Sulfide Mining Fact Sheet

What is sulfide mining?

"Sulfide mining" refers to mining metals that are found in sulfide-bearing rock. Mining metals in sulfide ores can be done in two ways: in underground mines where the ore deposits are very deep, and in open-pit mines when the deposits are relatively shallow.[i] Once the metals have been separated from other rock, the mining operator must find ways to dispose of the substantial waste rock.

Sulfide mining is different from traditional iron ore mines and taconite mining (sometimes referred to as ferrous mining). Sulfide mines have never been operated safely – no mine of this type has been known to have operated and closed without polluting local lakes, rivers, or groundwater.[ii]

PolyMet NorthMet is the first sulfide mining project to be proposed in Minnesota.[iii] Twin Metals Minnesota has also proposed a mine near the Boundary Waters Wilderness, but this mine is not yet close to the permitting process.

According to a non-partisan poll produced by the Minnesota Environmental Partnership in 2017, 72% of Minnesotans are concerned about runoff from mines threatening to pollute the Boundary Waters and Lake Superior.[iv]

PolyMet NorthMet Mine

About the Project:

The proposed PolyMet NorthMet open pit copper-nickel mine would be Minnesota's first non-ferrous mine. The mine would be located near Virginia, MN in a water-rich environment. This mine would be dug in wetlands, peatlands, and the headwaters of the St. Louis River, the largest tributary to Lake Superior. PolyMet would be situated in Ojibwe Ceded Territory, and would be upstream of drinking water for the Fond du Lac Reservation and the City of Duluth.

The mine would include three new open pits, permanent and temporary waste rock heaps, and a permanent tailings waste dump containing highly toxic waste.

Environmental, Health, and Financial Concerns:

- PolyMet would use wet storage for mine waste. In the wake of the Mount Polley disaster, experts suggest only utilizing dry storage to prevent mine waste spills.[v]
- PolyMet's project proposes to reuse a 40 year old dam from taconite mining, and store sulfide mining waste on top of taconite mining waste.[vi]

- According to PolyMet's own Environmental Impact Statement, ongoing water treatment would be required for the site for 500 years. The treatment would likely need to be continued beyond the next 500 years, but PolyMet's modeling doesn't project that far.[vii]
- Despite a petition from the Minnesota Academy of Family Physicians, a health impacts assessment was not included in the Environmental Impacts Assessment or in the record for the permitting of the project so far.
  Possible negative health impacts include:
  - Increased mercury contamination of fish and wildlife, and therefore greater risk of mercury contamination in people, especially infants.
  - Pollution of municipal drinking water and wells
  - Increased risk of cancer for on-site PolyMet workers.[viii]
- Clean up in case of a spill of mine waste often falls to taxpayers. PolyMet's financial assurance package (the funding they have put aside in case of a need to clean up mine waste). State officials have estimated that PolyMet would need to put up a financial assurance package of over $1 billion, but in the Permit to Mine proposed a package of $75 million for the first two years of construction, rising to $544 million per year once the mine were to open.[ix]

Land Exchange:

PolyMet's proposed mine site includes 6,650 acres of Superior National Forest Land. PolyMet has the mineral rights beneath this land, but the U.S. Forest Service maintained surface rights. PolyMet petitioned for a land exchange. In return for the 6,650 acres of Superior National Forest Land, PolyMet proposed exchanging 6,690 acres of non-federal lands at the rate of $550 per acre. On January 9, 2017 the U.S. Forest Service issued a Record of Decision to transfer the property.[x] When the Record of Decision was announced, four separate lawsuits were brought against the decision.

The exchange undervalued the land, as it only considered the use of the land for timber, not for the much more economically valuable mineral lands.[xi]

In July of 2017 Congressman Nolan introduced H.R. 3115: Superior National Forest Land Exchange act of 2017. The bill would bypass questions of legality and force the U.S. Forest Service to complete the land exchange. The bill passed the U.S. House of Representatives on November 28, 2017.[xii] A companion bill has not yet been introduced in the U.S. Senate.

Twin Metals Mineral Leases

Twin Metals Minnesota held the mineral leases to mine copper and nickel near the Boundary Waters Canoe Area Wilderness. In December of 2016, the Forest Service and Bureau of Land Management (BLM) denied the renewal of Twin Metals' mineral lease, and moved to segregate the lands from the mineral leasing process for two years while the Forest Service and BLM conducted an environmental analysis.[xiii]

The Forest Service and BLM opened a comment period in 2017 to gather input from Minnesotans about what should be included in the environmental study. There were three listening sessions, with over 4,000 participants.

2017 MINER Act and Trump Administration Reversal of Mineral Withdrawal:

The Twin Metals Mineral Leases is primarily within federal jurisdiction. As with PolyMet, Minnesota congressmen have introduced federal legislation that would impact the Twin Metals mine.

Rep. Emmer introduced H.R. 3905: The MINER Act on October 2, 2017, and was passed in the House on November 30, 2017.[xiv] This proposal reinstates the expired Twin Metals mineral leases, prohibits federal agencies from withdrawing mineral leases unless approved by Congress, and exempts MN from the process to establish national monuments in the state.[xv]

On Friday, December 22, a legal opinion was published by the U.S. Department of Interior concluding that the BLM had "erred in concluding they had the power to grant or deny the Twin Metals mineral leases."[xvi] This means that the BLM and the Forest Service will need to reconsider the decision to withdraw the mineral leases, not that they are automatically granted to Twin Metals.

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Sulfide Mining and Minnesota's Wild Rice Sulfate Standard

Impact of Mining on Sulfate Levels in Minnesota

The type of pollution that comes from sulfide mining is particularly dangerous to wild rice. Our state grain is extremely sensitive and more vulnerable to pollution and habitat loss than other species. Protecting wild rice is an environmental justice issue, as it has great significance as a sacred food for the Ojibwe people, and the ability to harvest wild rice is an essential treaty right.

Among the substances released by copper-nickel sulfide mining are: mercury air emissions, sulfate discharges, copper, nickel, manganese, iron, aluminum, and arsenic, as well as solvents and processing wastes.[xvii] Two discharges in particular are detrimental to the health of wild rice beds: Sulfate and Mercury. It is because of these discharges that Minnesota initially passed a Wild Rice Sulfate Standard.

Science Behind Minnesota's Wild Rice Sulfate Standard

- John Moyle spent years studying the impacts of sulfate on wild rice, and found that wild rice will not grow in waters with a sulfate content greater than 10 parts per million.[xviii]
- High sulfate levels are capable of destroying wild rice beds. A recent study from the MN DNR and MPCA confirmed these results.[xix]
- Sulfate in waters is converted into sulfide by bacteria – which is poisonous to almost all living organisms. Wild rice is particularly sensitive to sulfide, and is one of the first species to be impacted negatively.[xx]
- Sulfate increases mercury methylation in sediment, which leads to accumulation of mercury in fish and wildlife.[xxi]
- When humans ingest that fish and wildlife, it can lead to accumulation of mercury in our blood streams. This is particularly dangerous for infants and children. In Northeast Minnesota, 1 in 10 infants are already born with unhealthy levels of mercury in their bodies.[xxii]
- Limiting sulfate discharges in water therefore both protects wild rice and prevents further mercury methylization and accumulation of mercury in wildlife and humans.[xxiii]

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