IV. WASTE RELEASE PROFILE

This section provides a general overview of the waste release activities and issues common to the non-fuel, non-metal mining industry. Unlike facilities covered by SIC codes 20 through 39 (manufacturing facilities), non-fuel, non-metal mining facilities are not required by the Emergency Planning and Community Right-to-Know Act to report to the Toxic Release Inventory (TRI). Because TRI reporting is not required for the non-fuel, non-metal mining industry, other sources of waste release data have been identified for this profile. EPA is considering expanding TRI reporting requirements in the future, which may affect such previously exempt industries such as non-fuel, non-metal mining.

IV.A. Data Sources

The Aerometric Information Retrieval System (AIRS) contains a wide range of information related to stationary sources of air pollution, including the emissions of a number of air pollutants which may be of concern within a particular industry.

AIRS Data

The Aerometric Information Retrieval System (AIRS) is an air pollution data delivery system managed by the Technical Support Division in EPA's Office of Air Quality Planning and Standards, located in Research Triangle Park, North Carolina. AIRS is a national repository of data related to air pollution monitoring and control. It contains a wide range of information related to stationary sources of air pollution, including the emissions of a number of air pollutants which may be of concern within a particular industry. States are the primary suppliers of data to AIRS. Data are used to support monitoring, planning, tracking, and enforcement related to implementation of the Clean Air Act. AIRS users include State environmental agency staff, EPA staff, the scientific community, other countries, and the general public.

Exhibit 7 summarizes AIRS annual releases of carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter of 10 microns or less (PM10), total particulates (PT), sulfur dioxide (SO_2), and volatile organic compounds (VOCs). This information is compared across industry sectors.

Exhibit 7
Pollutant Releases (Short Tons/Year)

Industry	CO	NO_2	PM_{10}	PT	SO_2	VOC
U.S. Total	97,208,000	23,402,000	45,489,000	7,836,000	21,888,000	23,312,000
Metal Mining	5,391	28,583	39,359	140,052	84,222	1,283
Nonmetal Mining	**4,525**	**28,804**	**59,305**	**167,948**	**24,129**	**1,736**
Lumber and Wood Products	123,756	42,658	14,135	63,761	9,149	41,423
Wood Furniture and Fixtures	2,069	2,981	2,165	3,178	1,606	59,426
Pulp and Paper	624,291	394,448	35,579	113,571	341,002	96,875
Printing	8,463	4,915	399	1,031	1,728	101,537
Inorganic Chemicals	166,147	108,575	4,107	39,082	182,189	52,091
Organic Chemicals	146,947	236,826	26,493	44,860	132,459	201,888
Petroleum Refining	419,311	380,641	18,787	36,877	648,153	309,058
Rubber and Misc. Plastic Products	2,090	11,914	2,407	5,355	29,364	140,741
Stone, Clay, Glass, and Concrete	58,043	338,482	74,623	171,853	339,216	30,262
Iron and Steel	1,518,642	138,985	42,368	83,017	238,268	82,292
Nonferrous Metals	448,758	55,658	20,074	22,490	373,007	27,375
Fabricated Metals	3,851	16,424	1,185	3,136	4,019	102,186
Electronics	367	1,129	207	293	453	4,854
Motor Vehicles, Bodies, Parts, and Accessories	35,303	23,725	2,406	12,853	25,462	101,275
Dry Cleaning	101	179	3	28	152	7,310

Source U.S. EPA Office of Air and Radiation, AIRS Database, May 1995.

Exhibit 8 lists the air emissions of particular chemicals reported for SIC 14 in the Air Facility Subsystem (AFS) of AIRS, presented in a "SIC Code Profile, Non-Metal Mining," prepared by EPA's Office of Pollution Prevention and Toxics in April, 1992. The release data are expressed in pounds released per year, per facility.

Exhibit 8
AIRS Releases

Chemical	Facilities	Med. Releases (lbs/Year/Facility)	Total Releases (lbs/Year/Facility)
Acetaldehyde	19	420	8,200
Acetone	24	80	16,209
Acrolein	19	385	7,789
Acrylic acid	12	54	1,212
Acrylonitrile	16	290	4,599
Aniline	13	95	3,278
Antimony	49	377	37,608
Arsenic	284	2	56,371
Barium	284	3	19,960
Benzene	59	89	70,324
Benzyl chloride	12	50	1,131
Biphenyl	12	2	75
1,3-Butadiene	16	134	45,662
Butyl acrylate	16	215	1,865
sec-Butyl alcohol	15	170	5,753
tert-Butyl alcohol	12	50	1,131
Butyraldehyde	16	220	1,222
Cadmium	286	2	22,557
Carbon disulfide	15	45	1,522
Carbon tetrachloride	16	325	2,706
Chlorine	1,036	1,096	2,177,738
Chlorobenzene	17	142	19,065
Chloroethane	15	145	4,853
Chloroform	16	255	1,506
Chloromethane	4	1	37
Chloroprene	15	170	5,753
Chromium	300	20	85,079
Cobalt	281	24	80,282
Copper	295	16	106,526
Creosote	12	74	8,532
Cresol (mixed isomers)	12	46	1,024
Cumene	13	46	1,024
Cyclohexane	51	62	19,991
1,2-Dibromoethane	12	50	1,131
Dibutyl phthalate	12	6	124
1,2-Dichlorobenzene	16	200	9,112
1,3-Dichlorobenzene	4	1	37
1,4-Dichlorobenzene	15	360	12,202
Dichlorodifluorome-thane CFC-1	15	175	6,008
1,2, Dichoroethane	15	290	9,590

Exhibit 8 (cont'd)
AIRS Releases

Chemical	Facilities	Med. Releases (lbs/Year/Facility)	Total Releases (lbs/Year/Facility)
Dichloromethane	11	120	2,016
Dichlorotetrafluoroethane CFC	15	5	239
Dimethyl phthalate	12	10	353
Epichlorohydrin	12	50	1,131
2-Ethoxyethanol	11	58	968
Ethyl acrylate	16	250	3,067
Ethylbenzene	34	194	11,940
Ethylene	36	401	48,592
Ethylene glycol	12	74	8,532
Ethylene oxide	15	190	1,250
Formaldehyde	48	126	48,119
Formic acid	16	210	1,455
Freon	15	200	1,362
Glycol Ethers	16	220	1,339
HCFC-22	15	80	2,725
Isobutyraldehyde	12	50	1,132
Lead	1,039	126	361,044
Maleic anhydride	15	35	1,144
Manganese	1,038	69	135,959
Mercury	41	23	5,542
Methanol	15	700	13,074
2-Methoxyethanol	12	47	1,051
Methyl acrylate	12	46	1,024
Methyl ethyl ketone	16	610	10,214
Methyl isobutyl ketone	16	280	2,876
Methyl methacrylate	16	230	10,150
Methylene bromide	15	15	559
Monochloropenta-fluoroethane	15	10	282
Naphthalene	24	29	4,768
n-Butyl alcohol	15	345	5,429
Nickel	295	7	36,560
Nitrobenzene	12	40	889
Phenol	16	220	13,750
Phosphorus (yellow or white)	284	4	68,277
Phthalic anhydride	15	100	3,443
Propionaldehyde	15	50	1,132
Propylene oxide	16	250	1,405

Exhibit 8 (cont'd)
AIRS Releases

Chemical	Facilities	Med. Releases (lbs/Year/Facility)	Total Releases (lbs/Year/Facility)
Propylene (Propene)	38	53	19,610
Selenium	288	8	31,144
Silver	53	13	2,330
Styrene	17	240	44,591
Tetrachloroethylene	11	112	1,882
Toluene	59	125	87,231
1,1,1-Trichloroethane	11	69	1,156
1,1,2-Trichloroethane	11	56	941
Trichloroethylene	11	69	1,156
Trichlorofluorome-thane {CFC-11	15	305	5,310
1,2,4-Trimethylbenzene	16	2	120
Vinyl acetate	15	275	9,318
Vinyl chloride	15	210	6,254
m-Xylene	15	68	2,216
o-Xylene	34	89	12,679
p-Xylene	20	200	1,335
Xylene (mixed isomers)	18	112	8,553
Zinc (fume or dust)	1,039	32	191,766
TOTAL	**1,051**	**64**	**4,099,173**

Source: U.S. EPA Office of Air and Radiation, AIRS Database, May 1995.

V. POLLUTION PREVENTION OPPORTUNITIES

The best way to reduce pollution is to prevent it in the first place. Some companies have creatively implemented pollution prevention techniques that improve efficiency and increase profits while at the same time minimizing environmental impacts. This can be done in many ways such as reducing material inputs, re-engineering processes to reuse by-products, improving management practices, and employing substitution of toxic chemicals. Some smaller facilities are able to actually get below regulatory thresholds just by reducing pollutant releases through aggressive pollution prevention policies.

In order to encourage these approaches, this section provides both general and industry-specific descriptions of some pollution prevention advances that have been implemented within the non-fuel, non-metallic industry. While the list is not exhaustive, it does provide core information that can be used as the starting point for facilities interested in beginning their own pollution prevention projects. When possible, this section provides information from real activities that can, or are, being implemented by this sector. This section provides summary information from activities that may be, or are being implemented by this sector. When possible, information is provided that gives the context in which the techniques can be effectively used. Please note that the activities described in this section do not necessarily apply to all facilities that fall within this sector. Facility-specific conditions must be carefully considered when pollution prevention options are evaluated, and the full impacts of the change must examine how each option affects, air, land, and water pollutant releases.

The use of pollution prevention technologies and environmental controls can reduce substantially the volume and concentration of the contaminants released / discharged into the surrounding environment. In some cases, these pollution prevention approaches may be economically beneficial to mine operators because they may decrease the process chemicals needed, and therefore the cost of producing a given amount of mineral. The approaches actually used depend on many criteria, including the nature of the mine environment, the funds available for enforcement and inspection, the availability of new technological solutions, and the relationships between government and mine operators.

Waste minimization generally encompasses any source reduction or recycling that results in either the reduction of total volume or the toxicity of hazardous waste. Source reduction is a reduction of waste generation at the source, usually within a process. Source reduction can include process modifications, feedstock (raw material) substitution,

housekeeping and management processes, and increases in efficiency of machinery and equipment. Source reduction includes any activity that reduces the amount of waste that exits a process. Recycling refers to the use or reuse of a waste as an effective substitute for a commercial product or as an ingredient or feedstock in an industrial process.

Opportunities for waste minimization may include raw material substitutions, though these opportunities are somewhat limited for mining facilities because of the transportation costs involved in using ores or concentrates produced in other regions or countries. In elemental phosphorous production, raw materials substitution generally takes the form of improving the separation of value from the raw ore during beneficiation, so that the furnace operations would begin with a higher grade of ore concentrate. Processing a feedstock with a higher concentration of phosphorous results in decreased slag generation, although presumably increasing the generation of related beneficiation wastes. Other source reduction opportunities may involve process modifications to increase efficiency during the furnace operation.

Utilization of mineral processing wastes can be a viable alternative to disposal. In 1988, Occidental's Columbia, Tennessee plant reported selling all of its slag while three other facilities sold some portion of their slag for off-site use (specific data are confidential). Phosphorous slag can be used as an aggregate in asphalt manufacturing, and elemental phosphorous slag has been used extensively in highway construction for many years in Idaho, Montana, and Tennessee.

The list below summarizes some of the environmental control technologies and regulatory approaches that may serve as effective pollution prevention techniques for this industry.

Water Pollution Prevention

- Reduce the amount of contaminated water produced by using diversion systems to channel runoff away from exposed mine pits and waste dumps.
- Channel contaminated water into containment ponds for treatment or recycling.
- Reuse contaminated water in the extraction process for dust elimination or drilling.
- Utilize subsurface drainage systems and barriers to collect or deflect groundwater prior to contact with exposed mine pits.

Air Pollution Prevention and Control

- Utilize dust elimination technologies such as wet suppression systems to reduce dust created during excavation and transport.
- Use dust suppressant agents such as magnesium chloride to reduce dust in solid piles and tailings.

Closure and Reclamation Approaches

- Use plant cover and landscape alteration to reduce erosion, dust, and runoff contamination; reintroduce native species to the former mine site; and allow alternative uses of the land.

Sample Planning, Monitoring, Enforcement, and Compliance Approaches

- Use company-managed audits, environmental monitoring, and reporting systems to supplement government-run enforcement efforts.
- Prepare detailed environmental impact statements that estimate potential environmental impacts, outline compliance plans, and detail the management of future environmental problems.
- Discuss alternative mine design and extraction/beneficiation approaches prior to issuing mine permits, and explore options for minimizing environmental impacts.

Additional Pollution Prevention Activities

According to 1992 industry information, pollution prevention activities under evaluation in the non-fuel, nonmetallic mineral mining industry include the physical and chemical stabilization of tailings for backfilling, subaqueous disposal of tailings for chemical stabilization, tailings beneficiation to remove toxic and acid components and recover valuable minerals, and procedures for the reclamation and final closure of mines. Each of these methods is discussed briefly below.

Using mine wastes as backfill can minimize surface subsidence by filling in underground voids. It can also minimize the impacts of surface disposal by reducing the volume of waste on the surface. A potential problem with this is that the material used as backfill could contaminate water resources by generating acid mine waters.

A froth flotation process has been developed by the Bureau of Mines to remove heavy-metal-bearing minerals from tailings. This process

recovers the mineral components of the tailings while removing acid-forming minerals, rendering the wastes less susceptible to contaminating ground and surface waters. The Bureau is also investigating a new device called the air-sparged hydrocyclone, which provides a portable, compact unit to treat large volumes of tailings on-site without the usual expensive capital requirements.

Bureau researchers are also developing effective methods for reclamation and closure of mining operations. The focus of this work is on controlling hydrology at sites, decontaminating wastes when necessary, and stabilizing wastes for closure. For example, the current practice for sealing mine shafts and portals is to install a concrete plug. This practice is difficult and expensive because it requires drilling into rock walls to provide support for the plug. Access to remote shafts and portals is also a problem. One possible solution is the use of low-density foaming plastics and/or cements. Studies have shown that injecting foaming materials may cost half that of concrete plugs. In addition, the expansion characteristic of the foaming materials may eliminate the need for drilling into intact rock. Another advantage of using foamed plastic or cement plugs is the provision of a resistant seal to acidic mine waters.

Wastes are also generated from maintenance activities associated with the operation of a mine. Exhibit 9 presents some of these activities, along with the wastes generated by each activity and some waste minimization options.

Exhibit 9
Waste Minimization Options

Activity	Waste Generated	Waste Minimization Options
Metal Parts Cleaning	Miscellaneous chlorinated solvents	Switch to semi-aqueous cleaners or water-based cleaning solutions to reduce or eliminate solvent emission and liquid waste generation.
Flotation	Zinc sulfate, sodium cyanide	Use flotation process control equipment that uses sensors, computing elements, and control units to reduce the amount of flotation reagents needed and to improve separation of waste from product.
Blasting	Ammonium	Maintain storage containers properly.
Changing Lubricating Fluids	Lead, cadmium	Do not mix used oil with solvents or other materials; segregate and recycle used oil; use fluid filtration systems to extend fluid life; segregate and recycle antifreeze; use washable rags instead of disposable rags.

Exhibit 9 (cont'd)
Waste Minimization Options

Activity	Waste Generated	Waste Minimization Options
Mining Vehicle Battery Replacement	Lead, acids	Recycle used batteries. Trade in old batteries when buying new batteries.

Source: Mining and Quarrying of Nonmetallic Minerals, U.S. EPA, Office of Pollution Prevention and Toxics.

V.A. Innovative Waste Management Practices

Pipe Recycling/Reuse

IMC operates phosphate rock mines in West Central Florida and has implemented a waste minimization program involving the reuse and recycling of steel pipe used to transport slurry, water, tailings, and other materials. IMC obtains maximum use from its pipe in several ways:

- Pipe used for matrix and clay transport is periodically rotated to ensure that wear is evenly spaced over the full diameter of the pipe
- To the extent possible, pipe no longer suitable for the most demanding use is used in other, less demanding pipelines
- Pipe no longer suitable for use in pipelines is either used for other purposes (such as culverts) or is sold for off-site reuse or scrap.

IMC has developed a computerized model to predict how long a section of pipe can remain in each position and when it needs to be turned. When pipe can no longer be used for materials transport, any undamaged portions of pipe are removed for onsite reuse as culvert or sold to a local scrap dealer as usable pipe. Damaged pipe is sold to a scrap dealer. By reusing pipe onsite, IMC estimates that it saves approximately $1.5 million each year. In 1991, $316,000 was received for pipe that could be reused offsite, and 4,200 tons of scrap piping was sold for an estimated total of $42,000 - $84,000. IMC's program reduces capital expenditures by reducing the amount of new pipe that must be purchased, as well as saving operating costs by avoiding costly shutdowns when pipes fail.

Mine Tire Recycling

Two Federal regulations will increasingly effect the scrap tire industry markets. First, the Clean Air Act Amendments have redefined tire derived fuel (TDF) as a fuel, no longer considering it a waste fuel. Increased demand for TDF has already occurred as a result: in 1990 about 10 percent of scrap tires were used as TDF, while in 1992 27 percent, or 65

million scrap tires, were used. Projections for 1994 were that 50 to 55 percent of scrap tires, or 141 million tires, would be needed to meet market demand. Second, the Intermodal Surface Transportation Efficiency Act (ISTEA) requires that five percent of all Federally-funded road projects use rubber from scrap tires in 1994; use of scrap tires must increase five percent annually until 1997, when it tops out at 20 percent. By 1995, 17 million scrap tires will be required in Federal road projects; by 1997 the number will increase to 50 million.

Mine representatives have estimated the price of one large tire to range from $10,000 to $16,000, or over $100,000 to fit one large piece of equipment. Several options exist for recycling or reusing whole large tires. One alternative is retreading the tires for reuse; retreading reduces the demand for new tires and conserves resources (retreading a used tire requires less than 40 percent of the fossil fuel to make a new tire). The purchase price for retreaded tires is less than for new tires, providing an additional savings incentive. In addition to retreading, whole scrap tires are used in civil engineering applications, including construction, erosion control, and agriculture (feeding troughs, for example).

Processing scrap tires involves shearing, cutting and/or shredding tires into smaller pieces. The major markets for processed tires are as TDF and in civil engineering applications. Scrap tires are an excellent fuel source, generating about 80 percent as much energy as crude oil per pound. In recent years, there have been major increases in the use of scrap tires as fuel by a number of industries, including power plants, cement kilns, pulp and paper mills, and tire manufacturing facilities.

VI. SUMMARY OF FEDERAL STATUTES AND REGULATIONS

This section discusses the Federal statutes and regulations that may apply to this sector. The purpose of this section is to highlight, and briefly describe the applicable Federal requirements, and to provide citations for more detailed information. The three following sections are included.

- Section IV.A contains a general overview of major statutes
- Section IV.B contains a list of regulations specific to this industry
- Section IV.C contains a list of pending and proposed regulations

The descriptions within Section IV are intended solely for general information. Depending upon the nature or scope of the activities at a particular facility, these summaries may or may not necessarily describe all applicable environmental requirements. Moreover, they do not constitute formal interpretations or clarifications of the statutes and regulations. For further information, readers should consult the Code of Federal Regulations and other state or local regulatory agencies. EPA Hotline contacts are also provided for each major statute.

VI.A. General Description of Major Statutes

Resource Conservation And Recovery Act

The Resource Conservation And Recovery Act (RCRA) of 1976 which amended the Solid Waste Disposal Act, addresses solid (Subtitle D) and hazardous (Subtitle C) waste management activities. The Hazardous and Solid Waste Amendments (HSWA) of 1984 strengthened RCRA's waste management provisions and added Subtitle I, which governs underground storage tanks (USTs).

Regulations promulgated pursuant to Subtitle C of RCRA (40 CFR Parts 260-299) establish a "cradle-to-grave" system governing hazardous waste from the point of generation to disposal. RCRA hazardous wastes include the specific materials listed in the regulations (commercial chemical products, designated with the code "P" or "U"; hazardous wastes from specific industries/sources, designated with the code "K"; or hazardous wastes from non-specific sources, designated with the code "F") or materials which exhibit a hazardous waste characteristic (ignitibility, corrosivity, reactivity, or toxicity and designated with the code "D").

Regulated entities that generate hazardous waste are subject to waste accumulation, manifesting, and recordkeeping standards. Facilities that

treat, store, or dispose of hazardous waste must obtain a permit, either from EPA or from a State agency which EPA has authorized to implement the permitting program. Subtitle C permits contain general facility standards such as contingency plans, emergency procedures, recordkeeping and reporting requirements, financial assurance mechanisms, and unit-specific standards. RCRA also contains provisions (40 CFR Part 264 Subpart S and §264.10) for conducting corrective actions which govern the cleanup of releases of hazardous waste or constituents from solid waste management units at RCRA-regulated facilities.

Although RCRA is a Federal statute, many States implement the RCRA program. Currently, EPA has delegated its authority to implement various provisions of RCRA to 46 of the 50 States.

Most RCRA requirements are not industry specific but apply to any company that transports, treats, stores, or disposes of hazardous waste. Here are some important RCRA regulatory requirements:

- **Identification of Solid and Hazardous Wastes** (40 CFR Part 261) lays out the procedure every generator should follow to determine whether the material created is considered a hazardous waste, solid waste, or is exempted from regulation.

- **Standards for Generators of Hazardous Waste** (40 CFR Part 262) establishes the responsibilities of hazardous waste generators including obtaining an ID number, preparing a manifest, ensuring proper packaging and labeling, meeting standards for waste accumulation units, and recordkeeping and reporting requirements. Generators can accumulate hazardous waste for up to 90 days (or 180 days depending on the amount of waste generated) without obtaining a permit.

- **Land Disposal Restrictions** (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment. Under the LDRs (40 CFR 268), materials must meet land disposal restriction (LDR) treatment standards prior to placement in a RCRA land disposal unit (landfill, land treatment unit, waste pile, or surface impoundment). Wastes subject to the LDRs include solvents, electroplating wastes, heavy metals, and acids. Generators of waste subject to the LDRs must provide notification of such to the designated TSD facility to ensure proper treatment prior to disposal.

- **Used Oil Management Standards** (40 CFR Part 279) impose management requirements affecting the storage, transportation,

burning, processing, and re-refining of the used oil. For parties that merely generate used oil, regulations establish storage standards. For a party considered a used oil marketer (one who generates and sells off-specification used oil directly to a used oil burner), additional tracking and paperwork requirements must be satisfied.

- **Tanks and Containers** used to store hazardous waste with a high volatile organic concentration must meet emission standards under RCRA. Regulations (40 CFR Part 264-265, Subpart CC) require generators to test the waste to determine the concentration of the waste, to satisfy tank and container emissions standards, and to inspect and monitor regulated units. These regulations apply to all facilities who store such waste, including generators operating under the 90-day accumulation rule.

- **Underground Storage Tanks** (USTs) containing petroleum and hazardous substances are regulated under Subtitle I of RCRA. Subtitle I regulations (40 CFR Part 280) contain tank design and release detection requirements, as well as financial responsibility and corrective action standards for USTs. The UST program also establishes increasingly stringent standards, including upgrade requirements for existing tanks, that must be met by 1998.

- **Boilers and Industrial Furnaces** (BIFs) that use or burn fuel containing hazardous waste must comply with strict design and operating standards. BIF regulations (40 CFR Part 266, Subpart H) address unit design, provide performance standards, require emissions monitoring, and restrict the type of waste that may be burned.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346, responds to questions and distributes guidance regarding all RCRA regulations. The RCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Comprehensive Environmental Response, Compensation, And Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a 1980 law commonly known as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. CERCLA also enables EPA to force parties responsible for environmental contamination to clean it up or to reimburse the Superfund for response costs incurred by EPA. The Superfund Amendments and Reauthorization Act (SARA) of 1986 revised various sections of CERCLA,

extended the taxing authority for the Superfund, and created a free-standing law, SARA Title III, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA).

The CERCLA **hazardous substance release reporting regulations** (40 CFR Part 302) direct the person in charge of a facility to report to the National Response Center (NRC) any environmental release of a hazardous substance which exceeds a reportable quantity. Reportable quantities are defined and listed in 40 CFR § 302.4. A release report may trigger a response by EPA, or by one or more Federal or State emergency response authorities.

EPA implements **hazardous substance responses** according to procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300). The NCP includes provisions for permanent cleanups, known as remedial actions, and other cleanups referred to as "removals." EPA generally takes remedial actions only at sites on the National Priorities List (NPL), which currently includes approximately 1300 sites. Both EPA and states can act at other sites; however, EPA provides responsible parties the opportunity to conduct removal and remedial actions and encourages community involvement throughout the Superfund response process.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346, answers questions and references guidance pertaining to the Superfund program. The CERCLA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Emergency Planning And Community Right-To-Know Act

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA, also known as SARA Title III), a statute designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by State and local governments. EPCRA required the establishment of State emergency response commissions (SERCs), responsible for coordinating certain emergency response activities and for appointing local emergency planning committees (LEPCs).

EPCRA and the EPCRA regulations (40 CFR Parts 350-372) establish four types of reporting obligations for facilities which store or manage specified chemicals:

- **EPCRA §302** requires facilities to notify the SERC and LEPC of the presence of any "extremely hazardous substance" (the list of such substances is in 40 CFR Part 355, Appendices A and B) if it has such substance in excess of the substance's threshold planning quantity, and directs the facility to appoint an emergency response coordinator.

- **EPCRA §304** requires the facility to notify the SERC and the LEPC in the event of a release exceeding the reportable quantity of a CERCLA hazardous substance or an EPCRA extremely hazardous substance.

- **EPCRA §§311 and 312** require a facility at which a hazardous chemical, as defined by the Occupational Safety and Health Act, is present in an amount exceeding a specified threshold to submit to the SERC, LEPC, and local fire department material safety data sheets (MSDSs) or lists of MSDSs and hazardous chemical inventory forms (also known as Tier I and II forms). This information helps the local government respond in the event of a spill or release of the chemical.

- **EPCRA §313** requires manufacturing facilities included in SIC codes 20 through 39, which have ten or more employees, and which manufacture, process, or use specified chemicals in amounts greater than threshold quantities, to submit an annual toxic chemical release report. This report, commonly known as the Form R, covers releases and transfers of toxic chemicals to various facilities and environmental media, and allows EPA to compile the national Toxic Release Inventory (TRI) database.

All information submitted pursuant to EPCRA regulations is publicly accessible, unless protected by a trade secret claim.

EPA's EPCRA Hotline, at (800) 535-0202, answers questions and distributes guidance regarding the emergency planning and community right-to-know regulations. The EPCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Clean Water Act

The primary objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. Pollutants regulated under the CWA include "priority"

pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

The CWA regulates both direct and indirect discharges. The **National Pollutant Discharge Elimination System (NPDES)** program (CWA §402) controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either EPA or an authorized State (EPA has presently authorized forty States to administer the NPDES program), contain industry-specific, technology-based and/or water quality-based limits, and establish pollutant monitoring and reporting requirements. A facility that intends to discharge into the nation's waters must obtain a permit prior to initiating its discharge. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent. The permit will then set forth the conditions and effluent limitations under which a facility may make a discharge.

A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards, that were designed to protect designated uses of surface waters, such as supporting aquatic life or recreation. These standards, unlike the technological standards, generally do not take into account technological feasibility or costs. Water quality criteria and standards vary from State to State, and site to site, depending on the use classification of the receiving body of water. Most States follow EPA guidelines which propose aquatic life and human health criteria for many of the 126 priority pollutants.

Storm Water Discharges

In 1987 the CWA was amended to require EPA to establish a program to address **storm water discharges**. In response, EPA promulgated the NPDES storm water permit application regulations. Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant (40 CFR 122.26(b)(14)). These regulations require that facilities with the following storm water discharges apply for a NPDES permit: (1) a discharge associated with industrial activity; (2) a discharge from a large or medium municipal storm sewer system; or (3) a discharge which EPA or the State determines to contribute to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

Those facilities/activities that are subject to storm water discharge permit application requirements are identified below. To determine whether a particular facility falls within one of these categories, the regulation should be consulted.

Category i: Facilities subject to storm water effluent guidelines, new source performance standards, or toxic pollutant effluent standards.

Category ii: Facilities classified as SIC 24-lumber and wood products (except wood kitchen cabinets); SIC 26-paper and allied products (except paperboard containers and products); SIC 28-chemicals and allied products (except drugs and paints); SIC 29-petroleum refining; and SIC 311-leather tanning and finishing.

Category iii: Facilities classified as SIC 10-metal mining; SIC 12-coal mining; SIC 13-oil and gas extraction; and SIC 14-nonmetallic mineral mining.

Category iv: Hazardous waste treatment, storage, or disposal facilities.

Category v: Landfills, land application sites, and open dumps that receive or have received industrial wastes.

Category vi: Facilities classified as SIC 5015-used motor vehicle parts; and SIC 5093-automotive scrap and waste material recycling facilities.

Category vii: Steam electric power generating facilities.

Category viii: Facilities classified as SIC 40-railroad transportation; SIC 41-local passenger transportation; SIC 42-trucking and warehousing (except public warehousing and storage); SIC 43-U.S. Postal Service; SIC 44-water transportation; SIC 45-transportation by air; and SIC 5171-petroleum bulk storage stations and terminals.

Category ix: Sewage treatment works.

Category x: Construction activities except operations that result in the disturbance of less than five acres of total land area.

Category xi: Facilities classified as SIC 20-food and kindred products; SIC 21-tobacco products; SIC 22-textile mill products; SIC 23-apparel related products; SIC 2434-wood kitchen cabinets manufacturing; SIC 25-furniture and fixtures; SIC 265-paperboard containers and boxes; SIC 267-

converted paper and paperboard products; SIC 27-printing, publishing, and allied industries; SIC 283-drugs; SIC 285-paints, varnishes, lacquer, enamels, and allied products; SIC 30-rubber and plastics; SIC 31-leather and leather products (except leather and tanning and finishing); SIC 323-glass products; SIC 34-fabricated metal products (except fabricated structural metal); SIC 35-industrial and commercial machinery and computer equipment; SIC 36-electronic and other electrical equipment and components; SIC 37-transportation equipment (except ship and boat building and repairing); SIC 38-measuring, analyzing, and controlling instruments; SIC 39-miscellaneous manufacturing industries; and SIC 4221-4225-public warehousing and storage.

Pretreatment Program

Another type of discharge that is regulated by the CWA is one that goes to a publicly-owned treatment works (POTWs). The national **pretreatment program** (CWA §307(b)) controls the indirect discharge of pollutants to POTWs by "industrial users." Facilities regulated under §307(b) must meet certain pretreatment standards. The goal of the pretreatment program is to protect municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system and to protect the quality of sludge generated by these plants. Discharges to a POTW are regulated primarily by the POTW itself, rather than the State or EPA.

EPA has developed technology-based standards for industrial users of POTWs. Different standards apply to existing and new sources within each category. "Categorical" pretreatment standards applicable to an industry on a nationwide basis are developed by EPA. In addition, another kind of pretreatment standard, "local limits," are developed by the POTW in order to assist the POTW in achieving the effluent limitations in its NPDES permit.

Regardless of whether a State is authorized to implement either the NPDES or the pretreatment program, if it develops its own program, it may enforce requirements more stringent than Federal standards.

EPA's Office of Water, at (202) 260-5700, will direct callers with questions about the CWA to the appropriate EPA office. EPA also maintains a bibliographic database of Office of Water publications which can be accessed through the Ground Water and Drinking Water resource center, at (202) 260-7786.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants in drinking water. The law authorizes EPA to develop national drinking water standards and to create a joint Federal-State system to ensure compliance with these standards. The SDWA also directs EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes.

EPA has developed primary and secondary drinking water standards under its SDWA authority. EPA and authorized States enforce the primary drinking water standards, which are, contaminant-specific concentration limits that apply to certain public drinking water supplies. Primary drinking water standards consist of maximum contaminant level goals (MCLGs), which are non-enforceable health-based goals, and maximum contaminant levels (MCLs), which are enforceable limits set as close to MCLGs as possible, considering cost and feasibility of attainment.

The SDWA **Underground Injection Control (UIC)** program (40 CFR Parts 144-148) is a permit program which protects underground sources of drinking water by regulating five classes of injection wells. UIC permits include design, operating, inspection, and monitoring requirements. Wells used to inject hazardous wastes must also comply with RCRA corrective action standards in order to be granted a RCRA permit, and must meet applicable RCRA land disposal restrictions standards. The UIC permit program is primarily State-enforced, since EPA has authorized all but a few States to administer the program.

The SDWA also provides for a Federally-implemented Sole Source Aquifer program, which prohibits Federal funds from being expended on projects that may contaminate the sole or principal source of drinking water for a given area, and for a State-implemented Wellhead Protection program, designed to protect drinking water wells and drinking water recharge areas.

EPA's Safe Drinking Water Hotline, at (800) 426-4791, answers questions and distributes guidance pertaining to SDWA standards. The Hotline operates from 9:00 a.m. through 5:30 p.m., EST, excluding Federal holidays.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) granted EPA authority to create a regulatory framework to collect data on chemicals in order to evaluate, assess, mitigate, and control risks which may be posed by their

manufacture, processing, and use. TSCA provides a variety of control methods to prevent chemicals from posing unreasonable risk.

TSCA standards may apply at any point during a chemical's life cycle. Under TSCA §5, EPA has established an inventory of chemical substances. If a chemical is not already on the inventory, and has not been excluded by TSCA, a premanufacture notice (PMN) must be submitted to EPA prior to manufacture or import. The PMN must identify the chemical and provide available information on health and environmental effects. If available data are not sufficient to evaluate the chemical's effects, EPA can impose restrictions pending the development of information on its health and environmental effects. EPA can also restrict significant new uses of chemicals based upon factors such as the projected volume and use of the chemical.

Under TSCA §6, EPA can ban the manufacture or distribution in commerce, limit the use, require labeling, or place other restrictions on chemicals that pose unreasonable risks. Among the chemicals EPA regulates under §6 authority are asbestos, chlorofluorocarbons (CFCs), and polychlorinated biphenyls (PCBs).

EPA's TSCA Assistance Information Service, at (202) 554-1404, answers questions and distributes guidance pertaining to Toxic Substances Control Act standards. The Service operates from 8:30 a.m. through 4:30 p.m., EST, excluding Federal holidays.

Clean Air Act

The Clean Air Act (CAA) and its amendments, including the Clean Air Act Amendments (CAAA) of 1990, are designed to "protect and enhance the nation's air resources so as to promote the public health and welfare and the productive capacity of the population." The CAA consists of six sections, known as Titles, which direct EPA to establish national standards for ambient air quality and for EPA and the States to implement, maintain, and enforce these standards through a variety of mechanisms. Under the CAAA, many facilities will be required to obtain permits for the first time. State and local governments oversee, manage, and enforce many of the requirements of the CAAA. CAA regulations appear at 40 CFR Parts 50-99.

Pursuant to Title I of the CAA, EPA has established national ambient air quality standards (NAAQSs) to limit levels of "criteria pollutants," including carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide. Geographic areas that meet NAAQSs for a

given pollutant are classified as attainment areas; those that do not meet NAAQSs are classified as non-attainment areas. Under §110 of the CAA, each State must develop a State Implementation Plan (SIP) to identify sources of air pollution and to determine what reductions are required to meet Federal air quality standards.

Title I also authorizes EPA to establish New Source Performance Standards (NSPSs), which are nationally uniform emission standards for new stationary sources falling within particular industrial categories. NSPSs are based on the pollution control technology available to that category of industrial source but allow the affected industries the flexibility to devise a cost-effective means of reducing emissions.

Under Title I, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants (NESHAPs), nationally uniform standards oriented towards controlling particular hazardous air pollutants (HAPs). Title III of the CAAA further directed EPA to develop a list of sources that emit any of 189 HAPs, and to develop regulations for these categories of sources. To date EPA has listed 174 categories and developed a schedule for the establishment of emission standards. The emission standards will be developed for both new and existing sources based on "maximum achievable control technology" (MACT). The MACT is defined as the control technology achieving the maximum degree of reduction in the emission of the HAPs, taking into account cost and other factors.

Title II of the CAA pertains to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline, automobile pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms EPA uses to regulate mobile air emission sources.

Title IV establishes a sulfur dioxide emissions program designed to reduce the formation of acid rain. Reduction of sulfur dioxide releases will be obtained by granting to certain sources limited emissions allowances, which, beginning in 1995, will be set below previous levels of sulfur dioxide releases.

Title V of the CAAA of 1990 created a permit program for all "major sources" (and certain other sources) regulated under the CAA. One purpose of the operating permit is to include in a single document all air emissions requirements that apply to a given facility. States are developing the permit programs in accordance with guidance and regulations from EPA. Once a State program is approved by EPA, permits will be issued and monitored by that State.

Title VI is intended to protect stratospheric ozone by phasing out the manufacture of ozone-depleting chemicals and restrict their use and distribution. Production of Class I substances, including 15 kinds of chlorofluorocarbons (CFCs), will be phased out entirely by the year 2000, while certain hydrochlorofluorocarbons (HCFCs) will be phased out by 2030.

EPA's Control Technology Center, at (919) 541-0800, provides general assistance and information on CAA standards. The Stratospheric Ozone Information Hotline, at (800) 296-1996, provides general information about regulations promulgated under Title VI of the CAA, and EPA's EPCRA Hotline, at (800) 535-0202, answers questions about accidental release prevention under CAA §112(r). In addition, the Technology Transfer Network Bulletin Board System (modem access (919) 541-5742)) includes recent CAA rules, EPA guidance documents, and updates of EPA activities.

VI.B. Industry Specific Regulations

The environmental impacts of the non-fuel, nonmetallic mining industry are regulated primarily by two statutes: the Clean Air Act (CAA) and the Clean Water Act (CWA). Other statutes that might be applied to the non-fuel, non-metal mining industry are the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the General Mining Law of 1872, and State statutes.

Clean Air Act (CAA)

Although nonmetallic mining operations are not specifically regulated by the CAA, businesses involved in the processing of the minerals are regulated. 40 CFR Part 60 Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants, and 40 CFR Part 60 Subpart UUU, Standards of Performance for Calciners and Dryers in Mineral Industries, require these industries to control or reduce emissions of particulate matter and impose specific monitoring, recordkeeping, and reporting requirements. Under the Clean Air Act, sources are required to obtain construction and operating permits, not only for particulate emissions but also for NOx, SO2, and CO which are often products of combustion from engines for power and also dryers.

40 CFR Part 60 Subpart OOO applies to facilities that process any of the following 18 minerals: crushed and broken stone, sand and gravel, clay,

rock salt, gypsum, sodium compounds, pumice, gilsonite, talc and pyrophyllite, boron, barite, fluorspar, feldspar, diatomite, perlite, vermiculite, mica, and kyanite. The affected facilities are: crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins, and enclosed trucks or railcar loading stations.

40 CFR Part 60 Subpart UUU applies to calciners and dryers used to process the following minerals: aluminum, ball clay, bentonite, diatomite, feldspar, fire clay, fuller's earth, gypsum, industrial sand, kaolin, lightweight aggregate, magnesium compounds, perlite, roofing granules, talc, titanium dioxide, and vermiculite.

Clean Water Act (CWA)

Discharges from mine sites are addressed under two principal regulatory programs: the NPDES permit program (for process water and storm water point source discharges) and the Non-point source program.

NPDES Point Source Program

A point source is defined in Section 502(14) of the CWA as "any discernible, confined and discrete conveyance, included but not limited to, any pipe, ditch, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharged." The Water Quality Act amendments of 1987 added discharges from "landfill leachate collection systems" to this definition. All point source discharges to waters of the U.S. must be addressed by NPDES permits.

Storm water is defined in 40 CFR 122.26(b)(13) as "storm water runoff, snow melt runoff, and surface runoff and drainage." Storm water associated with industrial activity is defined in 40 CFR Section 122.26(b)(14) as the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. Section 402(p) of the CWA generally requires EPA to issue NPDES permits for point source discharges of storm water associated with industrial activity, including active and inactive mines. At mine sites, Section 402(1)(2) specifically limits the permit requirements for storm water that has come into contact with any overburden, raw material, intermediate products, finished products, byproducts, or waste products located on the site of the operation.

EPA is currently developing a storm water program for those point source discharges from active and inactive mines not already permitted. Several States are also currently developing general storm water permits for mine sites.

Non-point Source Program

Non-point sources of pollution are addressed under Sections 304(f)(b) and 319 of the CWA of 1972. Non-point source runoff is caused by runoff from diffuse sources, and is generally caused by rainfall or snow melt. Section 304(f)(b) establishes guidelines for identifying and evaluating the nature and source of non-point sources of pollutants, and processes, procedures, and methods to control pollution resulting from mining activities, including runoff and siltation from new, currently operating, and abandoned surface and underground mines. Non-point source discharges may be to streams, lakes, rivers, wetlands, or to groundwater. Specific best management practices (BMPs) requirements for non-point source control at mine sites have not been promulgated at the national level, nor has any national guidance been issued. However, individual States are currently developing programs for storm water management at mine sites. For example, Idaho recently prepared a document that describes practices to minimize non-point source water quality impacts.

Under Section 319 of the Clean Water Act, States developing plans to address problems and solutions to non-point source pollution, are eligible for grants that are administered by the Regions.

In addition to applicable general CWA requirements, active mineral mining and processing operations are subject to the requirements contained in 40 CFR 436, EPA Effluent Guidelines and Standards for Mineral Mining and Processing. The regulation establishes effluent limitation guidelines and pretreatment standards that limit the discharge of pollutants into navigable waters, and requires the application of best practicable control technologies (BPT). For the purposes of these guidelines and standards of performance, the industry is divided into 38 subcategories consisting of specific mineral types or classes of minerals. Effluent limitations are based on factors such as the type of ore, method of transport, type of processing, use of wet air emissions control devices, type of product, and groundwater seepage and runoff into mine and process wastewater impoundments.

Mine dewatering can invoke environmental regulation under CWA. Dewatering is the removal of water that has infiltrated the mining site. Wells, pumps, or ditches and tunnels are typically used to divert the water away from the site. Dewatering can also lead to the unintentional creation of wetlands, requiring a permit under the CWA. EPA's Office of Water, Office of Wastewater Management/Permits Division is currently developing a mining strategy for hard rock mining which will be completed by the fall of 1995.

Exhibit 10
Mine Discharges Subject to Permitting

Runoff/drainage discharges subject to 40 CFR Part 440 effluent limitation guidelines	Subject to storm water permitting (not subject to 40 CFR Part 440)
Land application area Crusher area Spent ore piles, surge piles, ore stockpiles, waste rock/overburden piles Pumped and unpumped drainage and mine water from pits/underground mines Seeps/French drains On-site haul roads, if constructed of waste rock or spent ore or if wastewater subject to mine drainage limits is used for dust control Tailings dams/dikes when constructed of waste rock/tailings Unreclaimed disturbed areas	Topsoil piles Haul roads not on active mining area On-site haul roads not constructed of waste rock or spent ore (unless wastewater subject to mine drainage limits is used for dust control) Tailings dams, dikes when not constructed of waste rock/tailings Concentration/mill building/site (if discharge is storm water only, with no contact with piles) Reclaimed areas released from reclamation bonds prior to 12/17/90 Partially, inadequately reclaimed areas or areas not released from reclamation bond Most ancillary areas (e.g., chemical and explosives storage, power plant, equipment/truck maintenance and wash areas, etc.)

Resource Conservation and Recovery Act (RCRA)

The Bevill Amendment

In 1980, Congress amended RCRA in the Solid Waste Disposal Act Amendments, adopting what has been dubbed the Bevill Amendment, after Representative Tom Bevill of Alabama. The amendment temporarily exempted from Subtitle C regulation solid waste from ore and mineral extraction, beneficiation, and processing. The Amendment directed EPA either to develop Subtitle C regulations for the waste or determine that the exemption should continue, and to present its findings in a report to Congress.

EPA modified its hazardous waste regulations to reflect the Bevill exclusion and issued a preliminary, and quite broad, interpretation of the exclusion's scope. In particular, it interpreted the exclusion as covering "solid waste from the exploration, mining, milling, smelting and refining of ores and minerals."

In 1985 the U.S. District Court for the District of Columbia awarded judgment to the Environmental Defense Fund and two public interest groups that had sued EPA for failing to submit the required report to Congress and make the regulatory determination by the statutory deadline. The court imposed two schedules, one for completing studies of extraction and beneficiation wastes and submitting them in a report to Congress, and the second for proposing reinterpretation of mineral-processing wastes. In so doing, the court effectively split the wastes that might be eligible for exclusion from regulation into two groups: mineral extraction and beneficiation wastes; and mineral processing wastes.

In December 1985 EPA submitted a report to Congress on mining wastes (*1985 Report to Congress: Wastes from the Extraction and Beneficiation of Metallic Ores, Phosphate Rock, Asbestos, Overburden from Uranium Mining, and Oil Shale*) in which EPA found that some mining wastes exhibit hazardous characteristics, that waste management practices have caused environmental damage, and that the range of risk from mining waste is broad. In July 1986 EPA published a regulatory determination, upheld in subsequent court challenges, that RCRA Subtitle C regulation of extraction and beneficiation wastes was unwarranted because mining wastes tend to be disposed of in arid climates, facilities and wastes are located in sparsely populated areas where human contact is minimal, and waste volumes are high. It also determined that it should develop a risk-based, State-run mining waste program under RCRA Subtitle D.

In keeping with its court-ordered directive to reinterpret the Mining Waste exclusion for mineral processing wastes, EPA proposed to narrow the scope of the exclusion for mineral-processing wastes to include only a few specific waste streams. Unable to articulate criteria for selecting these wastes, EPA later withdrew this proposal and was subsequently sued by the Environmental Defense Fund. The courts ruled against EPA, holding that the Agency's interpretation of Bevill exclusions was overbroad. The court ordered EPA to restrict the scope of the exclusion as it applied to mineral-processing wastes to include only "large volume, low hazard" wastes.

In a series of rulemaking notices, EPA reinterpreted the exclusion for mineral-processing wastes and defined which mineral-processing wastes met the high-volume, low-hazard criteria. The vast majority of mineral-processing wastes did not meet both criteria. EPA published its final regulatory determination in 1991, in compliance with a court-ordered deadline. The final rule permanently retains the Bevill exemption for 20 mineral-processing wastes. EPA determined that regulation under RCRA Subtitle C was inappropriate for these wastes because of the extremely

high cost to industry and the technical infeasibility of managing them under Subtitle C requirements; 18 of the wastes are subject to applicable State requirements, while the remaining two (phosphogypsum and phosphoric acid process waste water) are currently being evaluated by EPA.

Wastes from the extraction and beneficiation of ores and minerals remain exempt from Subtitle C requirements, irrespective of their chemical characteristics; EPA may, in the future, evaluate the appropriateness of regulating these wastes under RCRA Subtitle D as an industrial waste. Wastes from mineral processing, however, are not exempt from Subtitle C unless they are one of the 20 specific wastes identified in EPA's final ruling.

In addition, only wastes that are uniquely associated with the extraction and beneficiation of ores and minerals (or one of the 20 listed mineral processing wastes) are excluded from hazardous waste regulation. Non-uniquely associated wastes are typically generated as a result of maintaining mining machinery or as a result of other facility activities, and continue to be subject to Subtitle C regulation. These non-uniquely associated wastes may include used oil, polychlorinated biphenyls, discarded commercial chemicals, cleaning solvents, filters, empty drums, laboratory wastes, and general refuse.

Determining how and under what circumstances the Bevill Amendment exclusions should be interpreted in regulating mining wastes continues to be a subject of discussion and study, at least in part because many beneficiation terms are used to describe activities common to a wide range of nonexempt industries and to describe mineral-processing operations that occur at the same location as the beneficiation operations. Beneficiation and mineral-processing operations are often closely linked; in order to apply Subtitle C regulations at a mine site, a regulator often must prove that the waste is not a beneficiation waste. Because a variety of regulators, at both Federal and State levels, are independently interpreting the Bevill rules, the potential for inconsistent interpretations is significant. Staff in EPA's OSW have suggested the following guidelines for regulators and the regulated community in distinguishing between exempt and nonexempt wastes at mines and mineral-processing sites:

- Determine whether the material is considered a solid waste under RCRA.

- Determine whether the facility is using a primary ore or mineral to produce a final or intermediate product and also whether 50 percent of the feedstocks are from secondary sources.
- Establish whether the material and the operation that generates it are uniquely associated with mineral production.
- Determine where in the sequence of operations beneficiation ends and mineral processing begins.
- If the material is a mineral-processing waste, determine whether it is one of the 20 special wastes from mineral processing.

This sequence will result in one of three determinations: 1) the material is not a solid waste and therefore not subject to RCRA; 2) the material is a solid waste but is exempt from RCRA Subtitle C because of the Mining Waste Exclusion; or 3) the material is a solid waste that is not exempt from RCRA Subtitle C and is subject to regulation.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Although Bevill wastes are excluded from regulation under RCRA Subtitle C, they can be addressed under CERCLA. Mining companies may be liable under CERCLA for the release or threat of release of hazardous substances, covering releases to air, surface water, groundwater and soils. Many mines, where practices did not incorporate the safeguards now required under the CWA, allowed runoff from mine and tailings sites to flow into nearby streams and lakes. In general, the CERCLA problems associated with mining operations are much more frequent in metal rather than non-metal mining. Even newer mines, which have been subject to CWA regulations, have been targeted for CERCLA enforcement. Mine owners may also be liable for damages to natural resources as a result of mining activity.

National Environmental Policy Act (NEPA)

NEPA requires that all Federal agencies prepare detailed statements assessing the environmental impact of, and alternatives to, major Federal actions that may "significantly affect" the environment. An environmental impact statement (EIS) must provide a fair and full discussion of significant environmental impacts and inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts on the environment; EISs must explore and evaluate all reasonable alternatives, even if they are not within the authority of the lead agency. NEPA authorities are solely procedural; NEPA cannot compel selection of the environmentally preferred alternative.

Federal actions specifically related to mining that may require EISs include Federal land management agency (e.g. BLM and Forest Service) approval of plans of operations for hardrock mining on Federally-managed lands. All effected media (e.g., air, water, soil, geologic, cultural, economic resources, etc.) must be addressed. The EIS provides the basis for the permit decision; for example, an NPDES permit may be issued or denied based on EPA's review of the overall impacts, not just discharge-related impacts, of the proposed project and alternatives. Issues may include the potential for acid rock drainage, aquatic and terrestrial habitat value and losses, sediment production, mitigation, and reclamation.

Endangered Species Act (ESA)

The ESA provides a means to protect threatened or endangered species and the ecosystems that support them. It requires Federal agencies to ensure that activities undertaken on either Federal or non-Federal property do not have adverse impacts on threatened or endangered species or their habitat. In a June 1995 ruling, the U.S. Supreme Court upheld interpretations of the Act that allow agencies to consider impact on habitat as a potential form of prohibited "harm" to endangered species. Agencies undertaking a Federal action (such as a BLM review of proposed mining operations) must consult with the U.S. Fish and Wildlife Service (USFWS); an EIS must be prepared if "any major part of a new source will have significant adverse effect on the habitat" of a Federally or State-listed threatened or endangered species.

State Statutes

In addition to Federal laws, State and common laws also affect waste generation from mining activities. State law generally requires that permits be obtained prior to commencement of mining activities; permits may require design, performance, closure, and reclamation standards, and may impose monitoring requirements. Under common law, a mine owner may be liable for trespassing if wastes migrate into and damage another's property, or if the waste impacts the community as a whole, a miner may be liable for creating a public nuisance. Over the last five years several States have substantially altered their mining regulations to prevent the damage caused by past mining operations. Considerable disagreement remains, however, between mining industry groups and the environmental community regarding the effectiveness of these State regulations in preventing damage to the environment.

Many Western States require mining operations to obtain reclamation bonds and mining permits that are designed to regulate and monitor mining activity. States that require bonding and/or permitting include Alaska, Arizona, California, Idaho, Nevada, New Mexico, Oregon, Utah, Washington, South Dakota, Montana, Wyoming, and Colorado. To regulate mining activity in the State of Colorado, for example, the State requires mining operations to obtain: 1) a performance bond, 2) a reclamation bond, and 3) a permit. The performance bond outlines what the mining operation intends to do on the land, and is simply a promise from the mining operation that it will reclaim the land. This bond gives Colorado the authority to pursue reclamation costs from mining operations that fail to properly reclaim the land. The reclamation bond, also known as a financial warranty, equals the cost the State would incur if it were to hire someone to reclaim the site should the mining operation fail to do so. Although performance bonds are updated periodically, the bonds have not always been adequate to cover closure costs.

VI.C. Pending and Proposed Regulatory Requirements

Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA)

EPCRA Section 313 mandates that owners and operators of facilities that manufacture, process, or otherwise use a listed chemical to report to EPA their annual releases of these chemicals to any environmental medium. EPA makes this information available to the public in the form of the Toxic Release Inventory (TRI). TRI currently requires reporting from facilities in SIC codes 20-39 which meet various threshold requirements.

EPCRA Section 313 gives EPA discretionary authority to modify the coverage of facilities required to report to EPA for inclusion in the TRI.

EPA is considering expanding the TRI through the development of reporting requirements for additional facilities. These additional facilities include a list of 25 SIC codes that contribute 99 percent of the non-manufacturing TRI chemical loadings to the environment. SIC 14 is among these 25 SIC codes. EPA anticipates publication of a proposed rule in late 1995 or early 1996 requiring additional facilities to report the use, release, and transfer of TRI chemicals.

Clean Air Act (CAA)

Clean Air Act Amendments (CAAA) of 1990

In 1992, EPA published an initial list of all categories of major and area sources of the hazardous air pollutants (HAPs) listed in Section 112(b) of the CAA. EPA is required to establish dates for the promulgation of emission standards for each of the listed categories of HAP emission sources and develop emission standards for each source of HAPs such that the schedule is met. The standards are to be technology-based and are to require the maximum degree of emission reduction determined to be achievable by the Administrator. Proposed standards for most mineral industries are due by November 1, 1997. The Agency has determined that the phosphoric acid manufacturing industry may be anticipated to emit several of the 189 HAPs listed in Section 112(b) of the CAAA. As a consequence, this source category is included on the initial list of HAP-emitting categories scheduled for standards promulgation.

New Emissions Standards for Hazardous Air Pollutants (NESHAP)

Another proposed rule under the CAA concerns the development of maximum achievable control technology (MACT) or generally achievable control technology (GACT) standards for the asbestos processing source category that is comprised of the milling, manufacturing, and fabrication subcategories of the asbestos NESHAP. Pollutants to be regulated include asbestos and other HAPs emitted in major amounts by these subcategories. Final action on this proposed rule is scheduled for November 1995.

National Ambient Air Quality Standards (NAAQS)

EPA is reviewing and updating the air quality criteria for particulate matter to incorporate new scientific and technical information that has become available since the last review. Based on the revised criteria, EPA will determine whether revisions to the standards are appropriate. This will affect the mining and quarrying of non-fuel, nonmetallic minerals.

Clean Water Act (CWA)

A comprehensive bill was introduced in Congress in 1995 to reauthorize the Clean Water Act. The bill may affect EPA's authority to require changes in production processes, products, or raw materials to control emissions of toxins; may require risk assessments for water quality standards, effluent limitations or other regulatory requirements; and may require social, economic, and environmental benefits to be weighed in establishing regulations. Potentially large sectors of the non-fuel, non-metal mining industry could be affected by this legislation.

Safe Drinking Water Act (SDWA)

Arsenic is one of the non-fuel, nonmetallic minerals covered by SIC 14. A proposed rule will set a maximum contaminant level goal (MCLG) and revised national primary drinking water regulation (NPDWR) for arsenic in drinking water, pursuant to the SDWA amendments of 1986. The SDWA requires EPA to promulgate national primary drinking water regulations for 83 specific contaminants of which arsenic is one.