



Enforcement Alert

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Hazardous Waste Management Practices at Mineral Processing Facilities Under Scrutiny by U.S. EPA

EPA Clarifies 'Bevill Exclusion' Wastes and Establishes Disposal Standards

Evidence gathered by the U.S. Environmental Protection Agency (EPA) indicates that some mineral processing facilities may be failing to properly identify and manage hazardous

waste regulated under the Resource Conservation and Recovery Act (RCRA).

At some facilities, these violations have resulted in the leaching of toxic metals such as lead and arsenic to groundwater and drinking water, and the release of phosphine to the atmosphere. Recently, violations at three different mineral processing facilities have resulted in penalties totaling \$23.5 million, and more than \$200 million in additional cleanup costs.

EPA is concerned that these violations are arising because some companies are incorrectly assuming that certain wastes are exempt from RCRA under the so-called "Bevill exclusion," or are engaging in sham recycling activities.

EPA and States with authorized hazardous waste programs periodically inspect mineral processing facilities to determine whether company waste management practices are in compliance with RCRA. Owners and operators of mineral processing facilities may be subject to RCRA and applicable regulations found at 40 C.F.R. Parts 260-271.

To help mineral processing facilities comply with RCRA, EPA highlights in this issue of *Enforcement Alert*:

- RCRA regulatory requirements applicable to mineral processing facilities;
- The "Bevill Exclusion" and its applicability;
- Waste management practices

potentially resulting in noncompliance; and

- Recent cases involving hazardous waste violations at mineral processing facilities.

Improper Waste Disposal Poses Environmental Hazards

Mineral processing wastes, if improperly disposed, can cause harm to human health and substantial environmental damage. Environmental damage attributed to mineral processing operations includes:

- Groundwater contamination (e.g., arsenic, cadmium, copper, lead, zinc) caused by the placement of mineral processing waste waters in unlined surface impoundments;
- Soil contamination (e.g., arsenic, lead) caused by flue dust piles; and
- Surface water contamination (e.g., cadmium, zinc) caused by releases of some process wastewaters.

RCRA Regulatory Requirements for Mineral Processing Facilities

When Congress amended RCRA in October 1980, it temporarily excluded from regulation "solid waste from the extraction, beneficiation, and process-

About

Enforcement Alert

"*Enforcement Alert*" is published periodically by the Office of Regulatory Enforcement to inform and educate the public and regulated community of important environmental enforcement issues, recent trends and significant enforcement actions.

This information should help the regulated community anticipate and prevent violations of federal environmental law that could otherwise lead to enforcement action. Reproduction and wide dissemination of this publication are encouraged.

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ing of ores and minerals.” This exclusion is commonly referred to as the “Bevill exclusion” (see box below for more on the Bevill exclusion).

Since the 1980 amendment, EPA has established regulatory boundaries for the mining waste exclusion; articulated the criteria used to define “beneficiation” and “mineral processing”; and evaluated whether individual wastes streams are eligible for the Bevill exclusion (54 Federal Register 36592, Sept. 1, 1989; 55 Federal Register 2322, Jan. 23, 1990). For purposes of regulatory classification, EPA drew a “bright line” between beneficiation and mineral processing in its Bevill rules.

Beneficiation involves separating and concentrating mineral value from extracted ore through physical activities including, but not limited to, grinding or crushing. **Mineral processing** involves the use of processes that cause a significant physical/chemical change to the ore or minerals. For example, the smelting of copper or lead is commonly recognized as a mineral processing activity. While wastes from beneficiation are exempt from RCRA under the Bevill exclusion, wastes from mineral pro-

cessing are **not** unless they are specifically identified as exempt under 40 CFR 261.4(b)(7).

The rules established that all mineral processing wastes, (except the 20 wastes listed at 40 CFR 261.4(b)(7)), are subject to RCRA Subtitle C hazardous waste regulation if they are “listed” (see definitions on page 3) or exhibit one or more of the hazardous waste characteristics.

The 1989 and 1990 rules also address wastes that are “uniquely associated” with primary mineral processing operations. Uniquely associated wastes are eligible for the mining waste exclusion. In contrast, “non-uniquely associated” wastes (e.g., wastes that are generated as a result of maintaining mining machinery or other facility activities) are not. Many of the non-uniquely associated wastes are identical to wastes generated by non-mineral processing industries.

In May 1998, EPA promulgated “Land Disposal Restrictions (LDR)—Phase IV: Final Rule” (<http://www.epa.gov/fedrgstr/EPA-WASTE/1998/May/Day-26/f989.htm>). The rule applies to all mineral processing wastes that are discarded, except for 20 specific mineral processing wastes. The

rule establishes universal treatment standards for metal-bearing wastes from mineral processing, and requires that all underlying hazardous constituents in these wastes be treated before land disposal.

On April 21, 2000, the U.S. Court of Appeals for the District of Columbia Circuit issued a decision that vacated that portion of EPA’s LDR Phase IV rule that dealt with the issue of when secondary materials recycled as feedstock are solid wastes under RCRA. With respect to mineral processing, the Court left in place the part of the Phase IV rule reducing the scope of the 1985 definition of the solid waste rule; the result is that mineral processing spent materials being reclaimed by the industry sector are wastes if they are stored on the land, and that listed sludges and by-products being reclaimed are wastes under all circumstances. In addition, the Court upheld the Agency’s use of the Toxicity Characteristic Leaching Procedure (TCLP) to determine whether mineral processing wastes are hazardous. The Court also noted that the Agency may continue to use “speculative accumulation” and “legitimacy” as factors in determining whether disposal

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The Bevill Exclusion

The Bevill exclusion exempts from RCRA Subtitle C regulation solid waste from ore and mineral extraction, beneficiation, and 20 mineral processing wastes.

The 20 exempt mineral processing wastes are: **1.** Slag from primary copper processing; **2.** Slag from primary lead processing; **3.** Red and brown muds from bauxite refining; **4.** Phosphogypsum from phosphoric acid production; **5.** Slag from elemental phosphorus production; **6.** Gasifier ash from coal gasification; **7.** Process wastewater from coal gasification; **8.** Calcium sulfate wastewater treatment plant sludge from primary copper processing; **9.** Slag tailings from primary copper processing; **10.** Fluorogypsum from hydrofluoric acid production; **11.** Process wastewater from hydrofluoric acid production; **12.** Air pollution control dust/sludge from iron blast furnaces; **13.** Iron blast furnace slag; **14.** Treated residue from roasting/leaching of chrome ore; **15.** Process wastewater from primary magnesium processing by the anhydrous process; **16.** Process wastewater from phosphoric acid production; **17.** Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production; **18.** Basic oxygen furnace and open hearth slag from carbon steel production; **19.** Chloride process waste solids from titanium tetrachloride production; and **20.** Slag from primary zinc processing.

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has taken place (*Association of Battery Recyclers v. EPA*, 208 F.3d 1047 (D.C. Cir., 2000)).

Wastes Not Covered by the Bevill Exclusion

To restate, the Bevill exclusion applies to extraction, beneficiation, and 20 listed mineral processing wastes. **The exclusion does not apply to:**

- All other mineral processing wastes;
- Wastes from scrap recycling;
- Wastes from chemical manufacturing (54 *Federal Register* 36592, Sept. 1, 1989); and
- Wastes such as spent solvents, pesticide wastes, laboratory wastes, and vehicle maintenance wastes (non uniquely associated wastes).

EPA Investigates Waste Management Practices

EPA estimates that approximately 500 facilities throughout the United States process more than 50 types of mined minerals including lead, copper, titanium, and phosphate rock. Of those 500 facilities:

- More than 40 percent of mineral processing sites are located within one mile of a residential area.
- Approximately 140 facilities generate 118 potentially hazardous waste streams.
- Mineral processing facilities generate 20 million metric tons of liquids (wastewaters, acids, solvents) and 1.3 million metric tons of solids (slags, ash, sludge, and filtrate) annually.

EPA has been investigating the following types of mineral processing practices:

■ **Failure to perform waste identification:** Are mineral processing wastes being improperly characterized as non-hazardous wastes or beneficiation wastes?

■ **Improper storage of wastes:** Are hazardous wastes being managed in waste piles or unlined surface impoundments? Are hazardous wastes and Bevill-exempt wastes commingled?

■ **Sham recycling operations:** Are wastes being legitimately recycled?

■ **Improper management of non-uniquely associated wastes:** Are non-uniquely associated wastes (such as spent solvents, lab wastes and used oil) being improperly managed?

■ **Waste impoundments classified as “process impoundments”:** Are storage impoundments being used as waste disposal units?

Agency Concerned About Impact of Copper Smelters, Titanium Tetrachloride Operations

Copper smelting generates a wide variety of exempt and non-exempt wastes. A recent EPA evaluation of the waste management practices at primary copper smelters indicates that hazardous wastes may be commingled and disposed with non-hazardous wastes, frequently resulting in environmental damage. EPA is particularly concerned with the handling and disposal of flue dust, acid wastes and other metal-bearing wastes.

EPA has evaluated titanium tetrachloride acid wastestreams and is concerned about practices such as commingling of exempt and non-exempt solid wastes in unlined surface impoundments. For example, some of these facilities produce a waste ferric chloride acid. EPA has previously determined that ferric chloride waste acid

is a non-exempt solid waste subject to RCRA regulation. The Agency believes that ferric chloride waste acid is a hazardous waste if disposed.

The Cost of Noncompliance

The following cases highlight how noncompliance with hazardous waste

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Regulatory Definitions

Characteristic Waste: A characteristic waste is one that exhibits any of four different properties: ignitability, corrosivity, reactivity, and toxicity (40 C.F.R. Section 261.20-24).

Listed Waste: Listed wastes are wastes that are considered hazardous under RCRA because they meet specific listing descriptions (40 C.F.R. Section 261.31-33).

Sham Recycling: EPA has established guidelines for what constitutes legitimate recycling and has described activities it considers to be illegitimate or “sham recycling.” Some considerations in making this determination include whether the secondary material is effective for the claimed use, whether the secondary material is used in excess of the amount necessary, and whether or not the facility manages the secondary material as a valued commodity.

Speculative Accumulation: A material is “accumulated speculatively” (e.g., stored indefinitely in lieu of recycling) if it has no viable market or if the person accumulating the material cannot demonstrate that at least 75 percent of the material is recycled in a calendar year (40 C.F.R. Section 261.2(c)(4)).



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requirements may cause significant environmental contamination:

■ **On Oct. 16, 1998**, the FMC Corporation reached a settlement with the government for RCRA violations. The FMC facility in southeastern Idaho produces elemental phosphorous. The bulk of the wastes generated by this facility has been managed in unlined surface impoundments resulting in environmental contamination. The facility was cited, in part, for failing to identify hazardous wastes, for placing ignitable and reactive hazardous waste in surface impoundments, and for treating hazardous wastes without a permit. Under the settlement, FMC will clean up contamination, close the illegal surface impoundments, and construct a waste treatment plant. FMC also will pay a civil penalty of nearly \$12 million and spend approximately \$158 million to come into compliance with RCRA and the Clean Air Act.

■ **On Jan. 23, 1998**, ASARCO, Inc. reached an agreement with the government to correct hazardous waste and water violations at the company's lead smelting facility in Montana and its copper mine and ore processing facility in Arizona. The two settlements resolved violations including failure to identify

hazardous wastes, applying process water (containing toxic levels of arsenic and lead) on the ground for dust suppression, and illegally disposing hazardous wastes—including caustic slag, refractory brick, filter cake, and spent carbon. Under the settlements, ASARCO will pay over \$6 million in penalties and over \$50 million to reduce releases of lead, arsenic, and mercury to groundwater and surface water; and to restore wetlands near the Montana smelter.

■ **On April 15, 1999**, Encycle, an ASARCO subsidiary located in Corpus Christi, Texas, agreed to a settlement to resolve allegations that the company failed to comply with hazardous waste acceptance and exporting requirements, stored hazardous wastes on the ground, failed to conduct waste analysis and meet recordkeeping requirements. Under the settlement, Encycle will pay \$5.5 million in civil penalties and \$2 million in additional environmental projects at its El Paso and Corpus Christi facilities.

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Useful Compliance Assistance Resources

Office of Enforcement and Compliance Assurance:
<http://www.epa.gov/oeca/>

Office of Regulatory Enforcement:
<http://www.epa.gov/oeca/ore/>

RCRA Enforcement Division:
<http://www.epa.gov/oeca/ore/red/>

Hazardous Waste Resource Conservation and Recovery Act Subtitle C:
<http://www.epa.gov/epaoswer/osw/hazwaste.htm#ldr>

Office of Solid Waste (Land Disposal Restrictions, phase IV Treatment Standards Set for Toxicity Characteristic Metal Wastes, Mineral Processing Wastes, and Contaminated Soil):
<http://www.epa.gov/epaoswer/hazwaste/ldr/ldrmetal/facts.htm>

Toxic Release Inventory Website:
<http://www.epa.gov/tri/index.htm>

RCRA Online:
<http://www.epa.gov/rcraonline/>

Compliance Assistance Centers:
<http://www.epa.gov/oeca/mfcac.html>

Audit Policy Information:
<http://www.epa.gov/oeca/ore/apolguid.html>

Small Business Gateway:
<http://www.epa.gov/smallbusiness/>

