

US EPA ARCHIVE DOCUMENT

CHAPTER 2 AVAILABLE TREATMENT CAPACITY

This chapter presents EPA's estimates of available commercial treatment capacity for wastes impacted by Phase IV supplemental LDR rule. This chapter is organized as follows: Section 2.1 describes commercial capacity for stabilization; Section 2.2 describes metal recovery capacity; Section 2.3 describes vitrification capacity; Section 2.4 describes commercial wastewater treatment systems capacity; and Section 2.5 describes mixed RCRA/radioactive waste capacity.

2.1 STABILIZATION CAPACITY

This section discusses the commercial stabilization treatment capacity. Stabilization is a primary conventional commercial treatment technology for many of the wastes covered by the Phase IV supplemental LDR rule. In analyzing alternative treatment capacity for stabilization for wastes covered in this rule, the Agency built on the capacity analysis conducted for the Third Third LDR rule. This analysis was based on data contained in the May 1990 TSDR Capacity Data Set.¹ The TSDR Capacity Data Set contains results from the National Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Survey (the TSDR Survey). 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, and practices at RCRA-permitted and interim status treatment, storage, recycling, and disposal facilities. The TSDR Survey collected projections of capacity changes from 1986 through 1992. The TSDR Capacity Data Set includes the amount of hazardous and nonhazardous waste entering each treatment system in 1986, the maximum hazardous waste capacity, and the maximum total waste capacity.

For prior LDR rulemakings, 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). Updated information was obtained by contacting facilities and verifying critical projected capacities reported in the TSDR Survey. Based on the information provided by facility contacts, EPA determined whether planned facility capacity had come on line as projected. For a more detailed explanation of the TSDR Survey and of the Third Third Rule, refer to U.S. EPA, *Background Document for Third Third Wastes to Support 40 CFR Part 268 Land Disposal Restrictions*, May 1990.

Given the conventional nature of most stabilization technologies, such treatment can be and is conducted readily on-site. For example, as described above, numerous facilities currently are conducting on-site stabilization. Furthermore, in response to the original Phase IV proposed rule (60 *FR* 43654), commenters indicated the widespread use of on-site stabilization for characteristic metal wastes.² Numerous commercial vendors also are available to provide on-site stabilization treatment.³

In summary, EPA estimates that over 1 million tons of commercial stabilization capacity are currently available at treatment, storage, and disposal facilities (TSDFs). Furthermore, stabilization treatment can be and is conducted readily on-site.

2.2 METAL RECOVERY CAPACITY

¹ U.S. EPA, *Commercial Treatment/Recovery Data Set*, May 1990.

² These commenters include American Foundrymen's Society, Battery Council International, The TDJ Group, Non-Ferrous Founders' Society, and U.S. Department of Energy.

³ The following is a small sample of commercial vendors providing on-site stabilization treatment: American Colloid Co.; Chemical Waste Management; Envirosource CSI; Erosion Control Plastic Filter Company; Limestone Products Corp.; Reinco, Inc.; and Severson Environmental Services, Inc.

Due to metal recovery treatment as one of the bases for the LDR treatment standards, as well as due to the basic nature of mineral processing industries and EPA's policy of preferring pollution prevention or recycling to treatment, EPA evaluated the potential to recover metals from the newly identified mineral processing wastes. According to Biennial Reporting System (BRS) data,⁴ at least 58 commercial facilities recovered metals from hazardous wastes and 2,789 generators recycled waste on-site using metals recovery in 1991.

EPA identified and reviewed several metal recovery technologies that are commercially available. Exhibit 2-2 provides a sample of commercial metal recovery capacity for different technologies that appear to be suitable for the newly identified mineral processing wastes. Based on this sample, at least 800,000 mt/year of metal recovery capacity exists. Note, however, that not all of this capacity is necessarily available. Furthermore, this information is not a comprehensive list of available commercial metal recovery technologies.

2.3 VITRIFICATION CAPACITY

During the BDAT background document development process for characteristic arsenic wastes,⁵ EPA identified one commercial facility that treats arsenic containing wastes using vitrification. Published data⁶ indicate that pilot facilities are being successfully operated for treating arsenic wastes using vitrification. Furthermore, at least one commenter (Beazer East, Inc.) responding to the original Phase IV proposed rule (60 FR 43654) identified a commercial

⁴ U.S.EPA, "Hazardous Waste Recycling in the United States, 1989 to 1991," Office of Solid Waste, Draft, June 30, 1994.

⁵ U.S. EPA, *Final Best Demonstrated Available Technology (BDAT) Background Document for K031, K084, K101, K102, Characteristic Arsenic Wastes (D004), Characteristic Selenium Wastes (D010), and P and U Wastes Containing Arsenic and Selenium Listing Constituents*, Treatment Technology Section, May, 1990.

⁶ U.S. EPA, 1992, Vitrification of waste streams containing RCRA metal compounds, by J.G. Hnat, John Patten, and Christopher Jian., Vortex Corporation, EPA/600/R-92/105.

**EXHIBIT 2-2
SAMPLE OF METAL RECOVERY CAPACITY**

Metals Recovery Technology	Metals Recovered	Annual Feed Capacity (tons/year)
PYROMETALLURGICAL PROCESSES		
Dakota Catalyst Products, Williston, North Dakota	Al, Co, Mb, Ni, V	20,000 tons/year, metal and alumina catalysts
Elkem Multi-Purpose Furnace	Pb, Zn, Cu	40,000 ^a
Horsehead Resource Development, Flame Reactor	Zn, Pb	20,000-50,000 ^b
Horsehead Resource Development, Waelz Kiln System	Zn	270,000
Bethlehem Apparatus Company, Vacuum Mercury Retort System	Hg	595
Mercury Recovery Services Process	Hg	4,500
Zia Technology Inclined Rotary Reduction System	Fe, Zn, Pb	60,000 ^a
International Metals Reclamation Company (INMETCO)	Cr, Co, Cr, Fe, Mn, Mb, Ni	20,000 tons/year of K061; 20,000 tons/year of metal waste (non-hazardous) from the specialty steel industry; 10,000 tons/year of mill scale; 7,200 tons/year of K062; 6,700 tons/year of D007 from different sources in the specialty steel and alloy manufacturing industry; 3,600 tons/year of F006; 3,000 tons/year of nickel and/or chromium bearing solutions from other industries (D007, D002, and/or D001)

**EXHIBIT 2-2 (Continued)
SAMPLE OF METAL RECOVERY CAPACITY**

Metals Recovery Technology	Metals Recovered	Annual Feed Capacity (tons/year)
HYDROMETALLURGICAL PROCESSES		
AMAX (Cri-Met), Braithwaite, Louisiana	Al, Co, Mb, Ni, V	Plant presently accepts 20,000 tons/year of spent catalysts and has an annual feed capacity of 30,000 tons/year available for Ni/Co/Mo/Al-containing catalysts; also has some (additional?) capacity for processing Vanadium-containing materials
ETICAM Process	Cd, Cr, Co, Cu, Au, Mb, Ni, Pb, Ag, Ti, V, Zn	35,000 tons/year of metal-bearing solutions; 35,000 tons/year of cyanide-bearing solutions; 35,000 tons/year of acid/alkali solutions; 45,000 tons/year of metal-bearing solids
Recontek Process	Cd, Cr, Fe, Ni, Zn	60,000 tons/year
Encycle/Texas	Sb, Co, Cu, Pb, Ni	Plant reportedly received 20,000 tons/year of waste in 1991; total capacity is unknown

- Sources: (1) U.S. EPA, Profiles of Metal Recovery Technology for Mineral Processing Wastes and Other Metal-Bearing Hazardous Wastes, Office of Solid Waste, December 1994.
 (2) U.S. EPA, Background Document for Capacity Analysis for Land Disposal Restrictions: Newly Identified Petroleum Refining Process Wastes (Proposed Rule), October 1995.

^a Unknown if plant is currently operational.

^b Unknown if plant with 30,000 ton/year capacity is operational.

vitrification facility. Comprehensive data on other commercially available vitrification capacity is not available.

2.4 WASTEWATER TREATMENT SYSTEMS CAPACITY

EPA expects that the mineral processing industry's predominant wastewater management practices are to treat the wastewaters to TC levels in on-site tanks (or, to a limited extent, in surface impoundments that meet MTR requirements), and then either discharge to Subtitle D surface impoundments or discharge directly to surface waters under CWA or equivalent regulations. EPA believes that—similar to stabilization for nonwastewaters—the additional treatment required to meet the UTS levels for these wastewaters could be achieved through minimal modifications in the existing on-site treatment systems (e.g., change in the reagents or increase in the quantity of reagents added). Numerous commercial vendors are available to provide on-site wastewater treatment services.

2.5 MIXED RCRA/RADIOACTIVE WASTE CAPACITY

Available commercial treatment capacity for mixed radioactive waste is discussed in detail in the capacity analysis background document for the original Phase IV proposed rule (60 FR 43654).