Gold mines harm public health and the environment.

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Aston Bay Holdings Ltd., a Canadian mineral exploration company, started drilling for gold in Buckingham County, Virginia in 2019 and has expanded its search for metals into additional localities of the Commonwealth. Industrial-scale gold mining has never taken place in Virginia. However, the environmental and public health impacts from gold mines in the U.S. are well-known and widely reported. Damage typically occurs through hazardous leaks, spills, and accidents; acid mine drainage; and airborne pollutants.

LEAKS, SPILLS, AND ACCIDENTS

Mining waste products—typically containing sodium cyanide, calcium oxide, and potassium amyl xanthate[1]—regularly escape into the environment.[2] A recent study of gold mines in the U.S. found that 100% of the mines studied—representing 93% of gold produced in the United States in 2013—experienced an accidental release of hazardous materials.[3]

Recent examples of hazardous releases and accidents include the following:

- The Haile Gold Mine in South Carolina has multiple water quality violations including releasing excessive amounts of thallium, a toxic metal, into a nearby creek in 2020.[4] The mine did not self-report the pollution until years after its operations began.[5]
- In 2015, an accident at a wastewater pond in Colorado released more than 3 million gallons of gold mining waste into the Animas River watershed, a primary source of drinking water for Colorado, New Mexico, Utah, and the Navajo Nation.[6]
- Accidents also threaten the health and safety of mine employees. In the U.S. in 2020, there were at least 797 injuries from accidents at metal mines.[7]

Cyanide, used to extract over 90% of gold mined in the U.S., is extremely toxic.[8] It is lethal to humans (even in small amounts) and has been used as a chemical warfare agent for millennia. Sub-lethal exposures may cause Parkinson's disease and other neurological disorders.[9]

ACID MINE DRAINAGE

Open-pit waste dumps can contain pyrite and other sulfides that are unearthed during the mining process.[10] Rainwater oxidizes these compounds, which acidifies the waste.[11] Acid mine drainage occurs when acidic waste escapes into the surrounding environment through runoff or infrastructure failures.[12] As it travels downstream, acid mine drainage leaches toxic metals from rocks into surface and groundwater resources, thereby posing a serious threat to human health and the environment.[13]

In Prince William County, Virginia, acidic drainage from an abandoned pyrite mine was found to have leached dangerously high levels of cadmium, copper, lead and zinc.[14] Each of these toxic metals accumulate in fish[15] and, if ingested in excess quantities, are hazardous to human health:

- Cadmium and copper can damage the lungs and kidneys and irritate the digestive tract.
- Lead damages the brain and kidneys and can cause reproductive harm.
- Zinc damages the pancreas and may cause anemia.[16]

AIRBORNE POLLUTANTS

Gold mining generates dust and airborne pollutants that are carried by wind into surrounding communities.[17] Soil contaminated with toxic metals poses a substantial risk to small children, who are more likely to accidentally ingest soil through crawling and playing, and who are physiologically more vulnerable to metal poisoning.[18] In addition, toxic metals present in soil may bioaccumulate in crops.

Exposure to small-particle pollutants, which travel much greater distances and are more harmful to human health than large-particle pollutants,[19] has been linked to:

- Heart attacks;
- Asthma;
- Decreased lung function;
- Respiratory symptoms, such as coughing or difficulty breathing; and
- Premature death in individuals with heart and lung disease.[20]

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