Midwest Mining Rush Threatens Water: Part I: Foreign-owned Mining Companies vs. U.S. Regulators

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Some of this nation's most pristine ancient forests, glacial wetlands and fresh water lakes are under threat from large, multinational mining companies that plan to extract billions of dollars in copper and nickel using methods untested in a water-rich environment. The Great Lakes Basin – America's largest supply of surface fresh water – faces the duel dangers of increasing prices for industrial metals and a failing economy in desperate need of good paying jobs. These economic realities have weakened efforts to protect the region.

In the upper Midwest, mining companies estimate there is the largest deposit of copper, nickel and precious stones in North America encased in nearly 5 billion tons of low-grade rock. The span of sulfide ore that harbors these vast amounts of metals and stones runs from the tip of Lake Superior's Duluth Complex through Minnesota's Arrowhead region. It borders the Boundary Waters Canoe Area Wilderness and Voyageurs National Park. It is underneath Wisconsin's acres of wild rice and Native American territorial lands and extends to Michigan's storied Upper Peninsula and then into Ontario, Canada. This rock, when exposed to air and water, sparks a toxic reaction that creates sulfuric acid.

Because the region suffers some of the highest unemployment rates in the nation, there is enormous pressure to let the mining companies come. While the region has been host to centuries of traditional mining, metallic sulfide mining is very different. The process involves removing one percent of metals from a sulfide ore body and discarding 99 percent of the remaining material. One of the best ways to describe this type of mining is to imagine traditional mining as digging the chocolate chips out of a cookie, while sulfide metal mining is more akin to extracting the sugar out of the cookie. And while that might work in arid Nevada, experts contend it is unlikely to have as good an outcome in the Great Lakes Basin, a region with the nation's largest concentration of surface fresh water.

"All the new mines that are proposed in Wisconsin, Michigan and Minnesota are sulfide mines. They are after the sulfides," explains Stratus Consulting scientist Ann Maest, Ph.D., whose research found that 90 percent of the time "when you have a combination of sulfide mining and water resources there is a high likelihood you will have water quality problems." Maest is an aqueous geochemist who studies water chemistry at mining and industrial sites.

There has never been a metallic sulfide mine that has not polluted water resources where water was present, according to opponents of proposed mines in all three states. Iron mining that has defined the region for more than a century adheres to a natural process where the taconite iron is bonded to oxide ores, whereas sulfide ore is bonded with copper and nickel. If the excavated ore, waste rock or pit walls are exposed to moisture and air, a sulfuric acid solution is created and causes acid drainage – think: battery acid – and while this alone is dangerous when it enters the water system, it also dissolves heavy metals that are present in the rock such as lead, zinc, copper, manganese, arsenic and mercury and carries them into the ground and surface water

requiring perpetual treatment over centuries. This metal load causes more environmental damage and is of greater concern than the acid drainage, according to the U.S. Forest Service.

The U.S. Environmental Protection Agency (EPA) has taken notice and expressed concerns because mines are not routinely required to test waste rock and tailings for acid rock drainage which can happen at any time throughout the life of the mine, including years after a mine closes. “Once acid rock drainage begins, the chemical phenomena continue for extremely long periods of time. Some of the most problematic mine sites on the Superfund’s National Priorities List are sites where acid rock drainage has taken place,” according to an EPA report from 1997 on the risks posed by Bevill wastes, certain mineral and mining wastes exempt from hazardous waste designation.

When acid reaches the water table or nearby streams, it changes the pH balance and harms and often kills aquatic life, animals, plants, and, ultimately, has the potential to harm people. There is a secondary problem. When the ore is processed – crushed and ground – it creates tailings (a slurry) and these tailings are pumped to a settling pond. The tailings in this slurry will have the same reaction to water and air creating a toxic slush and, while the ponds are often lined, they just as often leak. (Kennecott Utah Copper’s lined tailings pond near Salt Lake, Utah, failed and ended up contaminating the groundwater for 70 square miles impacting the drinking water of a number of communities.) The Great Lakes region is known for being dark and stormy. It has harsh, blizzard-laden winters. These conditions do not bode well for preventing a dynamic and noxious reaction to metallic sulfide mining.

“The formation of mine acid drainage and the contaminants associated with it has been described by some as the largest environmental problem facing the U.S. mining industry,” wrote Amy Boulanger and Alexandra Gorman in their 2004 report: Hard Rock Mining: Risks to Community Health.

Because no federal law forces mining companies to properly manage sulfide ore mining hazardous waste, large foreign conglomerates proposing this type of mining in the region have only to deal with state laws and state agents. The mining industry believes states are the best guardian of their own resources. They add that no state would issue permits to corporations applying to pollute the environment.

Photo: Phil Scoville

“Michigan and other Great Lakes states residents can be assured that only mining proposals that demonstrate compliance with applicable laws and regulations will receive their permits,” explains Laura Skaer, Executive Director of the Northwest Mining Association (NWMA).

Rep. Bart Stupak, the Congressman for the Michigan Upper Peninsula, disagrees. He wrote in his blog, “We should heed the lessons we have learned from the Gulf spill. Weak state regulations in place for sulfide mining are worthless without proper enforcement.”