

Data Submitted (UTC 11): 6/4/2023 3:37:34 PM

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Comments: In 1991, residents were devastated to learn that mining operations near the headwaters of their local creek had discharged millions of tons of mine tailings since the 1870s. These tailings settled along the bank of the stream and into their fields and backyards.

And in those tailings were heavy metals, including mercury, cyanide, and arsenic, some of the most toxic contaminants that are carcinogenic and lethal at incredibly small amounts. They were in their wells, stock ponds, and irrigation systems.

Despite the environmental catastrophe, it would be 17 years before one resident would have their arsenic-laced soil removed. That's 17 years of raising livestock, gardening, and living on the land. 17 years of eating trout from the stream. 17 years of watching their children play in soil and water turned a weird greenish hue and full of mercury, copper, zinc, selenium, cyanide, and arsenic.

That's tragic, but these residents lived in some under-regulated country, right?

Think again. They are our neighbors from Whitewood, SD.

And the mine that let this happen? Homestake.

Homestake used mercury in their operations until 1971. The volumes of mercury used and lost to the waste stream in this process vary from an eighth of an ounce to almost half an ounce per ton of ore crushed with almost 50 percent of this volume lost to the entire waste stream. (Fox Consultants, Inc., 1984a)

Homestake also used cyanide since the early 1900s to process the lower grades of ore and increase gold recoveries. In addition to cyanide, the tailings also contained considerable quantities of arsenic, derived from minerals in the ore (Fox Consultants, Inc., 1984a).

These tailings remain along much of Whitewood Creek (Chadwick et al., 1997).

Reports indicate that in 1963, as much as 3,000 tons per day of tailings, together with 12,500 tons per day of contaminated water were discharged to Whitewood Creek (ISSI, 1998; Fox Consultants, Inc., 1984a).

That is an environmental catastrophe, and the federal government agreed. But Homestake has a long history in the Hills. Surely they would take action as soon as they found a problem, right?

No, of course not. Homestake was made aware by government agencies placing them on the interim National Priorities List at the request of the SD governor in 1981. The USEPA warned Homestake about liability due to the arsenic and other contaminants draining into Whitewood creek and people's back yards.

We don't know how long Homestake knew it was contaminating the water before they were notified, but we do know that in response, the mine used its vast financial resources to petition (twice). We also know that they didn't attempt to fix the problem, clean the water, or even bother to notify the locals.

Clean up for the impacted residents wouldn't start until a decade later, in 1991. And the Holsclaw property mentioned in the beginning wouldn't be considered safe until 17 years later, in 1998.

But what could have even been done? Homestake was ordered to clean the water and soil, but they evoked waivers based on the technical impracticability of remediating contaminated ground and surface waters. As anyone who studies water contamination will tell you, once the damage has been done there isn't much you can do, especially without money. And the Whitewood residents didn't have much of that.

The estimated cost of the remedial action at the time of the ROD was \$882,813, which includes an annual Operation and Maintenance (O&M) cost of \$12,000 for years 1 to 5 and \$6,000 for years 6 to 30 (USEPA, 1990).

You can put a price on the health of South Dakota residents, and it doesn't even reach \$1M.

The revised long-term remedy included excavation of 4,500 cubic yards of contaminated soil from 16 residential yards, disposal of the contaminated soil in an on-site landfill, institutional controls and surface water monitoring. Although the estimated daily intakes of iron, manganese, and silver in children exceeded the ADIs for the respective chemicals, the Environ Corp (hired by Homestake, check it out) concluded it did not pose meaningful harm to residents. That research conducted by Homestake was ever considered valid is as infuriating as it is nonsensical.

So what did the scientists who weren't in Homestake's pocket find out?

Surprise surprise, there is little research.

Hesse et al. (1975) reported mercury levels in double-breasted cormorants in fish-eating birds in the Cheyenne River, downstream of Whitewood Creek and the Belle Fourche River, that were significantly greater than concentrations observed in a control population from the Missouri River System.

Cattle deaths and sickness attributed to arsenic toxicosis have been documented within the Whitewood Creek floodplain (Bergeland et al. 1976) and downstream of Whitewood Creek along the Belle Fourche River (Tveidt, 1981).

Nobody bothered to test the fish (which residents commonly ate), but they did suspect that the contaminants destroyed the ecosystem on the riparian banks.

So what about the residents?

One of the few independent studies evaluated human health risks from exposure to arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel and selenium at six ranches along Whitewood Creek. Researchers found risks to adults and children exposed by inhalation of suspended tailings, incidental ingestion of soil, ingestion of groundwater, and ingestion of locally grown food items. Risks to children were evaluated from the incidental ingestion of soil. Both typical (average) intakes and worst-case (high end) exposure assumptions were used in the risk evaluations.

Superfund guidance mandates that the risk range for managing cancer risk at HAZWS is between one in one million ($1E-06$) and one in ten thousand ($1E-04$).

Adult resident cancer risks from arsenic were greater than $1E-04$ for both typical and worst-case exposure scenarios and risks to a child resident from the incidental ingestion of arsenic in soil were greater than $1E-04$ at 3 of the 6 (50%!) residential sites evaluated under the typical exposure scenario, and greater than $1E-04$ at all 6 residential sites based on worst-case exposure assumptions.

And USEPA officially declared that concentrations of arsenic exceeded background levels and resulted in unacceptable risks to current and future Site residents (USEPA, 1990).

But consider this: only six properties were tested. And only one property received more than 5 collected soil samples. I don't know about you, but if a mine dumped a bunch of arsenic in my back yard, I'd want someone to take more than a handful of samples. Whether or not these samples were taken from areas most likely to be contaminated is unknown.

But this isn't a one-off.

Ten years ago we had a huge rainfall event. Workers at WARF mine saw the leach pits-full of cyanide, arsenic, and other toxic chemicals-fill to the brim. Once they reached capacity, the contaminated water spilled over, draining into Spearfish creek.

Likely because of its long history in the Hills, gold mining is perceived as less harmful than other forms of mining. But the kind of highly advanced mining operations that now take place are disastrous to local populations. Acid is carried off the minesite by rainwater or surface drainage and deposited into nearby streams, rivers, lakes and groundwater and is considered one of the most serious environmental threats posed by mining, and it can devastate aquatic resources for generations.

A new study of U.S. gold mines' operating records reveals that major gold mines surveyed by the United States Geological Survey have spilled contaminants, and 74% polluted water with cyanide, arsenic, nitrates, or other hazardous materials.

74% of mining operations pollute local water.

Those of us who live in the Hills might wonder why a town situated in as beautiful of a location as Whitewood is...well...struggling. After the superfund designation, the value of people's homes and lands plummeted. Even today, property in Whitewood similar to that in Spearfish is worth half as much (check on Zillow).

The exploratory claim ranges from Big Hill to Spearfish Canyon to Hanna campground. This area is some of the most pristine and beautiful wilderness left in the world. It's where we fish, hunt, hike, and bike. Where we raise our children and teach them to care about the outdoors. Where ranchers graze cattle and people live.

This is our home.

Are we going to let history repeat itself? Will Spearfish and surrounding towns be the next Whitewood?

Are we going to let out-of-state operations poison our water,

Ruin our environment,

Destroy Spearfish Canyon, Little Spearfish, Big Hill, and Hanna,

All so that some outside company from South America and based in Colorado can make money?

If they find gold, do you think they'll stop mining just because of a little arsenic in the drinking water? Why should they care, they don't even live here.

According to the website for this operation, we sure as hell are. They state, "The project area is in a safe and mining friendly jurisdiction with highly developed infrastructure, an unbroken 145-year record of continuous gold mining."

That's a pitch to investors that says the residents of the Black Hills aren't going to protect their land. This is our chance to prove them wrong.