic materials	B211	Paint thinner or petroleum distillates
M111	1.0	Stabilization/fixation with cementitious/pozzolanic materials	B212	Reactive or polymerizable organic liquid
M111	35.1	Stabilization/fixation with cementitious/pozzolanic materials	B219	Other organic liquids (Specify in Comments)
M111	70.9	Stabilization/fixation with cementitious/pozzolanic materials	B301	Soil contaminated with organics
M111	137.2	Stabilization/fixation with cementitious/pozzolanic materials	B302	Soil contaminated with inorganics only
M111	0.5	Stabilization/fixation with cementitious/pozzolanic materials	B304	Other "dry" ash, slag, or thermal residue
M111	150.8	Stabilization/fixation with cementitious/pozzolanic materials	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M111	434.9	Stabilization/fixation with cementitious/pozzolanic materials	B306	"Dry" lime or metal hydroxide solids not "fixed"
M111	0.1	Stabilization/fixation with cementitious/pozzolanic materials	B307	Metal scale, filings, or scrap

M111	2.9	Stabilization/fixation with cementitious/pozzolanic materials	B309	Batteries or battery parts, casings, cores
M111	44.7	Stabilization/fixation with cementitious/pozzolanic materials	B310	Spent solid filters or adsorbents
M111	2.4	Stabilization/fixation with cementitious/pozzolanic materials	B312	Metal-cyanide salts/chemicals
M111	2.8	Stabilization/fixation with cementitious/pozzolanic materials	B313	Reactive cyanide salts/chemicals
M111	9.4	Stabilization/fixation with cementitious/pozzolanic materials	B314	Reactive sulfide salts/chemicals
M111	8.7	Stabilization/fixation with cementitious/pozzolanic materials	B315	Other reactive salts/chemicals
M111	92.9	Stabilization/fixation with cementitious/pozzolanic materials	B316	Other metal salts/chemicals
M111	586.4	Stabilization/fixation with cementitious/pozzolanic materials	B319	Other waste inorganic solids (Specify in Comments)
M111	9.9	Stabilization/fixation with cementitious/pozzolanic materials	B404	Spent carbon
M111	4.7	Stabilization/fixation with cementitious/pozzolanic materials	B405	Reactive organic solid
M111	0.1	Stabilization/fixation with cementitious/pozzolanic materials	B407	Other halogenated organic solids (Specify in Comments)
M111	14.5	Stabilization/fixation with cementitious/pozzolanic materials	B409	Other nonhalogenated organic solids (Specify in Comments)
M111	9.1	Stabilization/fixation with cementitious/pozzolanic materials	B501	Lime sludge without metals
M111	111.3	Stabilization/fixation with cementitious/pozzolanic materials	B502	Lime sludge with metals/metal hydroxide sludge
M111	47.3	Stabilization/fixation with cementitious/pozzolanic materials	B504	Other wastewater treatment sludge
M111	151.9	Stabilization/fixation with cementitious/pozzolanic materials	B505	Untreated plating sludge without cyanides
M111	12.8	Stabilization/fixation with cementitious/pozzolanic materials	B506	Untreated plating sludge with cyanides
M111	95.9	Stabilization/fixation with cementitious/pozzolanic materials	B508	Sludge with reactive sulfides
M111	5.1	Stabilization/fixation with cementitious/pozzolanic materials	B509	Sludge with other reactives
M111	43.1	Stabilization/fixation with cementitious/pozzolanic materials	B510	Degreasing sludge with metal scale or filings
M111	0.2	Stabilization/fixation with cementitious/pozzolanic materials	B511	Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
M111	0.3	Stabilization/fixation with cementitious/pozzolanic materials	B512	Sediment or lagoon dragout contaminated with organics
M111	10.3	Stabilization/fixation with cementitious/pozzolanic materials	B513	Sediment or lagoon dragout contaminated with inorganics only
M111	468.3	Stabilization/fixation with cementitious/pozzolanic materials	B519	Other inorganic sludges (Specify in Comments)
M111	37.3	Stabilization/fixation with cementitious/pozzolanic materials	B603	Oily sludge
M111	1.0	Stabilization/fixation with cementitious/pozzolanic materials	B604	Organic paint or ink sludge
M111	0.3	Stabilization/fixation with cementitious/pozzolanic materials	B606	Resins, tars, or tarry sludge
M111	1,687.7	Stabilization/fixation with cementitious/pozzolanic materials	B609	Other organic sludges (Specify in Comments)
M112	0.4	Other stabilization	B101	Aqueous waste with low solvents
M112	34.3	Other stabilization	B102	Aqueous waste with low other toxic organics
M112	491.0	Other stabilization	B103	Spent acid with metals
M112	2.4	Other stabilization	B104	Spent acid without metals
M112	39.1	Other stabilization	B105	Acidic aqueous waste
M112	3.3	Other stabilization	B106	Caustic solution with metals but no cyanides
M112	217.9	Other stabilization	B109	Spent caustic
M112	139.1	Other stabilization	B110	Caustic aqueous waste
M112	0.7	Other stabilization	B119	Other inorganic liquids (Specify in Comments)
M112	0.3	Other stabilization	B201	Concentrated solvent-water solution
M112	0.5	Other stabilization	B212	Reactive or polymerizable organic liquid
M112	148.8	Other stabilization	B219	Other organic liquids (Specify in Comments)
M112	18.3	Other stabilization	B301	Soil contaminated with organics
M112	1.6	Other stabilization	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M112	0.1	Other stabilization	B310	Spent solid filters or adsorbents
M112	0.2	Other stabilization	B316	Other metal salts/chemicals
M112	2.5	Other stabilization	B319	Other waste inorganic solids (Specify in Comments)
M112	1.7	Other stabilization	B403	Solid resins or polymerized organics
M112	0.0	Other stabilization	B405	Reactive organic solid
M112	10.2	Other stabilization	B406	Empty fiber or plastic containers
M112	12.9	Other stabilization	B409	Other nonhalogenated organic solids (Specify in Comments)
M112	26.7	Other stabilization	B501	Lime sludge without metals
M112	0.7	Other stabilization	B502	Lime sludge with metals/metal hydroxide sludge
M112	0.7	Other stabilization	B506	Untreated plating sludge with cyanides
M112	1.6	Other stabilization	B512	Sediment or lagoon dragout contaminated with organics
M112	7.5	Other stabilization	B519	Other inorganic sludges (Specify in Comments)
M112	309.4	Other stabilization	B603	Oily sludge
M112	4.3	Other stabilization	B606	Resins, tars, or tarry sludge
M119	0.9	Stabilization - unknown	B001	Lab packs of old chemicals only
M119	0.2	Stabilization - unknown	B002	Lab packs of debris only
M119	0.0	Stabilization - unknown	B003	Mixed lab packs
M119	166.8	Stabilization - unknown	B103	Spent acid with metals
M119	4.6	Stabilization - unknown	B104	Spent acid without metals
M119	11.6	Stabilization - unknown	B105	Acidic aqueous waste
M119	21.6	Stabilization - unknown	B106	Caustic solution with metals but no cyanides
M119	9.6	Stabilization - unknown	B107	Caustic solution with metals and cyanides
M119	1.6	Stabilization - unknown	B109	Spent caustic
M119	5.1	Stabilization - unknown	B110	Caustic aqueous waste
M119	0.5	Stabilization - unknown	B114	Other aqueous waste with low dissolved solids
M119	0.5	Stabilization - unknown	B119	Other inorganic liquids (Specify in Comments)
M119	3.4	Stabilization - unknown	B207	Concentrated aqueous solution of other organics
M119	0.5	Stabilization - unknown	B219	Other organic liquids (Specify in Comments)
M119	1.0	Stabilization - unknown	B310	Spent solid filters or adsorbents
M119	0.1	Stabilization - unknown	B315	Other reactive salts/chemicals
M119	4.5	Stabilization - unknown	B316	Other metal salts/chemicals
M119	0.7	Stabilization - unknown	B319	Other waste inorganic solids (Specify in Comments)
M119	0.2	Stabilization - unknown	B405	Reactive organic solid
M119	1.6	Stabilization - unknown	B409	Other nonhalogenated organic solids (Specify in Comments)
M119	3.4	Stabilization - unknown	B502	Lime sludge with metals/metal hydroxide sludge
M119	0.2	Stabilization - unknown	B504	Other wastewater treatment sludge
M119	16.0	Stabilization - unknown	B505	Untreated plating sludge without cyanides
M119	5.0	Stabilization - unknown	B506	Untreated plating sludge with cyanides
M119	0.2	Stabilization - unknown	B509	Sludge with other reactives
M119	2.0	Stabilization - unknown	B519	Other inorganic sludges (Specify in Comments)
M121	32.2	Neutralization	B001	Lab packs of old chemicals only
M121	0.2	Neutralization	B002	Lab packs of debris only
M121	44.8	Neutralization	B003	Mixed lab packs
M121	1.3	Neutralization	B009	Other lab packs (Specify in Comments)
M121	225.7	Neutralization	B101	Aqueous waste with low solvents
M121	14.8	Neutralization	B102	Aqueous waste with low other toxic organics
M121	3,572.2	Neutralization	B103	Spent acid with metals
M121	4,392.7	Neutralization	B104	Spent acid without metals
M121	5,489.9	Neutralization	B105	Acidic aqueous waste
M121	2,752.0	Neutralization	B106	Caustic solution with metals but no cyanides
M121	2,003.3	Neutralization	B107	Caustic solution with metals and cyanides
M121	2.0	Neutralization	B108	Caustic solution with cyanides but no metals
M121	2,146.3	Neutralization	B109	Spent caustic

M121	5,819.1	Neutralization	B110	Caustic aqueous waste
M121	2.6	Neutralization	B112	Aqueous waste with other reactives (e.g., explosives)
M121	123.7	Neutralization	B113	Other aqueous waste with high dissolved solids
M121	3.5	Neutralization	B114	Other aqueous waste with low dissolved solids
M121	22.1	Neutralization	B115	Scrubber water
M121	306.2	Neutralization	B119	Other inorganic liquids (Specify in Comments)
M121	60.7	Neutralization	B201	Concentrated solvent-water solution
M121	55.0	Neutralization	B202	Halogenated (e.g., chlorinated) solvent
M121	1.6	Neutralization	B203	Nonhalogenated solvent
M121	14.2	Neutralization	B204	Halogenated/nonhalogenated solvent mixture
M121	0.0	Neutralization	B205	Oil-water emulsion or mixture
M121	0.0	Neutralization	B206	Waste oil
M121	57.4	Neutralization	B207	Concentrated aqueous solution of other organics
M121	0.5	Neutralization	B209	Organic paint, ink, lacquer, or varnish
M121	1.3	Neutralization	B210	Adhesives or epoxies
M121	0.8	Neutralization	B211	Paint thinner or petroleum distillates
M121	0.2	Neutralization	B212	Reactive or polymerizable organic liquid
M121	18.6	Neutralization	B219	Other organic liquids (Specify in Comments)
M121	21.0	Neutralization	B301	Soil contaminated with organics
M121	0.7	Neutralization	B302	Soil contaminated with inorganics only
M121	1.8	Neutralization	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M121	3.6	Neutralization	B306	"Dry" lime or metal hydroxide solids not "fixed"
M121	3.6	Neutralization	B309	Batteries or battery parts, casings, cores
M121	1.5	Neutralization	B310	Spent solid filters or adsorbents
M121	1.7	Neutralization	B314	Reactive sulfide salts/chemicals
M121	1.4	Neutralization	B315	Other reactive salts/chemicals
M121	59.3	Neutralization	B316	Other metal salts/chemicals
M121	92.4	Neutralization	B319	Other waste inorganic solids (Specify in Comments)
M121	3.3	Neutralization	B403	Solid resins or polymerized organics
M121	1.1	Neutralization	B404	Spent carbon
M121	1.9	Neutralization	B409	Other nonhalogenated organic solids (Specify in Comments)
M121	3.0	Neutralization	B501	Lime sludge without metals
M121	8.6	Neutralization	B502	Lime sludge with metals/metal hydroxide sludge
M121	6.4	Neutralization	B503	Wastewater treatment sludge with toxic organics
M121	82.0	Neutralization	B504	Other wastewater treatment sludge
M121	15.4	Neutralization	B505	Untreated plating sludge without cyanides
M121	0.3	Neutralization	B510	Degreasing sludge with metal scale or filings
M121	575.8	Neutralization	B511	Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
M121	126.7	Neutralization	B513	Sediment or lagoon dragout contaminated with inorganics only
M121	238.9	Neutralization	B519	Other inorganic sludges (Specify in Comments)
M121	0.7	Neutralization	B601	Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
M121	0.9	Neutralization	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M121	1.3	Neutralization	B609	Other organic sludges (Specify in Comments)
M122	0.5	Evaporation	B104	Spent acid without metals
M122	17.2	Evaporation	B105	Acidic aqueous waste
M122	0.0	Evaporation	B110	Caustic aqueous waste
M122	0.8	Evaporation	B319	Other waste inorganic solids (Specify in Comments)
M122	5.8	Evaporation	B405	Reactive organic solid
M122	1.7	Evaporation	B503	Wastewater treatment sludge with toxic organics
M123	0.5	Settling/clarification	B106	Caustic solution with metals but no cyanides
M123	0.5	Settling/clarification	B113	Other aqueous waste with high dissolved solids
M124	0.0	Phase separation	B001	Lab packs of old chemicals only
M124	0.0	Phase separation	B105	Acidic aqueous waste
M124	1.2	Phase separation	B108	Caustic solution with cyanides but no metals
M124	0.0	Phase separation	B109	Spent caustic
M124	58.5	Phase separation	B110	Caustic aqueous waste
M124	1,612.8	Phase separation	B113	Other aqueous waste with high dissolved solids
M124	16.4	Phase separation	B201	Concentrated solvent-water solution
M124	1.7	Phase separation	B202	Halogenated (e.g., chlorinated) solvent
M124	12.7	Phase separation	B205	Oil-water emulsion or mixture
M124	10.8	Phase separation	B206	Waste oil
M124	0.6	Phase separation	B207	Concentrated aqueous solution of other organics
M124	0.0	Phase separation	B209	Organic paint, ink, lacquer, or varnish
M124	0.0	Phase separation	B210	Adhesives or epoxies
M124	779.8	Phase separation	B219	Other organic liquids (Specify in Comments)
M124	0.2	Phase separation	B309	Batteries or battery parts, casings, cores
M124	0.1	Phase separation	B310	Spent solid filters or adsorbents
M124	0.2	Phase separation	B319	Other waste inorganic solids (Specify in Comments)
M124	1.2	Phase separation	B503	Wastewater treatment sludge with toxic organics
M124	57.4	Phase separation	B603	Oily sludge
M124	4.9	Phase separation	B606	Resins, tars, or tarry sludge
M125	2.1	Other - known (treatment)	B001	Lab packs of old chemicals only
M125	3.4	Other - known (treatment)	B003	Mixed lab packs
M125	0.5	Other - known (treatment)	B004	Lab packs containing acute hazardous wastes
M125	0.6	Other - known (treatment)	B009	Other lab packs (Specify in Comments)
M125	2.9	Other - known (treatment)	B101	Aqueous waste with low solvents
M125	0.1	Other - known (treatment)	B102	Aqueous waste with low other toxic organics
M125	186.4	Other - known (treatment)	B103	Spent acid with metals
M125	24.8	Other - known (treatment)	B104	Spent acid without metals
M125	1,389.3	Other - known (treatment)	B105	Acidic aqueous waste
M125	488.4	Other - known (treatment)	B106	Caustic solution with metals but no cyanides
M125	87.1	Other - known (treatment)	B107	Caustic solution with metals and cyanides
M125	296.4	Other - known (treatment)	B109	Spent caustic
M125	492.3	Other - known (treatment)	B110	Caustic aqueous waste
M125	0.2	Other - known (treatment)	B114	Other aqueous waste with low dissolved solids
M125	7.3	Other - known (treatment)	B119	Other inorganic liquids (Specify in Comments)
M125	49.6	Other - known (treatment)	B201	Concentrated solvent-water solution
M125	3.3	Other - known (treatment)	B203	Nonhalogenated solvent
M125	12.9	Other - known (treatment)	B204	Halogenated/nonhalogenated solvent mixture
M125	0.6	Other - known (treatment)	B207	Concentrated aqueous solution of other organics
M125	0.2	Other - known (treatment)	B211	Paint thinner or petroleum distillates
M125	0.3	Other - known (treatment)	B212	Reactive or polymerizable organic liquid
M125	9.3	Other - known (treatment)	B219	Other organic liquids (Specify in Comments)
M125	7.4	Other - known (treatment)	B302	Soil contaminated with inorganics only
M125	0.4	Other - known (treatment)	B305	"Dry" lime or metal hydroxide solids chemically "fixed"

M125	10.8	Other - known (treatment)	B309	Batteries or battery parts, casings, cores
M125	31.8	Other - known (treatment)	B310	Spent solid filters or adsorbents
M125	0.0	Other - known (treatment)	B312	Metal-cyanide salts/chemicals
M125	66.5	Other - known (treatment)	B313	Reactive cyanide salts/chemicals
M125	178.4	Other - known (treatment)	B315	Other reactive salts/chemicals
M125	259.8	Other - known (treatment)	B316	Other metal salts/chemicals
M125	755.1	Other - known (treatment)	B319	Other waste inorganic solids (Specify in Comments)
M125	706.8	Other - known (treatment)	B405	Reactive organic solid
M125	1.5	Other - known (treatment)	B406	Empty fiber or plastic containers
M125	2.7	Other - known (treatment)	B409	Other nonhalogenated organic solids (Specify in Comments)
M125	3.5	Other - known (treatment)	B502	Lime sludge with metals/metal hydroxide sludge
M125	1.7	Other - known (treatment)	B503	Wastewater treatment sludge with toxic organics
M125	13.8	Other - known (treatment)	B505	Untreated plating sludge without cyanides
M125	193.7	Other - known (treatment)	B509	Sludge with other reactives
M125	14.2	Other - known (treatment)	B519	Other inorganic sludges (Specify in Comments)
M125	1.7	Other - known (treatment)	B609	Other organic sludges (Specify in Comments)
M125	0.1	Other - known (treatment)	B701	Inorganic gases
M125	0.6	Other - known (treatment)	B801	Organic gases
M129	5.0	Other - unknown (treatment)	B001	Lab packs of old chemicals only
M129	0.0	Other - unknown (treatment)	B002	Lab packs of debris only
M129	15.4	Other - unknown (treatment)	B003	Mixed lab packs
M129	4,067.2	Other - unknown (treatment)	B009	Other lab packs (Specify in Comments)
M129	0.9	Other - unknown (treatment)	B101	Aqueous waste with low solvents
M129	0.1	Other - unknown (treatment)	B102	Aqueous waste with low other toxic organics
M129	120.2	Other - unknown (treatment)	B103	Spent acid with metals
M129	324.4	Other - unknown (treatment)	B104	Spent acid without metals
M129	55.2	Other - unknown (treatment)	B105	Acidic aqueous waste
M129	203.8	Other - unknown (treatment)	B106	Caustic solution with metals but no cyanides
M129	1.1	Other - unknown (treatment)	B107	Caustic solution with metals and cyanides
M129	76.7	Other - unknown (treatment)	B109	Spent caustic
M129	217.3	Other - unknown (treatment)	B110	Caustic aqueous waste
M129	0.0	Other - unknown (treatment)	B111	Aqueous waste with reactive sulfides
M129	0.3	Other - unknown (treatment)	B112	Aqueous waste with other reactives (e.g., explosives)
M129	7.9	Other - unknown (treatment)	B113	Other aqueous waste with high dissolved solids
M129	12.9	Other - unknown (treatment)	B115	Scrubber water
M129	31.5	Other - unknown (treatment)	B119	Other inorganic liquids (Specify in Comments)
M129	25.6	Other - unknown (treatment)	B201	Concentrated solvent-water solution
M129	0.0	Other - unknown (treatment)	B202	Halogenated (e.g., chlorinated) solvent
M129	0.1	Other - unknown (treatment)	B203	Nonhalogenated solvent
M129	0.0	Other - unknown (treatment)	B204	Halogenated/nonhalogenated solvent mixture
M129	7.7	Other - unknown (treatment)	B205	Oil-water emulsion or mixture
M129	0.0	Other - unknown (treatment)	B207	Concentrated aqueous solution of other organics
M129	0.0	Other - unknown (treatment)	B210	Adhesives or epoxies
M129	8.6	Other - unknown (treatment)	B212	Reactive or polymerizable organic liquid
M129	25.1	Other - unknown (treatment)	B219	Other organic liquids (Specify in Comments)
M129	1.6	Other - unknown (treatment)	B302	Soil contaminated with inorganics only
M129	26.8	Other - unknown (treatment)	B304	Other "dry" ash, slag, or thermal residue
M129	0.6	Other - unknown (treatment)	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M129	0.2	Other - unknown (treatment)	B306	"Dry" lime or metal hydroxide solids not "fixed"
M129	1.3	Other - unknown (treatment)	B309	Batteries or battery parts, casings, cores
M129	3.1	Other - unknown (treatment)	B310	Spent solid filters or adsorbents
M129	0.8	Other - unknown (treatment)	B312	Metal-cyanide salts/chemicals
M129	0.7	Other - unknown (treatment)	B313	Reactive cyanide salts/chemicals
M129	0.3	Other - unknown (treatment)	B314	Reactive sulfide salts/chemicals
M129	12.6	Other - unknown (treatment)	B315	Other reactive salts/chemicals
M129	0.0	Other - unknown (treatment)	B316	Other metal salts/chemicals
M129	11.6	Other - unknown (treatment)	B319	Other waste inorganic solids (Specify in Comments)
M129	0.1	Other - unknown (treatment)	B405	Reactive organic solid
M129	0.9	Other - unknown (treatment)	B409	Other nonhalogenated organic solids (Specify in Comments)
M129	1.0	Other - unknown (treatment)	B504	Other wastewater treatment sludge
M129	0.5	Other - unknown (treatment)	B505	Untreated plating sludge without cyanides
M129	1.9	Other - unknown (treatment)	B509	Sludge with other reactives
M129	1.0	Other - unknown (treatment)	B519	Other inorganic sludges (Specify in Comments)
M129	0.8	Other - unknown (treatment)	B609	Other organic sludges (Specify in Comments)
M129	0.3	Other - unknown (treatment)	B701	Inorganic gases
M129	0.0	Other - unknown (treatment)	B801	Organic gases
M131	0.1	Land treatment/application/farming	B001	Lab packs of old chemicals only
M131	8.1	Land treatment/application/farming	B103	Spent acid with metals
M131	3.5	Land treatment/application/farming	B106	Caustic solution with metals but no cyanides
M131	1.4	Land treatment/application/farming	B110	Caustic aqueous waste
M131	0.1	Land treatment/application/farming	B119	Other inorganic liquids (Specify in Comments)
M131	0.2	Land treatment/application/farming	B310	Spent solid filters or adsorbents
M131	0.1	Land treatment/application/farming	B315	Other reactive salts/chemicals
M132	0.7	Landfill	B001	Lab packs of old chemicals only
M132	12.4	Landfill	B002	Lab packs of debris only
M132	1.5	Landfill	B003	Mixed lab packs
M132	1.7	Landfill	B009	Other lab packs (Specify in Comments)
M132	65.7	Landfill	B101	Aqueous waste with low solvents
M132	45.5	Landfill	B103	Spent acid with metals
M132	50.5	Landfill	B104	Spent acid without metals
M132	50.0	Landfill	B105	Acidic aqueous waste
M132	33.1	Landfill	B106	Caustic solution with metals but no cyanides
M132	14.1	Landfill	B107	Caustic solution with metals and cyanides
M132	0.2	Landfill	B108	Caustic solution with cyanides but no metals
M132	373.2	Landfill	B109	Spent caustic
M132	164.8	Landfill	B110	Caustic aqueous waste
M132	2.7	Landfill	B111	Aqueous waste with reactive sulfides
M132	6.1	Landfill	B112	Aqueous waste with other reactives (e.g., explosives)
M132	0.0	Landfill	B114	Other aqueous waste with low dissolved solids
M132	1,104.8	Landfill	B119	Other inorganic liquids (Specify in Comments)
M132	523.8	Landfill	B201	Concentrated solvent-water solution
M132	116.0	Landfill	B203	Nonhalogenated solvent
M132	0.5	Landfill	B207	Concentrated aqueous solution of other organics
M132	4.3	Landfill	B212	Reactive or polymerizable organic liquid
M132	27.7	Landfill	B219	Other organic liquids (Specify in Comments)

M132	85.5	Landfill	B301	Soil contaminated with organics
M132	59.9	Landfill	B302	Soil contaminated with inorganics only
M132	256.8	Landfill	B303	Ash, slag, or other residue from incineration of wastes
M132	0.5	Landfill	B304	Other "dry" ash, slag, or thermal residue
M132	0.2	Landfill	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M132	6.3	Landfill	B306	"Dry" lime or metal hydroxide solids not "fixed"
M132	70.8	Landfill	B307	Metal scale, filings, or scrap
M132	0.6	Landfill	B308	Empty or crushed metal drums or containers
M132	5.9	Landfill	B309	Batteries or battery parts, casings, cores
M132	56.1	Landfill	B310	Spent solid filters or adsorbents
M132	14.2	Landfill	B312	Metal-cyanide salts/chemicals
M132	47.4	Landfill	B313	Reactive cyanide salts/chemicals
M132	76.3	Landfill	B314	Reactive sulfide salts/chemicals
M132	126.6	Landfill	B315	Other reactive salts/chemicals
M132	87.1	Landfill	B316	Other metal salts/chemicals
M132	423.5	Landfill	B319	Other waste inorganic solids (Specify in Comments)
M132	0.6	Landfill	B403	Solid resins or polymerized organics
M132	0.0	Landfill	B405	Reactive organic solid
M132	0.1	Landfill	B407	Other halogenated organic solids (Specify in Comments)
M132	25.9	Landfill	B409	Other nonhalogenated organic solids (Specify in Comments)
M132	18.5	Landfill	B502	Lime sludge with metals/metal hydroxide sludge
M132	34.9	Landfill	B503	Wastewater treatment sludge with toxic organics
M132	32.2	Landfill	B504	Other wastewater treatment sludge
M132	6.3	Landfill	B505	Untreated plating sludge without cyanides
M132	11.7	Landfill	B509	Sludge with other reactives
M132	3.9	Landfill	B511	Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
M132	1.7	Landfill	B516	Chloride or other brine sludge
M132	327.4	Landfill	B519	Other inorganic sludges (Specify in Comments)
M132	37.7	Landfill	B601	Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
M132	2.0	Landfill	B604	Organic paint or ink sludge
M132	1.6	Landfill	B609	Other organic sludges (Specify in Comments)
M132	0.0	Landfill	B801	Organic gases
M133	27.7	Surface impoundment	B101	Aqueous waste with low solvents
M133	150.2	Surface impoundment	B103	Spent acid with metals
M133	268.7	Surface impoundment	B104	Spent acid without metals
M133	0.0	Surface impoundment	B105	Acidic aqueous waste
M133	3.1	Surface impoundment	B106	Caustic solution with metals but no cyanides
M133	0.7	Surface impoundment	B302	Soil contaminated with inorganics only
M133	3.0	Surface impoundment	B309	Batteries or battery parts, casings, cores
M134	20,587.2	Deepwell/underground injection	B101	Aqueous waste with low solvents
M134	29,649.7	Deepwell/underground injection	B102	Aqueous waste with low other toxic organics
M134	21,340.0	Deepwell/underground injection	B103	Spent acid with metals
M134	9,981.5	Deepwell/underground injection	B104	Spent acid without metals
M134	46,173.9	Deepwell/underground injection	B105	Acidic aqueous waste
M134	230.3	Deepwell/underground injection	B106	Caustic solution with metals but no cyanides
M134	0.2	Deepwell/underground injection	B108	Caustic solution with cyanides but no metals
M134	68,245.7	Deepwell/underground injection	B109	Spent caustic
M134	7,267.2	Deepwell/underground injection	B110	Caustic aqueous waste
M134	787.1	Deepwell/underground injection	B111	Aqueous waste with reactive sulfides
M134	34.0	Deepwell/underground injection	B113	Other aqueous waste with high dissolved solids
M134	179.7	Deepwell/underground injection	B114	Other aqueous waste with low dissolved solids
M134	1,910.7	Deepwell/underground injection	B115	Scrubber water
M134	11,515.2	Deepwell/underground injection	B119	Other inorganic liquids (Specify in Comments)
M134	1,502.2	Deepwell/underground injection	B201	Concentrated solvent-water solution
M134	930.6	Deepwell/underground injection	B203	Nonhalogenated solvent
M134	72.6	Deepwell/underground injection	B205	Oil-water emulsion or mixture
M134	251.9	Deepwell/underground injection	B206	Waste oil
M134	3,545.4	Deepwell/underground injection	B207	Concentrated aqueous solution of other organics
M134	2.9	Deepwell/underground injection	B208	Concentrated phenolics
M134	627.1	Deepwell/underground injection	B211	Paint thinner or petroleum distillates
M134	0.2	Deepwell/underground injection	B212	Reactive or polymerizable organic liquid
M134	8,207.5	Deepwell/underground injection	B219	Other organic liquids (Specify in Comments)
M134	0.0	Deepwell/underground injection	B319	Other waste inorganic solids (Specify in Comments)
M134	3.6	Deepwell/underground injection	B403	Solid resins or polymerized organics
M134	46.6	Deepwell/underground injection	B409	Other nonhalogenated organic solids (Specify in Comments)
M134	421.1	Deepwell/underground injection	B508	Sludge with reactive sulfides
M134	1,985.6	Deepwell/underground injection	B609	Other organic sludges (Specify in Comments)
M135	0.3	Discharge to sewer/POTW	B001	Lab packs of old chemicals only
M135	0.6	Discharge to sewer/POTW	B103	Spent acid with metals
M135	1.1	Discharge to sewer/POTW	B104	Spent acid without metals
M135	25.1	Discharge to sewer/POTW	B105	Acidic aqueous waste
M135	0.4	Discharge to sewer/POTW	B109	Spent caustic
M135	59.7	Discharge to sewer/POTW	B110	Caustic aqueous waste
M136	34.1	Discharge to surface water (NPDES)	B105	Acidic aqueous waste
M137	2.2	Other - known (disposal)	B001	Lab packs of old chemicals only
M137	2,918.0	Other - known (disposal)	B002	Lab packs of debris only
M137	2.5	Other - known (disposal)	B003	Mixed lab packs
M137	0.1	Other - known (disposal)	B009	Other lab packs (Specify in Comments)
M137	3,238.7	Other - known (disposal)	B101	Aqueous waste with low solvents
M137	1.2	Other - known (disposal)	B104	Spent acid without metals
M137	40.0	Other - known (disposal)	B105	Acidic aqueous waste
M137	1.9	Other - known (disposal)	B109	Spent caustic
M137	0.9	Other - known (disposal)	B110	Caustic aqueous waste
M137	3.4	Other - known (disposal)	B119	Other inorganic liquids (Specify in Comments)
M137	72.5	Other - known (disposal)	B201	Concentrated solvent-water solution
M137	0.2	Other - known (disposal)	B219	Other organic liquids (Specify in Comments)
M137	59.7	Other - known (disposal)	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M137	2.8	Other - known (disposal)	B309	Batteries or battery parts, casings, cores
M137	0.1	Other - known (disposal)	B315	Other reactive salts/chemicals
M137	0.0	Other - known (disposal)	B316	Other metal salts/chemicals
M137	2.2	Other - known (disposal)	B319	Other waste inorganic solids (Specify in Comments)
M137	634.9	Other - known (disposal)	B405	Reactive organic solid
M137	45.8	Other - known (disposal)	B503	Wastewater treatment sludge with toxic organics
M137	28.9	Other - known (disposal)	B519	Other inorganic sludges (Specify in Comments)
M137	2.3	Other - known (disposal)	B609	Other organic sludges (Specify in Comments)

M141	277.0	Transfer facility storage	B001	Lab packs of old chemicals only
M141	2.6	Transfer facility storage	B002	Lab packs of debris only
M141	2,465.3	Transfer facility storage	B003	Mixed lab packs
M141	12.1	Transfer facility storage	B004	Lab packs containing acute hazardous wastes
M141	43.8	Transfer facility storage	B009	Other lab packs (Specify in Comments)
M141	228.5	Transfer facility storage	B101	Aqueous waste with low solvents
M141	138.7	Transfer facility storage	B102	Aqueous waste with low other toxic organics
M141	2,271.2	Transfer facility storage	B103	Spent acid with metals
M141	591.6	Transfer facility storage	B104	Spent acid without metals
M141	1,905.4	Transfer facility storage	B105	Acidic aqueous waste
M141	1,074.5	Transfer facility storage	B106	Caustic solution with metals but no cyanides
M141	83.7	Transfer facility storage	B107	Caustic solution with metals and cyanides
M141	34.2	Transfer facility storage	B108	Caustic solution with cyanides but no metals
M141	1,099.6	Transfer facility storage	B109	Spent caustic
M141	2,439.3	Transfer facility storage	B110	Caustic aqueous waste
M141	10.9	Transfer facility storage	B111	Aqueous waste with reactive sulfides
M141	14.3	Transfer facility storage	B112	Aqueous waste with other reactives (e.g., explosives)
M141	447.0	Transfer facility storage	B113	Other aqueous waste with high dissolved solids
M141	322.7	Transfer facility storage	B114	Other aqueous waste with low dissolved solids
M141	119.3	Transfer facility storage	B115	Scrubber water
M141	293.1	Transfer facility storage	B119	Other inorganic liquids (Specify in Comments)
M141	118.3	Transfer facility storage	B201	Concentrated solvent-water solution
M141	432.1	Transfer facility storage	B202	Halogenated (e.g., chlorinated) solvent
M141	821.7	Transfer facility storage	B203	Nonhalogenated solvent
M141	546.6	Transfer facility storage	B204	Halogenated/nonhalogenated solvent mixture
M141	242.0	Transfer facility storage	B205	Oil-water emulsion or mixture
M141	292.9	Transfer facility storage	B206	Waste oil
M141	389.5	Transfer facility storage	B207	Concentrated aqueous solution of other organics
M141	8.5	Transfer facility storage	B208	Concentrated phenolics
M141	55.5	Transfer facility storage	B209	Organic paint, ink, lacquer, or varnish
M141	17.4	Transfer facility storage	B210	Adhesives or epoxies
M141	28.9	Transfer facility storage	B211	Paint thinner or petroleum distillates
M141	1,177.5	Transfer facility storage	B212	Reactive or polymerizable organic liquid
M141	996.5	Transfer facility storage	B219	Other organic liquids (Specify in Comments)
M141	4.8	Transfer facility storage	B301	Soil contaminated with organics
M141	35.4	Transfer facility storage	B302	Soil contaminated with inorganics only
M141	0.5	Transfer facility storage	B303	Ash, slag, or other residue from incineration of wastes
M141	5.9	Transfer facility storage	B304	Other "dry" ash, slag, or thermal residue
M141	5.4	Transfer facility storage	B305	"Dry" lime or metal hydroxide solids chemically "fixed"
M141	55.4	Transfer facility storage	B306	"Dry" lime or metal hydroxide solids not "fixed"
M141	19.8	Transfer facility storage	B307	Metal scale, filings, or scrap
M141	4.3	Transfer facility storage	B308	Empty or crushed metal drums or containers
M141	235.8	Transfer facility storage	B309	Batteries or battery parts, casings, cores
M141	80.9	Transfer facility storage	B310	Spent solid filters or adsorbents
M141	13.0	Transfer facility storage	B312	Metal-cyanide salts/chemicals
M141	23.8	Transfer facility storage	B313	Reactive cyanide salts/chemicals
M141	19.7	Transfer facility storage	B314	Reactive sulfide salts/chemicals
M141	82.0	Transfer facility storage	B315	Other reactive salts/chemicals
M141	75.5	Transfer facility storage	B316	Other metal salts/chemicals
M141	826.2	Transfer facility storage	B319	Other waste inorganic solids (Specify in Comments)
M141	27.0	Transfer facility storage	B402	Nonhalogenated pesticide solid
M141	33.3	Transfer facility storage	B403	Solid resins or polymerized organics
M141	11.6	Transfer facility storage	B404	Spent carbon
M141	43.8	Transfer facility storage	B405	Reactive organic solid
M141	14.2	Transfer facility storage	B406	Empty fiber or plastic containers
M141	9,601.1	Transfer facility storage	B407	Other halogenated organic solids (Specify in Comments)
M141	114.4	Transfer facility storage	B409	Other nonhalogenated organic solids (Specify in Comments)
M141	4.1	Transfer facility storage	B501	Lime sludge without metals
M141	3.1	Transfer facility storage	B502	Lime sludge with metals/metal hydroxide sludge
M141	3.3	Transfer facility storage	B503	Wastewater treatment sludge with toxic organics
M141	25.9	Transfer facility storage	B504	Other wastewater treatment sludge
M141	63.8	Transfer facility storage	B505	Untreated plating sludge without cyanides
M141	88.5	Transfer facility storage	B506	Untreated plating sludge with cyanides
M141	0.2	Transfer facility storage	B507	Other sludge with cyanides
M141	109.0	Transfer facility storage	B508	Sludge with reactive sulfides
M141	0.6	Transfer facility storage	B509	Sludge with other reactives
M141	13.7	Transfer facility storage	B510	Degreasing sludge with metal scale or filings
M141	7.4	Transfer facility storage	B511	Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
M141	12.5	Transfer facility storage	B512	Sediment or lagoon dragout contaminated with organics
M141	26.7	Transfer facility storage	B513	Sediment or lagoon dragout contaminated with inorganics only
M141	1.0	Transfer facility storage	B516	Chloride or other brine sludge
M141	245.9	Transfer facility storage	B519	Other inorganic sludges (Specify in Comments)
M141	0.5	Transfer facility storage	B601	Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
M141	47.9	Transfer facility storage	B602	Still bottoms of nonhalogenated solvents or other organic liquids
M141	98.3	Transfer facility storage	B603	Oily sludge
M141	3.9	Transfer facility storage	B604	Organic paint or ink sludge
M141	3.3	Transfer facility storage	B605	Reactive or polymerizable organics
M141	197.7	Transfer facility storage	B606	Resins, tars, or tarry sludge
M141	74.1	Transfer facility storage	B609	Other organic sludges (Specify in Comments)
M141	1.2	Transfer facility storage	B701	Inorganic gases
M141	17.3	Transfer facility storage	B801	Organic gases
	1,930,127			

Detailed List of Facilities Managing D002 and D003 Wastes Onsite Using Underground Injection.

On-Site System Code	Short Tons	Management Type	Waste Form Code	Waste Form Code Description	Site/Company Name	City	State	No Migration Wastewater? 0=Yes, 1=No	0=Yes, 1=No	Impacted WW Qty, tons	Impacted NWW Qty, tons
M134	177,871	Deepwell/underground injection	B101	Aqueous waste with low solvents	PARKE-DAVIS, DIV. OF WARNER-LAMBERT CO.	HOLLAND	MI	1	0	177,871	0
M134	718,229	Deepwell/underground injection	B102	Aqueous waste with low other toxic organics	CYTEC INDUSTRIES INC	WAGGAMAN	LA	0		0	0
M134	17,385	Deepwell/underground injection	B102	Aqueous waste with low other toxic organics	Merichem - Sasol USA LLC.	Houston	TX	0		0	0
M134	6,326	Deepwell/underground injection	B103	Spent acid with metals	HOSKINS MANUFACTURING COMPANY	MIO	MI	1	0	6,326	0
M134	1,006	Deepwell/underground injection	B103	Spent acid with metals	HOSKINS MFG CO	NEW PARIS	IN	1	0	1,006	0
M134	59,890	Deepwell/underground injection	B103	Spent acid with metals	MIDWEST STEEL DIV	PORTAGE	IN	0		0	0
M134	57,157	Deepwell/underground injection	B104	Spent acid without metals	CYTEC INDUSTRIES INC	WAGGAMAN	LA	0		0	0
M134	98,089	Deepwell/underground injection	B105	Acidic aqueous waste	AK STEEL CORPORATION MIDDLETOWN WORKS	MIDDLETOWN	OH	0		0	0
M134	86,318	Deepwell/underground injection	B105	Acidic aqueous waste	ANGUS CHEMICAL COMPANY	STERLINGTON	LA	0		0	0
M134	44,890	Deepwell/underground injection	B105	Acidic aqueous waste	BP CHEMICALS INC	LIMA	OH	0		0	0
M134	179,599	Deepwell/underground injection	B105	Acidic aqueous waste	Chocolate Bayou Plant	Alvin	TX	1	0	179,599	0
M134	2,904,712	Deepwell/underground injection	B105	Acidic aqueous waste	Du Pont De Nemours & Co., E.I.	Victoria	TX	0		0	0
M134	689	Deepwell/underground injection	B105	Acidic aqueous waste	DUPONT & DUPONT DOW ELASTOMERS INC	LAPLACE	LA	0		0	0
M134	6,243	Deepwell/underground injection	B105	Acidic aqueous waste	GAS CO THE	KAPOLEI	HI	1	0	6,243	0
M134	11,836	Deepwell/underground injection	B109	Spent caustic	BP CHEMICALS INC	LIMA	OH	0		0	0
M134	849	Deepwell/underground injection	B110	Caustic aqueous waste	Green Lake Facility	Bloomington	TX	1	0	849	0
M134	24,760	Deepwell/underground injection	B110	Caustic aqueous waste	K N PROCESSING INC BUSHTON FACILITY	BUSHTON	KS	1	0	24,760	0
M134	74,095	Deepwell/underground injection	B110	Caustic aqueous waste	Marshall Facility	Marshall	TX	1	0	74,095	0
M134	15,437	Deepwell/underground injection	B110	Caustic aqueous waste	Texas City Refinery - Amoco Oil Co	Texas City	TX	0		0	0
M134	489,252	Deepwell/underground injection	B111	Aqueous waste with reactive sulfides	MORTON INTERNATIONAL, INC	Moss Point	MS	0		0	0
M134	441,256	Deepwell/underground injection	B114	Other aqueous waste with low dissolved solids	DUPONT & DUPONT DOW ELASTOMERS INC	LAPLACE	LA	0		0	0
M134	233,979	Deepwell/underground injection	B115	Scrubber water	RUBICON INC	GEISMAR	LA	0		0	0
M134	4	Deepwell/underground injection	B119	Other inorganic liquids (Specify in Comments)	CHEMICAL WASTE MANAGEMENT	CORPUS CHRISTI	TX	0		0	0
M134	6	Deepwell/underground injection	B119	Other inorganic liquids (Specify in Comments)	DSCCI	Corpus Christi	TX	0		0	0
M134	280,776	Deepwell/underground injection	B207	Concentrated aqueous solution of other organics	Arco Chemical	Channelview	TX	0		0	0
M134	175,072	Deepwell/underground injection	B207	Concentrated aqueous solution of other organics	SOLUTIA INC	GONZALEZ	FL	1	1	0	175,072
M134	2,186,767	Deepwell/underground injection	B208	Concentrated phenolics	Texas City Refinery - Amoco Oil Co	Texas City	TX	0		0	0
M134	2,560	Deepwell/underground injection	B219	Other organic liquids (Specify in Comments)	Green Lake Facility	Bloomington	TX	1	1	0	2,560
	8,295,052									470,749	177,632

TRI On-site and Off-site Releases of Manganese (in pounds), By Industry, U.S., 1998

Industry	Number of Facilities Reported	Total Air Emissions	Surface Water Discharges	Under-ground Injection	Releases to Land	Total On-site Releases	Total Off-site Releases	Total On- & Off-site Releases
20 Food	29	1655	2	0	0	1657	48137	49794
24 Lumber	7	916	0	0	0	916	0	916
25 Furniture	17	1039	0	0	0	1039	521	1560
26 Paper	5	7741	230117	0	101759	339617	31949	371566
28 Chemicals	18	643	480	0	3230204	3231327	3450	3234777
30 Plastics	11	392	0	0	250	642	8520	9162
31 Leather	1	3312	740	0	0	4052	29067	33119
32 Stone/Clay/Glass	55	17818	281	0	181003	199102	434245	633347
33 Primary Metals	415	399073	18680	3	6042379	6460135	11696382	18156517
34 Fabricated Metals	521	177813	1860	0	133867	313540	1270235	1583775
35 Machinery	293	116846	3089	0	17409	137344	519077	656421
36 Electrical Equip.	46	130770	10	0	3155	133935	397528	531463
37 Transportation Equip.	190	64858	1044	0	270	66172	362004	428176
38 Measure/Photo.	8	15	0	0	5	20	364499	364519
39 Miscellaneous	14	2270	0	0	348	2618	71775	74393
Multiple Codes 20-39	106	35654	4017	0	142950	182621	690097	872718
No Reported Codes	11	9843	83	0	9400	19326	40059	59385
Combination New/Original Ind.	.	0	0	0	132896	132896	0	132896
Original industry subtotal:	.	970658	260403	3	9995895	11226959	15967545	27194504
10 Metal Mining	18	816	255	0	5909370	5910441	4	5910445
12 Coal Mining	4	0	2	0	750	752	0	752
49 Electric Utilities	39	28845	147175	0	846241	1022261	1098617	2120878
5169 Chemical Wholesalers	1	250	5	0	0	255	255	510
5171 Petroleum Bulk Terminals	2	.	.	.	.	.	.	.
4953/7389 RCRA/Solvent Recovery	6	1153	0	0	4142582	4143735	258181	4401916
New industry subtotal:	.	31064	147437	0	10898943	11077444	1357057	12434501
Total	1817	1001722	407840	3	20894838	22304403	17324602	39629005

TRI On-site and Off-site Releases of Manganese Compounds (in pounds), By Industry, U.S., 1998

Industry	Number of Facilities Reported	Total Air Emissions	Surface Water Discharges	Under-ground Injection	Releases to Land	Total On-site Releases	Total Off-site Releases	Total On- & Off-site Releases
20 Food	231	4483	0	0	138313	142796	185665	328461
24 Lumber	5	8856	0	0	77603	86459	8435	94894
25 Furniture	4	70	2	0	0	72	255	327
26 Paper	109	248030	2802289	0	8934023	11984342	1781850	13766192
28 Chemicals	175	145612	570708	7750510	11112357	19579187	6650454	26229641
29 Petroleum	8	1137	1260	0	28800	31197	16200	47397
30 Plastics	27	47	6	0	19	72	17233	17305
31 Leather	9	760	0	0	0	760	577093	577853
32 Stone/Clay/Glass	103	26554	905	0	847508	874967	70405	945372
33 Primary Metals	234	986668	649742	5100	30522487	32163997	30279909	62443906
34 Fabricated Metals	82	10734	418	0	28934	40086	572351	612437
35 Machinery	30	8924	250	0	0	9174	154313	163487
36 Electrical Equip.	45	36466	689	0	10	37165	1371362	1408527
37 Transportation Equip.	77	7827	987	0	13204	22018	320648	342666
38 Measure/Photo.	3	3300	57001	0	5000	65301	15805	81106
39 Miscellaneous	3	515	0	0	0	515	755	1270
Multiple Codes 20-39	53	75857	384629	0	1036320	1496806	3243884	4740690
No Reported Codes	8	12	2696	0	0	2708	3265	5973
Combination New/Original Ind.	.	500	0	0	76000	76500	0	76500
Original industry subtotal:	.	1566352	4471582	7755610	52820578	66614122	45269882	111884004
10 Metal Mining	30	88328	6805	720000	409678272	410493405	1221305	411714710
12 Coal Mining	16	344	12225	45000	1772013	1829582	0	1829582
49 Electric Utilities	295	440232	988125	17400	31822856	33268613	6127684	39396297
5169 Chemical Wholesalers	3	0	0	0	0	0	0	0
4953/7389 RCRA/Solvent Recovery	14	656	854	85000	4654611	4741121	87954	4829075
New industry subtotal:	.	529560	1008009	867400	447927752	450332721	7436943	457769664
Total	1564	2095912	5479591	8623010	500748330	516946843	52706825	569653668