

Alaskans for Responsible Mining

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MINING: ENVIRONMENTAL IMPACTS

Mining can pollute air and drinking water, harm wildlife and habitat, and permanently scar natural landscapes. Modern mines as well as abandoned mines are responsible for significant environmental damage throughout the West.

- More than 40 percent of stream reaches in western watersheds are contaminated by acid mine drainage and heavy metals.¹
- Mining has contaminated drinking water wells used by residents of Questa, New Mexico, and San Luis, Colorado, among other rural western towns.²
- Residents of Silver Valley, Idaho, and other rural communities have been forced to leave their homes because of mining waste contamination.
- Mining has caused massive fish kills in the Red River in New Mexico, the Sacramento River in California, and the Alamosa River in Colorado, among others.
- Hundreds of migratory birds have been poisoned after landing at mine pit lakes in California and Nevada.
- Seventy-eight mines and mining facilities are so toxic that the U.S. Environmental Protection Agency (EPA) has designated them as federal Superfund sites.³

Water

“Water is more precious than gold” in the arid mountain West. Dramatic population growth in recent decades coupled with record-breaking droughts in parts of the West, have intensified demand for this naturally scarce resource. Pollution further compromises water supplies and increase costs to consumers as more water treatment becomes necessary to make contaminated water safe for human consumption and agricultural use.

Acid Mine Drainage

Acid mine drainage is the primary source of water pollution from mining. Mining unearths large amounts of ore that contains precious metals, such as gold and silver, as well as iron and other sulfides. When sulfides in the ore are exposed to water and air, sulfuric acid is created, which can seep from mines and waste rock piles into streams, rivers, and groundwater. This seepage is called acid mine drainage.

- Acid mine drainage can be 20 to 300 times more acidic than acid rain and can burn human skin and kill fish and aquatic organisms.⁴
- Some of the most acidic water ever recorded was in the Richmond Mine in California. The water was more acidic than battery acid and had been know to catch fire.⁵
- Acid mine drainage also leaches toxic metals, such as arsenic, cadmium, chromium, lead, from ore and waste rock, causing additional water pollution.
- Acid mine drainage can often occurs for decades and even centuries after mining operations cease. Acid mine drainage is still seeping from mines in Europe that were worked by Romans prior to A.D. 476.⁶

Cyanide and Mercury

Chemicals used to separate valuable metals and minerals from ore also may leak into streams, rivers, and groundwater. Some of these chemicals, such as mercury, persist in the environment for decades. Although no longer used in mining, mercury continues to contaminate waterways. Cyanide, which is widely used in modern gold mining, is another potentially deadly chemical that can get into water supplies.

Air and Water Quality Permit Violations

Water and air quality permits for mine operations are frequently violated. For example:

- An EPA inspection between 1990 and 1995 of some U.S. mines and processing facilities found that about 20 percent were polluting air or water in violation of federal environmental laws.⁷
- In a 1998 case study, EPA documented dozens of toxic releases from mines and processing facilities in Arizona, New Mexico, and Nevada.⁸
 - Nineteen air and water quality violations at mines in Arizona owned by ASARCO, BHP Copper, and Phelps Dodge, among others.
 - Eighteen water quality violations at mines in Nevada owned by Placer Dome, Barrick Goldstrike, and Kinross Mining Company, among others.
 - Four water quality violations at mines in New Mexico owned by Phelps Dodge and Molycorp, among others.
- Eight out of 12 major mines in Montana have major water quality problems that were not predicted by federal agencies at the time of permitting.

Water Quantity

Mining can deplete surface and groundwater supplies. Groundwater withdrawals may damage or destroy streamside habitat many miles from the actual mine site.⁹

- In Nevada, the driest state in the nation, the Humboldt River is being drained to benefit gold mining operations along the Carlin Trend.
- “Mines in the northeastern Nevada desert have pumped out more than 580 billion gallons of water since 1986—enough to feed New York City’s taps for more than a year.”¹⁰
- Groundwater withdrawn from the Santa Cruz River Basin in southern Arizona for use at a nearby copper mine is lowering the water table and drying up the river.¹¹

Air Quality

Hundreds of tons of rock are unearthed, moved, and crushed in mining operations significantly increasing the amount of dust and particulates in the air. In addition, mine tailings, which may contain finely ground and even toxic waste, can become airborne. This air pollution can directly affect human health.

- A high school football game in Questa, New Mexico, had to be cancelled when heavy winds blew tailings across the field.¹²
- Tailings from uranium mines on Navajo Reservation lands in Arizona have contributed to health problems experienced by local residents.¹³

Human Health

Mining can cause serious human health problems. Statistical studies suggest linkage between mining pollution and human disease and mortality. For example:

- “The death rate from serious disease has been unusually high in the Clark Fork Basin near Butte, Montana, and areas of intensive mining and smelting for over a hundred years. (The Clark Fork Basin contains the most extensive area of Superfund sites in the United States.) National cancer statistics also have shown elevated death rates from cancer—particularly lung, bronchial, and trachea cancer—in areas of the Clark Fork Basin where mining has occurred. Cancer mortality rates in these areas have been much higher than in other areas in Montana and neighboring states where mining activity has not occurred.¹⁴
- Silver Valley, Idaho (Need more information about this one.)

Wildlife and Habitat

Because mining is often a heavy industrial activity that involves road construction and the use of heavy machinery, wildlife can be dislocated and habitat damaged or destroyed. Birds and other wildlife can be poisoned after drinking contaminated water in tailings ponds. Increases in sedimentation or acidity can kill trout, salmon, and other aquatic organisms. Even at very low concentrations, exposure to heavy metals can stunt fish growth. The macro-invertebrates that fish eat live in stream sediment and eat algae, both of which often contain higher metal concentrations than surface waters.¹⁵

- In 1995, 340 migrating geese were found dead in the abandoned Berkeley Pit copper mine in Butte, Montana.
- A 1995 spill of 40,000 gallons of cyanide from the New Gold Mine in Montana killed all the fish in Golconda Creek.
- A spill from the Molycorp mine in Questa, New Mexico, killed all of the aquatic life in an eight-mile stretch of the Red River.¹⁶
- Fish in a 15-mile stretch of the Alamosa River in Colorado were killed by a spill from the Summitville Mine, near Leadville.
- Spills and drainage for the defunct Richmond Mine have killed fish and plants along miles of the Sacramento River, which provides drinking water for 80,000 residents of Redding, California.¹⁷
- Mining also can cause erosion and sedimentation, burying gravel beds important for salmon spawning and damaging habitat for trout and other species that depend on clear, cold, oxygen-rich water.

Hazardous Waste

Metal mining generates hundreds of millions of pounds of hazardous waste each year, but because of a loophole in the federal Resource Conservation and Recovery Act, mining waste is exempt from the special handling and treatment normally required for hazardous waste. The metal mining annually produces more toxic waste by volume than any other industry in the United States.

- In 2001, the metal mining industry reported 2.8 billion pounds of toxics emitted to air, water, and land or 45 percent of all industry-emitted toxics.¹⁸

Notes

- ¹ U.S. Environmental Protection Agency, Office of Water. Liquid Assets 2000: America's Water Resources at a Turning Point. Washington, D.C. May 2000.
- ² Personal communication with Amigos Bravos, Taos, New Mexico, and Alliance for Responsible Mining, La Jara, Colorado.
- ³ U.S. Environmental Protection Agency. Fact Sheet: NPL Abandoned Mine Land Sites and Cleanup Leads. Washington, D.C. September 2003.
- ⁴ Proceedings of the First Midwestern Region Conference (held at Southern Illinois University at Carbondale). June 1990.
- ⁵ *The Seattle Post Intelligencer*, "More than a century of mining has left the West deeply scarred," Robert McClure and Andrew Schneider. June 12, 2001.
- ⁶ Environmental Impacts of Hardrock Mining in Eastern Washington, University of Washington, Center for Streamside Studies, College of Forest Resources and Fishery Sciences, Seattle, WA. 2000.
- ⁷ Hardrock Mining on Federal Lands (1999). National Academy of Sciences, Washington, D.C. National Academies Press.
- ⁸ U.S. Environmental Protection Agency, Office of Solid Waste. Damage Cases and Environmental Releases from Mines and Mineral Processing Sites. Washington, D.C. April 1998.
- ⁹ Hardrock Mining on Federal Lands (1999). National Academy of Sciences, Washington, D.C. National Academies Press.
- ¹⁰ *The Seattle Post Intelligencer*, "More than a century of mining has left the West deeply scarred," Robert McClure and Andrew Schneider. June 12, 2001.
- ¹¹ Hardrock Mining on Federal Lands. National Academy of Sciences, Washington, D.C. National Academies Press. 1999.
- ¹² *High Country News*, "The mine that turned the Red River blue," Ernest Atencio. August 28, 2000.
- ¹³ *The New York Times*. 2003
- ¹⁴ Da Rosa, Carlos D., and Lyons, James S. *Golden Dreams, Poisoned Streams: How Reckless Mining Pollutes America's Waters and How We Can Stop It*. Mineral Policy Center, Washington, D.C. p. 8.
- ¹⁵ Hardrock Mining on Federal Lands (1999). National Academy of Sciences, Washington, D.C. National Academies Press. p. 159.
- ¹⁶ *High Country News*, "The mine that turned the Red River blue," Ernest Atencio. August 28, 2000.
- ¹⁷ *The Seattle Post Intelligencer*, "More than a century of mining has left the West deeply scarred," Robert McClure and Andrew Schneider. June 12, 2001.
- ¹⁸ U.S. Environmental Protection Agency. 2001 Toxics Release Inventory Executive Summary. Washington, D.C. July 2003. <http://www.epa.gov/tri/tridata/tri01/index.htm>

Alaskans for Responsible Mining (ARM) is working to make mining in Alaska publicly accountable and fiscally, socially, and environmentally responsible. To learn more about the proposed mining district and what you can do to get involved, please contact Scott Brennan at Alaskans for Responsible Mining via scott@reformakmines.org or (907) 277-0005.