



Potential human health effects of the PolyMet project

More than 10 years-worth of careful analysis to identify and understand the potential health related issues associated with the NorthMet Project were performed as part of the environmental review process. The results, found in large part in the NorthMet Project Final Environmental Impact Statement¹ and supported by the Minnesota Department of Natural Resources' Adequacy Determination, affirm that the project is capable of operating within state and federal health and safety parameters and with no harmful effect on human health. These details are being further evaluated as part of environmental permitting through air and water evaluations by the Minnesota Pollution Control Agency.

Will the project increase mercury to dangerous levels, including mercury levels in fish?

No. In fact, it will lead to a *net reduction* in overall mercury levels to the downstream St. Louis River. This is because we will discharge treated water with a mercury concentration at or below water quality standards for mercury while also cutting off mercury load that is currently contributing from the former iron ore mining operations. (See our separate Mercury Fact Sheet for more details.)

The Final Environmental Impact Statement specifically says “sulfate and **mercury** loadings, two key constituents of concern, are predicted to **decrease** overall as a result of the NorthMet Project Proposed Action.”² (Bold type added.)

The effects of the NorthMet Project on nearby surface waters, including the St. Louis River, were assessed in separate studies and also showed no reasonably foreseeable effects on:

- Surface water mercury concentrations
- Methylation of mercury
- Fish mercury concentrations

Because of the project's energy demand, will it increase fossil fuel use and the associated contaminants from power plants?

Because no new electrical generating capacity will be needed for the project, there will be no measurable increase in regulated pollutants related to power generation above currently permitted levels. Further, Minnesota Power, the energy provider for the project, is dramatically changing the balance of its energy supply away from coal and toward natural gas and renewables. This will result in less coal-related emissions generated as Minnesota Power serves its customers, including PolyMet. Potential health effects from coal combustion do not change as a result of the NorthMet Project, because they are included in estimates of background risks for the project area.

Will the project create air pollution that will affect human health?

No. Results of a human health risk assessment conducted in 2013 for the project, which followed the Minnesota Pollution Control Agency's air emissions risk analysis process, showed that:

- “Air pollutants with risk guideline value for assessing human health effects were all predicted to be at levels below state and federal risk guidelines.”³ Potential health risks

¹ NorthMet Mining Project and Land Exchange Final Environmental Impact Statement, Nov. 2015. Ch. 5.

² FEIS p. 6-32.

³ Minnesota Department of Natural Resources Record of Decision on the NorthMet Project Final Environmental Impact Statement, p. 49

from particulate metals including nickel, manganese, arsenic and lead did not exceed guideline values set by the Department of Health. The particulate metals were assessed using the most recent toxicity data for each chemical.

- Chemicals potentially associated with the combustion of natural gas and diesel fuels also were assessed for multi-pathway risks in both the mine and plant site air emissions risk analysis (AERA) which was done under the supervision of the MPCA. The potential risks were found to be well below guideline values.
- These air emissions risk analyses results are being re-evaluated as part of the Minnesota Pollution Control Agency's air permitting program to confirm the results remain below the agency's guideline values prior to the issuance of an air permit.

Will the project pollute nearby residential wells or otherwise contaminate drinking water resources in the area?

No. Because the project has the potential to affect groundwater and surface water hydrology and quality in both the Partridge River and Embarrass River watersheds, PolyMet has made great efforts to understand and quantify these potential effects and incorporate mitigation strategies into the project. For example:

- Several domestic wells located about one to two miles from the existing NorthMet tailings basin and within the Embarrass River watershed are routinely sampled as part of a monitoring program to establish baseline data related to the potential health impacts from tailings seepage. (Tailings have existed on the project site since the 1950s.) The monitoring data show that the existing site has had no effect on the residential wells. Concentrations of various chemicals, including chloride (as a marker for tailings basin influence), sulfate, aluminum, arsenic, boron, iron, manganese and nickel, all were within the range of background concentrations for northeast Minnesota⁴ or within the range of background concentrations reported for groundwater and drinking water aquifers.
- The tailings basin is specifically designed to contain seepage during NorthMet operation and over the long term, primarily through the installation of a seepage capture system.
- Specific water quality modeling indicates that the project will not cause or contribute to any exceedances of groundwater standards or evaluation criteria (which include drinking water criteria).⁵
- Based on the analysis, the Final Environmental Impact Statement found that no discharges of water or seepage from the NorthMet Project Proposed Action would affect off-site domestic water wells or public sources in the area.⁶
- As part of the Minnesota Pollution Control Agency's NPDES/SDS water permitting process⁷, PolyMet has assessed the potential impacts to groundwater. The agency is reviewing this information, which will require confirmation of these results, including

⁴ Compilation of data from Final Environmental Impact Statement Table 4.2.2-22, (p. 4-124 to 125) and Table 4.2.2-24, p. 4-129 to 4-130 and Table 4.2.2-25 (p. 4-130 to 131)..

⁵ FEIS, Table 5.2.2-38, p. 5-191.

⁶ FEIS, p. 7-16.

⁷ Minnesota Pollution Control Agency Water/Wastewater (NPDES/SDS) Permits #1.02/July 2002: "An NPDES/SDS Permit is a document that establishes the terms and conditions that must be met when a facility discharges wastewater to surface or ground waters of the state. The permit is jointly issued under two programs. The National Pollutant Discharge Elimination System (NPDES) is a federal program established under the Clean Water Act, aimed at protecting the nation's waterways from point and nonpoint sources. In Minnesota it is administered by the Minnesota Pollution Control Agency (MPCA) under a delegation from the U.S. Environmental Protection Agency. The State Disposal System (SDS) is a state program established under Minn. Stat. § 115. In Minnesota, when both permits are required they are combined into one NPDES/SDS Permit administered by the state.

long-term groundwater monitoring to verify there are no exceedances of groundwater standards as a result of the NorthMet Project.

Are infants, children and other vulnerable population groups at greater risk?

No. The human health risk assessment process uses conservative estimates of potential risks, purposely overestimating them so as to be protective of sensitive populations such as children and the elderly. Similarly, toxicology values used in the respective risk assessments for the project for both potential non-cancer and cancer risks, were developed to be protective of human health and particularly for sensitive populations. These values also account for early life exposures for specific chemicals. Even when accounting for higher rates of fish consumption by subsistence fishers, the project did not exceed guideline values for potential health risks.

Are workers or the public at risk from asbestos or silica exposure due to the project?

No. Mine sites are required to meet federal occupational health and safety requirements established by the federal Mine Safety and Health Administration, the National Institute for Occupational Safety and Health, and the Occupational Safety and Health Administration. These requirements include permissible exposure limits for a number of air pollutants including respirable dust, mineral fibers, and crystalline silica. These exposure limits are set at concentrations that are protective of worker health. The company also will be required to conduct regular surveys to determine compliance and adequacy of control measures, and also to have plans in place to address emergency situations. These requirements collectively and individually will serve to protect both workers and the public from exposure.

In addition, non-cancer chronic inhalation risks for workers from crystalline silica were evaluated at both the NorthMet mine site and plant site. They were found to be well below guideline levels. Recent scientific studies, including a University of Minnesota Taconite Study (2013)⁸ of the Iron Range, show that asbestos fibers are not a risk to local communities or to workers. Overall, amphibole mineral fibers were found to represent a relatively small percent of the mineral fibers associated with the processing of NorthMet Deposit ore.⁹

PolyMet will install state of the art control equipment in the crusher/concentrator to reduce fine particle emissions, further limiting the risk of potential exposure to mineral fibers. MPCA's air permitting process will evaluate the effectiveness of this equipment for controlling amphibole fiber emissions, which will be required prior to the issuance of an air permit for the NorthMet Project.

Is a formal Human Health Impact Assessment of the project necessary?

No. The preparation of an HIA is not required under the National Environmental Policy Act or the Minnesota Environmental Policy Act. In this case, information considered by the co-lead agencies (Minnesota Department of Natural Resources, U.S. Forest Service and U.S. Army Corps of Engineers) in connection with the project's Final Environmental Impact Statement fully addresses the concerns that would be addressed in an HIA. In other words, concerns raised by health-related groups who are calling for a formal HIA to be conducted on the project are redundant given the work already done for the EIS.

⁸ Minnesota Taconite Workers Health Study. <http://taconiteworkers.umn.edu/index/html>

⁹ FEIS, p. 7-15