



Potential human health effects of the PolyMet project

Before the PolyMet Mining NorthMet Project can obtain permits to build and operate the mine and processing facilities, comprehensive evaluations are conducted to identify and understand the potential health related issues associated with the project. These studies are performed as part of the environmental review process conducted under the National Environmental Policy Act (NEPA) and Minnesota Environmental Policy Act (MEPA) and can in large part be found in the NorthMet Project supplemental draft Environmental Impact Study.¹

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

No. The preparation of an HIA is not required under NEPA or MEPA. 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 supplemental draft EIS fully addresses the concerns that would be addressed in an HIA. In other words, concerns raised to the agencies by health-related groups who are calling for a formal HIA to be conducted on the project are redundant and unnecessary given the work already done in the EIS context.

Will the project increase mercury levels 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 from existing background levels. Potential incremental cumulative mercury risks from the project by eating fish were assessed for five lakes near the project using the Minnesota Pollution Control Agency's Mercury Risk Estimation Method. This is a common evaluation method and was performed consistent with other Minnesota projects. The analysis included estimated emissions from the nearby Mesabi Nugget Large Scale Demonstration Plant (about 75 lbs. per year) and the project (about 4.8 lbs. per year). It showed that the potential incremental changes in fish mercury concentrations are small and not statistically distinguishable from background levels – and that potential incremental fish consumption risks are below guideline values.

The effects of the mining operations 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

Importantly, because the project will address issues from previous mining operations at the site, the SDEIS says specifically “[S]ulfate 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.) This means that the net result of the NorthMet Project is an overall decrease in sulfate and mercury in the St. Louis River.

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

No. 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 current 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 pollution generated as MN Power serves its

¹ NorthMet Project Supplemental Draft Environmental Impact Statement Ch. 5.

² SDEIS p. 6-18.

customers, including PolyMet. Potential health effects from coal combustion do not change 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 multiple pathway human health risk assessment conducted in 2013 for the project, which followed MPCA's air emissions risk analysis process, showed that:

- Potential health risks from particulate metals including nickel, manganese, arsenic and lead did not exceed guideline values. 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 the both the mine and plant site air emissions risk analysis (AERA) which were done under the supervision of the MPCA. The potential risks were found to be well below guideline values.

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 effort 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 were 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 Minnesota³ 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 construction of underground cutoff walls and by covering the tailings basin with a layer of bentonite material after closure to inhibit seepage.
- 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).⁴

Are infants, children and other vulnerable population groups at greater risk due to the project?

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.

³ Compilation of data from SDEIS Table 4.2.2-22, p. 4-108 to 4-109 and Table 4.2.2-24, p. 4-112 to 4-11.

⁴ SDEIS, Table 5.2.2-38, p. 5-169.

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 (MSHA). 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)⁵ of the Iron Range show that asbestos fibers are not a risk to local communities or to workers. The SDEIS finds “the probability of amphibole asbestos being released to the air” as a result of the project “is very low.”⁶ 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.

⁵ Minnesota Taconite Workers Health Study. <http://taconiteworkers.umn.edu/index/html>

⁶ SDEIS, p. 5-440.