Impacts from Open Pit Cyanide Leach Mining on Water Quality, Fisheries, Private Landowners and Taxpayers

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Montana Case Studies

All five open pit cyanide leach mines in Montana have severe water quality problems that were not predicted by government or the mining companies when the mines were permitted.

These water quality impacts have harmed downstream landowners, fisheries and water supplies, and cost taxpayers millions in reclamation and long-term water treatment costs.

Water pollution problems include:
1. Chronic release of processing chemicals (cyanide)
2. Acid mine drainage
3. Metals Leaching
1. Cyanide Releases

Multiple cyanide releases have occurred at every major cyanide leach mine in Montana:

- At Zortman Landusky, over a dozen cyanide releases have occurred -- including 50,000 gallons spilled into Alder Gulch contaminating a community water supply.
- At Golden Sunlight, 19 million gallons of cyanide solution leaked when a tailings pipeline failed. Four domestic wells and a well at the veterinary clinic were contaminated. Golden Sunlight was sued by neighboring landowners. The company eventually bought out the landowners.
- At the Golden Maple Mine, a cyanide leak occurred with one stock watering spring and one domestic well affected. Two cows killed by drinking contaminated water.
2. Acid mine drainage

- Acid mine drainage is a severe problem at many gold mines because gold is often found in association with sulfide minerals (pyrite or “fools gold”).

- When sulfide minerals are unearthed during mining – and exposed to oxygen and water – they react to form sulfuric acid.

- The sulfuric acid can dissolve other metals out of the surrounding rock, which can runoff into nearby streams and rivers or seep into groundwater, if not controlled.
3. Metals Leaching

- Even if the mine doesn’t develop acid mine drainage, metals and other types of pollution (selenium, arsenic, copper, thallium, nitrates, cadmium, etc.) can leach from mine facilities into groundwater or run-off into neighboring streams or rivers, if not controlled.
System failures

- The standard liner system used by the mining industry - with a primary synthetic liner, a secondary liner, and a system for detection of leaks - has failed to protect surface or groundwater at all five open pit cyanide leach mines in Montana.
Other system failures

- Containment systems engineered to withstand a 24-hour, 100 year storm event, failed to protect against water quality impacts.

- For example, four separate storm events greater than the predicted 24-hr 100-yr frequency have occurred in the 25 years since the Zortman and Landusky mines were first operated. The results: overflowed leach solution impoundments and spills into ground and surface water.
A large open-pit gold mine located in the Little Rocky Mountains adjacent to the Fort Belknap Reservation – home to the Assiniboine and Gros Ventre Tribes. It was operated by Canadian company Pegasus Gold.
Despite assurances from the company and the government agencies that the mine would not harm water quality, it has had more than a dozen cyanide releases and contaminated surface and/or groundwater in nearly every drainage in the Little Rocky Mountains with acid mine drainage and toxic metals.
Health Risks

- In 1993, the Fort Belknap Tribes, the EPA and the State filed suit against the company for long-term water quality violations, charging that the mines' waste discharges present human health risks and that "the acidity of the discharges is killing fish and aquatic life."
In 1996, the lawsuit was settled requiring the company to pay penalties to the state, install water treatment facilities, increase water monitoring and provide funds for a public health study.

In 1998, the company filed for bankruptcy leaving the State and the Tribes with severe ongoing water quality problems.
Financial Liability

“This is a financial nightmare.”

- Mark Simonich, former director of Montana's Dept. of Environmental Quality and subsequent Director of the Montana Dept. of Commerce, speaking about Montana taxpayers having to pay for long-term water treatment.

“Water treatment will have to go on for hundreds of years, possibly forever.”

Since 1999, over 1 billion gallons of contaminated water have been collected and treated by just one of the water treatment plants. These plants will have to be operated forever to prevent the acid and toxic metals from the mine’s discharges from contaminating additional water supplies downstream.

In 2005, the State of Montana passed legislation to appropriate money from the state budget for many years to help pay for long-term water treatment.
Kendall Mine


- Families downstream of the mine used the water in the area for generations to water their crops and livestock.
Cyanide Releases

- During the permitting process, concerns were raised about impacts to water.

- The company repeatedly promised that no impacts would occur.

- Despite assurances, cyanide releases occurred soon after mining operations started.
Waste rock from the mine leached arsenic, thallium, and selenium into groundwater and surface water. Although the company installed a pump-back system to intercept the contaminated water and return it back to the mine, this caused downstream water shortages.

The State of Montana had to take administrative action against the mine to force it to replace the water with a clean source of water, which finally occurred 2 years later.
Private Property Impacts

Families who live downstream of the mine filed suit against Canyon Resources for damages to private property – finally settling the case in 2009.

Great Falls Tribune online

Kendall mine neighbors sue Kendall over mine discharge

Six landowners charge water, land left in ruin

By SONJA LEE
Tribune Staff Writer

Neighboring landowners are suing the defunct Kendall gold mine north of Lewistown, claiming their water supply has been devastated and their landscapes destroyed.

In the case filed last week in Fergus County, six families request actual damages from Canyon Resources Corp. and the C.R. Kendall Corp., and go on to ask that the court make an example of the companies by awarding punitive damages for their disregard of the environment.
Testimonials

"My water has been taken by this Canyon Resources-owned mine. Our spring has been contaminated. My family's health and livelihood are in jeopardy. What can our kids look forward to after three generations of our family ranching this land?"

-Alan Shammel ranches with his family next to the Kendall Mine.

"All I want is the water coming down that creek like it should, like it was before (the mine) went in there and took it all,"

-Ida Ruckman, whose property is just below the south end of the mine.
Beal Mountain Mine


- Although the mine was located next to a favorite trout stream, the company promised that there would be “no discharge of mine or process water to surface waters of the State of Montana.” Just two years after the mine began operating, the leach pad began leaking cyanide into surface and groundwater.

- Discharges from the heap leach pad violated cyanide standards in the neighboring stream for 3 months in 2001, 6 months in 2002, and at least 4 months in 2003.
Harm to trout streams

- In 1993, toxic levels of selenium began to leach into the trout stream adjacent to the mine. Testing showed that trout contain several times the level of selenium that biologists consider to be safe for the fish.
“Time Critical Removal”

- In July 2003, the Mine was pulled into a “time critical” clean-up program by the Forest Service because conditions “present a substantial endangerment to human health and the environment.”

- The Forest Service and State have spent $5 million in public funds to construct a water treatment system that will have to be operated indefinitely.
Long-term liability

"It's not something we're ever going to be able to walk away from."

-Warren McCullough, mining regulator for Montana's Dept. of Environmental Quality, referring to ongoing water pollution taxpayers will pay to fix at the closed Beal Mountain Mine near Anaconda in a July 14, 2002 Great Falls Tribune story.
Basin Creek Mine

- Listed as a federal Superfund site in 1999.
- After spending the $6.5 million reclamation bond, reclamation work was still needed and water pollution problems persisted. The Forest Service has spent $2 million, and the State of Montana has spent over $5 million in public funds, with another $1 million to be spent in 2007.
Montana passes cyanide ban

- In 1998, Montana citizens passed a ban prohibiting any future open pit, cyanide leach mines.
- Montana voters voted to uphold the ban by an even larger margin in 2004.
South Dakota – Brohm Mine

- The Brohm mine, which operated from 1998-1996, is located near Deadwood, at the headwaters of municipal water supplies for the northern Black Hills.
- In late 1992, the mine began generating acid mine drainage.
- In 1998 the company threatened to abruptly abandon costly water treatment at the Gilt Edge Mine after its parent company declared bankruptcy. Within 72 hours, pollution would have overtopped holding ponds and entered local streams and drinking water. Governor Janklow went to court, seeking to force the company to continue to treat the water to acceptable levels.
In February 2000, the Governor requested that the site be designated a Superfund site to provide emergency response, as well as long-term remedial cleanup. In a 2002 interview with the Federal Gazette, South Dakota state engineer Mike Cepak stated, “With this type of acid mine drainage, the main problem is it's a reaction that could last for centuries, so you have to plan for forever, almost.”

Well over $30 million in public funds has been spent on the mine thus far.
Colorado – Summitville Mine

- The Summitville mine is located at the headwaters of the Alamosa River. Although it was permitted as a “no-discharge” mine, the heap leach system overflowed in 1992, destroying all biological life in a 17-mile stretch of the Alamosa River.

- The company filed for bankruptcy, leaving cleanup costs to the public. According to the EPA, over $200 million - primarily public funds - have been spent so far.

- According to a 2005 report, the mine continues to discharge contaminated water due to limited storage and treatment capacity. Flows of contaminated water to the Alamosa River cause water standards to continue to be exceeded on a regular basis.

*Sign along the Alamosa River. Photo by the Environmental Protection Agency*