



Save Lake Superior Association Fall 2018

Dedicated to the restoration and preservation of this Great Lake

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COPPER-NICKEL SULFIDE MINING PLANS DESIGNED TO FAIL ENVIRONMENTALLY (SAVE LAKE SUPERIOR ASSOCIATION POINT OF VIEW)

The millions claimed by global mining companies to have been spent on environmental review of proposed projects are actually spent designing their mining projects. The bulk of the development cost is expended upon basic exploration, extraction and processing, engineering, planning, and procurement. The methods of mining and processing sulfide ores are advanced globally and applied locally. Environmental review costs consist of modifying the project designs to meet local pollution standards. The lower the standards, the lower the additional cost.

The sulfide ore bodies in northeastern Minnesota are very low grade. The copper equivalent metal content is roughly 1%. This means that 99% of the hard rock is waste and left behind at the mine site as mine and process waste. Well-defined metal deposits are distributed as specks in billions of tons of hard sulfide ore. Dealing with the billions of tons of waste is a project cost and not assignable to environmental review. The waste contains inherently reactive, toxic material. Exposing the crushed rock to air and water produces sulfuric acid, sulfates and iron pyrite among many other compounds. The acid and sulfates, in turn leach toxic minerals such as copper, nickel, cobalt and manganese out of mine waste at dangerously high levels. The sulfate becomes part of the mercury methylation process which eventually poisons fish and children.



THERE IS NO FINANCIAL VEHICLE TO FUND PERPETUAL POLLUTION FROM SULFIDE MINING

So, in order to generate maximum profits the cost associated with moving and disposing of crushed hard sulfide ore must be "controlled". From the environmental perspective these mining project plans must be designed to fail. The waste is reactive and the leaching process perpetual. The surface area of the reactive material becomes infinite during the crushing process. Acidification, leaching and resulting water pollution then becomes perpetual. There are no relevant examples of this process ever being prevented. Thus pollution must be mitigated and reduced to local environmental standard levels for as long as the mining and processing continue. Then the mitigations will begin failing and water pollution will increase.

“ADAPTIVE MANAGEMENT” SCHEMES REPLACE PRECAUTIONARY MEASURES IN PERMITTING

“Mitigation” means to lessen in force or intensity. It does not mean “prevention”. Federal and state government sets limits on the discharge of elements and compounds that are toxic to humans and their environment. Historically, these limits have been determined by trial and error. Limits are now set by a process called “science based risk management”. Generally, if analysis shows that less than a statistically based number in 10,000 would die from exposure to the pollutant, a pollution permit may be granted. Here science, mathematics, health studies and subjectivity become tools of economics and politics. Mitigation becomes a permitting tool and compliments the process of “risk analysis”.

MINING BENEFITS MAKE BETTER NEWS THAN ITS COSTS

The process of softening up the “majority” of the target population begins early and is intentional. Of the things concerning the “majority” in most prospective mining districts, water pollution does not rank high on the list.



The financial benefits of the mining projects are headlined in all communications sources and most outlets become dependent upon income from this corporate advertising. The potential cost of implementing mitigation schemes, both social and environmental, is underestimated, back loaded and becomes a huge public liability. This population is “captured” by a process consisting of political influence, jurisdictional control, management of regulator concerns, and harmonizing messages with local constituents who will speak for the company.

Even though the concepts are not mutually exclusive, there is a difference between mollification of the public concern about water pollution and mitigation of the water pollution sources. The public is first convinced that the environmental review process is too cumbersome and must be “streamlined”. This is a pseudonym for weakening water quality standards which in most cases are already sufficiently weak to permit harmful pollution. Key agencies are vilified to the extent that politicians secure concessions in permits or have statutes written or changed to make the mitigation process even more affordable. Those who do not cooperate are not rewarded.

ACID MINE DRAINAGE THREATENS HUMAN AND AQUATIC LIFE

In northeastern Minnesota a major threat from copper-nickel (sulfide) mining is known to be a fundamental chemical process called acid leaching or acid mine drainage. Past experience with sulfide ore waste from the old Dunka Pit and other exploration projects has demonstrated that water and air react with iron-sulfide waste material to produce sulfuric acid, sulfates and iron pyrite. The acid and sulfates either leach toxic elements out of the surrounding material or methylate elemental mercury in water to create a compound harmful to fish and human fetuses. The limits for sulfates is set at 10 mg per liter of water in Minnesota and is routinely ignored by state agencies and mining companies in permitting. Elemental copper, nickel, cobalt, manganese, etc. also have

federal discharge limits that are often exceeded or excused through the state permit variance process. Pond leakage, ground faults, project failures and corporate bankruptcies introduce incalculable risks into “science-based risk management”. It’s a real “Monte Carlo” process.

HISTORICAL DATA “NOT GOOD ENOUGH” TO SUPPORT THE SULFATE STANDARD

State agencies and corporations are also developing overall strategies for “managing” sulfate discharges from current taconite processing waste ponds. Subsequent application to discharges from copper-nickel disposal sites is also an objective, which is to show that mercury methylation and wild rice destruction cannot be directly correlated with sulfate levels in wild rice waters. This work is being compressed into the current mine permitting schedule requirement of two years. A former agency employee, John Moyle, spent 30 years demonstrating that water polluted with more than 10 mg per liter of sulfates does not support normal wild rice production. The same agencies have given up trying to reduce the emission of elemental mercury into the St. Louis River. Sulfates have a statutory limit which is being attacked (streamlined) through the impressive array of science-based methods. This is avoidance methodology rather than precautionary methodology and a misuse of science.

“RISK MANAGEMENT” IS MORE FINANCIALLY THAN SCIENTIFICALLY BASED

In all cases the mitigation of dissolved metals and sulfates in solution due to precipitation, processing, sub-aqueous storage, natural fractures or earth movement is expensive and an inexact science at best. Science-based risk management is a misnomer. The process is really financially-based risk management. Mining the Duluth complex is seen as being inevitable. The mantra is “when, not if”. The wishful thinkers and those heavily financially or intellectually involved call it a “stewardship question”. This redefinition of conservation concepts is part of the “population capture” methodology sweeping the globe.

LONG-TERM ENVIRONMENTAL FUTURE OF LAKE SUPERIOR AT HIGH RISK

If permits to mine and pollute were issued based upon the “mitigation concepts” being proposed, the St. Louis River would deteriorate into a drainage ditch and Lake Superior into a polluted shipping canal. Northeastern Minnesota would truly become a mining district glowing in unison with the metropolis to the south. The Boundary Waters Canoe Area Wilderness has similar sad prospects. Tall pines would protrude out of a smoky haze with canoes slicing through lifeless waters, a macabre setting for a mystery novel; who done it?

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THE “MAJORITY” MUST DEMAND PROOF THAT SULFIDE MINING IS SAFE

The pollution mitigation methods proposed for the control of water pollution from sulfide mining processing and extraction are unproven schemes to assure the public that copper-nickel and related mining will not harm public health or the environment. This has never been accomplished anywhere in an environment equivalent to that of northeastern Minnesota. After the Flambeau Mine environmental failure in Wisconsin, the state passed a law requiring that a moratorium be placed on sulfide mining until it could be shown that at least one similar mine did not discharge polluted water after 10 years of closure. That mine is still leaking pollutants into the Flambeau River. The earth is covered with waters polluted by abandoned sulfide mines. Check out Ghana. The Environmental Protection Agency has determined that this type of pollution poses the greatest threat to our waters of any industrial activity. Minnesota needs a moratorium on sulfide mining so our ingenious

entrepreneurs can demonstrate effective acid mine drainage control that would be effective and affordable for centuries. **SLSA**

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