



# Air Dispersion Modeling for Northern Metals

Air dispersion modeling is a tool used by risk assessors to predict airborne pollutant concentrations from proposed projects over selected geographic areas. The information provided by dispersion modeling is important to governmental agencies tasked with protecting and managing ambient air quality, and to determine whether existing or new industrial facilities are or will be in compliance with state and federal air quality standards.

Over the past several months the Minnesota Pollution Control Agency (MPCA) has looked at air modeling results for Northern Metals in north Minneapolis to determine a fine-particle emission rate that complies with the federal 24-hour ambient standard for fine particles. The models help identify effective control strategies to reduce emissions of harmful air pollutants. The federal 24-hour standard for fine particles was created to protect humans from potential cardiovascular and respiratory impacts when these small particles are breathed in. The federal 24-hour ambient fine particle standard is  $35 \mu\text{g}/\text{m}^3$  (micrograms per cubic meter of air).

The MPCA has done extensive modeling for the Northern Metals Environmental Assessment Worksheet (EAW) and found:

- Modeling with Northern Metals' emission rate at 4.2 lb/hr and 3.6 lb/hr both show emissions from the facility would exceed the federal ambient 24-hour fine particle standard.
- Modeling with Northern Metals' emission rate at 1.83 lb/hr shows that the facility complies with the federal 24-hour ambient fine particle standard.
- The most recent modeling, with an emission rate of 1.83 lb/hr, is consistent with the modeling results presented in the Findings of Fact for the March 26, 2012 MPCA Citizens' Board Meeting.

One factor that played a significant role in the MPCA's final recommendation of a fine-particle emission rate of 1.83 lbs/hr is how background concentrations are factored in. The MPCA and Northern Metals explored alternative methods to determine a background value but the final modeling used a background concentration from a single ambient air-quality monitor located at East 27<sup>th</sup> St. and 10<sup>th</sup> Ave South in south Minneapolis. The final methodology used in the analysis is consistent with U.S. Environmental Protection Agency guidance. The MPCA believes this is the most representative air monitor for North Minneapolis, and establishes a fine-particle background value of  $30 \mu\text{g}/\text{m}^3$ . This was the same background value that was used in MPCA's air modeling of Northern Metals in the beginning of 2012. This monitor also has recorded the highest levels of fine particle measurements for Hennepin County.

The MPCA and Northern Metals also included other nearby sources of fine particles in the modeling for the EAW. The result of adding nearby sources indicated there is a potential exceedance of the fine-particle standard to the northwest of the Northern Metals location. The largest contributors to the potential exceedance are GAF Industries and the background level of  $30 \mu\text{g}/\text{m}^3$ . To address this potential exceedance, MPCA air permitting staff are working with GAF Industries and other nearby sources, including Cemstone and Aggregate Industries, to understand the fine-particle emissions from these facilities and to consider changes to the permits for these facilities. The MPCA will also evaluate the

placement of a fine particle monitor in the area to better understand the fine-particle levels in this part of Minneapolis. In conducting this modeling, the MPCA used very protective assumptions and, based upon our review of nearby monitoring data and our experience with fine-particle modeling, we believe the modeled is overestimating fine-particle levels in the area.

The MPCA is confident that with a particulate matter emission rate of 1.83 lbs/hr, Northern Metals' emissions will not exceed the fine-particle standard.

**For more information**

For more information on air dispersion modeling for Northern Metals, contact Frank Kohlasch at 651-757-2500 or [frank.kohlasch@state.mn.us](mailto:frank.kohlasch@state.mn.us).