

Final report links exposure to taconite mine dust and mesothelioma

THE FINAL REPORT on a University of Minnesota study investigating the health of Minnesota's taconite industry workers shows an association between mining dust exposure and cases of a rare cancer and, in response, urges increased monitoring and disease prevention initiatives for employees.

Findings from the project, called the Minnesota Taconite Workers Health Study, were released December 1.

"Mining is of great importance to the people of Minnesota and to our state's economy," says School of Public Health Dean John Finnegan, Ph.D., who led the project with principal investigator Jeffrey Mandel, M.D., M.P.H. "The state invested significant funds and time into the [study], and we felt it was important to indicate follow-up activities in order to continue to improve the health and safety of all miners moving forward."

The study was launched in 2008 at the request of the state Legislature after the Minnesota Department of Health detected an unusually high number of cases of mesothelioma, a rare cancer of the lung lining, in Minnesota taconite workers. (In February, the department announced that another 21 cases had been identified, bringing the total number to 101 of about 69,000 people who worked in the industry from the 1930s to 1982.)

The study sought answers to three major questions:

Is working in the taconite industry associated with mesothelioma and/or other diseases?

The study found that taconite workers had higher than expected death rates from three diseases when compared with the general Minnesota population:

mesothelioma (2.77 times higher than the expected mortality rate), lung cancer (1.16 times higher than expected), and heart disease (1.10 times higher than expected). However, working in the mining industry was not believed to be the predominant cause of the lung cancer or heart disease.

What factors, particularly dust from taconite operations, are associated with mesothelioma and other respiratory diseases?

Researchers found that the length of time people worked in the mining industry was specifically linked to higher levels of mesothelioma. For each year in the industry, researchers noted a 3 percent increase in a worker's risk of developing mesothelioma.

Specifically, exposure to a fiber-like mineral—referred to as elongate mineral particle (EMP)—was linked to mesothelioma. The investigators determined EMP exposure could be from either dust generated in mining and processing or from its most widely known source, commercial asbestos exposure.

Are workers and their spouses at risk for common dust-related lung diseases?

A health screening of current and former taconite workers and their spouses in 2010–11 showed X-ray evidence of dust-related scarring of the lung and lung lining (pleura) in workers but not in their spouses. ^[M18]

Read the full report at z.umn.edu/taconitestudy.

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Aerial view of a taconite mine near Eveleth, Minnesota