

US EPA ARCHIVE DOCUMENT

II. INTRODUCTION

A. BACKGROUND

Under the provisions of the Mining Waste Exclusion of the Resource Conservation and Recovery Act (RCRA), solid waste from the extraction, beneficiation, and processing of ores and minerals is exempt from regulation as hazardous waste under Subtitle C of RCRA, as amended. The Mining Waste Exclusion was established in response to §3001(b)(3) of the statute, which was added in the 1980 Solid Waste Disposal Act Amendments (also known as the "Bevill Amendment"). The Bevill Amendment precluded EPA from regulating these wastes until the Agency performed a study and submitted a Report to Congress, as directed by §8002(f) and (p), and determined either to promulgate regulations under Subtitle C or that such regulations were unwarranted, (i.e., that the Exclusion should continue), as directed by §3001(b)(3)(C) of the statute. In response to the Bevill Amendment, EPA modified its final hazardous waste regulations in November 1980 to reflect this new exemption, and issued a preliminary and very broad interpretation of the scope of its coverage ("solid waste from the exploration, mining, milling, smelting and refining of ores and minerals" (45 FR 76618, November 19, 1980)).

In 1984, the Agency was sued for failing to complete the required Report to Congress and regulatory determination in conformance with the statutory deadline (*Concerned Citizens of Adamstown v. EPA*, No. 84-3041, D.D.C., August 21, 1985). In responding to this lawsuit, EPA explained that it planned to propose a narrower interpretation of the scope of the Exclusion, and proposed to the Court two schedules: one for completing the §8002 studies of mineral extraction and beneficiation wastes and submitting the associated Report to Congress, and one for proposing and promulgating a re-interpretation for mineral processing wastes. In so doing, the Agency, in effect, split the wastes that might be eligible for exclusion from regulation into two groups: mining (extraction and beneficiation) wastes and mineral processing wastes. The Court agreed to this approach and established a schedule for completing these two initiatives.

The Report to Congress on mining wastes was published on December 31, 1985, and on July 3, 1986 (51 FR 24496) EPA published the regulatory determination for these wastes, which stated that, in the Agency's judgment, Subtitle C regulation of these wastes was unwarranted. In keeping with its agreement, EPA also proposed to narrow the scope of the Mining Waste Exclusion for mineral processing wastes on October 2, 1985 (50 FR 40292). In this proposal, however, the Agency did not specify the criteria that it used to distinguish the mineral processing wastes that qualified for the Exclusion from those that did not.

In response to the proposed rule, many companies and industry associations "nominated" wastes that they believed should be retained within the Exclusion. Faced with an inability at that time to articulate criteria that could be used to distinguish exempt from non-exempt wastes and the approaching Court-ordered deadline for final action, EPA withdrew its proposal on October 9, 1986 (51 FR 36233); the Agency was promptly sued by a coalition of environmental/public interest groups. In July 1988, the Court in *Environmental Defense Fund v. EPA* held that EPA's withdrawal of the 1985 proposal was arbitrary and capricious, and ordered the Agency to define the specific mineral processing wastes that were eligible for the Mining Waste Exclusion. The Court also directed the Agency to restrict the scope of the Exclusion to include only "large volume, low hazard" wastes, based upon the legislative history of the special wastes concept.

During the three years that followed this decision, EPA proposed and promulgated several rules that redefined the boundaries of the Exclusion for mineral processing wastes. These rulemaking notices included explicit criteria for defining mineral beneficiation and processing, and large volume and low hazard, as well as evaluations of which specific mineral industry wastes were in conformance with these criteria and thus, eligible for special waste status. This rulemaking process was completed with the publication of final rules on September 1, 1989 (54 FR 36592) and January 23, 1990 (54 FR 2322). EPA's evaluations led to the finding that only 20 specific mineral processing wastes fulfilled the newly promulgated special wastes criteria; all other mineral processing wastes were removed from the Mining Waste Exclusion. The 20 special wastes were studied in a Report to Congress published on July 30, 1990. Subsequently, EPA ruled, after considering public comment and performing additional analysis, that Subtitle C regulation was unwarranted for these 20 waste streams.

How LDR Relates to Mineral Processing Wastes

As a consequence of the rulemaking process described above, all but 20 mineral processing wastes have been removed from the Mining Waste Exclusion. These newly non-exempt wastes have the same regulatory status as any other industrial solid waste. That is, if they exhibit characteristics of hazardous waste or are listed as hazardous wastes, they must be managed in accordance with RCRA Subtitle C or equivalent state standards. Existing waste characterization data suggest that some of these wastes may exhibit the characteristic of toxicity for metals (waste codes D004-D011), corrosivity (D002), and/or reactivity (D003).

EPA considers these wastes to be "newly identified" because they were brought into the RCRA Subtitle C

system after the date of enactment of the Hazardous and Solid Waste Act (HSWA) Amendments on November 8, 1984. EPA declined to include newly identified wastes within the scope of the Land Disposal Restrictions (LDRs) for Subtitle C characteristic hazardous wastes ("Third Third" Rule) published on June 1, 1990, deciding instead to promulgate additional treatment standards (Best Demonstrated Available Technology, or BDAT) in several phases that would be completed in 1997. The rationale for this decision is articulated at 55 FR 22667. In brief, at that time, EPA had not performed the technical analyses necessary to determine whether the treatment standards being promulgated for characteristic hazardous wastes were feasible for the newly non-exempt mineral processing wastes. The issue was further complicated by the fact that the list of non-exempt wastes was not final at that time, because the regulatory determination for the 20 wastes studied in the 1990 Report to Congress had not yet been promulgated. The boundaries of the Exclusion have now been firmly established, and the Agency is ready to characterize and establish treatment standards for all newly identified hazardous mineral processing wastes.

More recent work performed by OSW's Waste Treatment Branch (WTB) on the composition and other characteristics of the mineral processing wastes that have been removed from the Exclusion suggests that some of these wastes may pose unique treatability and/or capacity problems. Accordingly, there is a need for EPA to perform further data collection and analysis activities in order to develop BDAT treatment standards that are both adequately protective and achievable.

B. SCOPE OF PROJECT

In order to provide the necessary foundation to both develop a fully comprehensive inventory of mineral commodity sectors, facilities, and waste streams that may be affected by the LDRs program and identify applicable treatment technologies, EPA conducted an extensive effort to collect information. Specifically, EPA: (1) conducted electronic literature searches; (2) reviewed documents, including the 1989 mineral processing survey instruments (NSSW MPF), public comments on the 1991 ANPRM, and various articles and conference proceedings; (3) reviewed documents prepared by the Office of Solid Waste, various Agency contractors, state regulatory authorities, and the Bureau of Mines (BOM); (4) reviewed the "Mineral Commodity Summaries" prepared by the BOM; and (5) contacted BOM Commodity Specialists. Information collected included detailed process descriptions and identification of waste streams. The specific methodology that EPA employed for this effort is described in detail in Section III, Methods and Data Sources, below.

Based on this information, EPA prepared 49 analyses covering 62 commodity groups. Each mineral commodity analysis report consists of a summary describing the uses of the commodity, a detailed process description and process flow diagram, and a process waste section that identifies -- to the maximum extent practicable -- individual waste streams, sorted by the nature of the operation (i.e., extraction/beneficiation or mineral processing). Within the process waste section, EPA also identified: waste stream sources and form; Bevill-Exclusion status of the waste stream; waste stream characteristics; annual generation rates; management practices; and, whether the waste stream was being (or could potentially be) recycled, and thus be classified as a sludge, by-product, or spent material. EPA strongly cautions that the process information and identified waste streams presented in the commodity analysis reports should not be construed to be the authoritative list of processes and waste streams. These reports represent a best effort, and clearly do not include every potential process and waste stream. Furthermore, the omission of an actual waste stream (and thus its not being classified as either an extraction/beneficiation or mineral processing waste in this report) does not relieve the generator from its responsibility of correctly determining whether the particular waste is covered by the Mining Waste Exclusion.

C. STRUCTURE OF THE DOCUMENT

The remainder of this document is organized into three additional sections. Section III discusses the data sources and methodology used to develop the mineral commodity reports and to identify waste streams potentially subject to RCRA Subtitle C. Section IV presents the commodity summaries describing the uses of and salient statistics pertaining to the particular commodity, a process description section with detailed, current process information and process flow diagram(s), and waste streams generated by each process. Section V summarizes the findings of this study.