



DUST CONTROL TECHNOLOGY



MIDWEST INDUSTRIAL SUPPLY



SUPERIOR HYDROSEEDING

Challenges in Dust Control

There's no shortage of sites that need dust control these days.

BY JANET AIRD

A Haul Road in Iowa

At the SSAB electric arc furnace in Muscatine, IA, huge forklifts called coil haulers transport tons of steel coils from the mill to the yard, and then from the yard to the shipping area.

"We have permits and permit limitations for paved and unpaved roadways," says Tom Sanicola, the company's environmental manager. "One of our concerns was that during transport a lot of dust was being generated because of the equipment. It needed to be controlled as much as possible."

The mini-mill, which is owned by a Swedish company, can produce about 1.25 million tons of steel coil and plate per year—from commodity steels to very high strength—for equipment for companies including John Deere and Caterpillar. It sits on about 450 acres of the 2,200-acre property, which drops down a bluff to the Mississippi River.

It gets windy at times, and although the soil isn't particularly fine, there's a lot of peripheral dust. The mill is in a farming area, and its roads are prepared with slag, a byproduct of steel making that cools into a coarse aggregate. The dust the coil haulers stirred up used to waft into the workshop where the coils are made.

It isn't easy complying with the Iowa Department of Natural Resources (DNR) air-quality control permits, Sanicola says. "For the most part, they're permits for our facility," he says. "They put limitations in there that are hard to test to."

Some states require permittees to employ best management practices (BMPs),

such as sweeping, vacuuming, or the use of a dust control product, to show they're managing dust on their roadways. The SSAB mill had to perform testing and maintain the BMPs for the roadways.

This is difficult for a number of reasons, Sanicola says. The test method is undefined, and very few labs do the testing. The permit provides a single, consistent number to comply with, but the testing is very dependent on the conditions at the time, which change, for example, depending on when and how much it last rained, how much loading there was, how and when the road was paved, and even how the sample is collected.

The company chooses when to do the testing, but the permit states that it must be done under worst-case conditions, which also can be difficult to define. It's usually midwinter, when the roads haven't been watered or swept, although the permit allows the company not to treat the roads if the temperature is below 35°F.

"It's basically just a snapshot in time," he says. "Depending on the conditions, we can get very high or very low numbers."

Traditionally the company had paved its roads with asphalt, Sanicola says. There are a number of problems with asphalt paving, though. In hot weather, it gets soft, resulting in ruts and tracks. In hot sun, volatile compounds in the asphalt evaporate; the surface oxidizes and becomes brittle. In cold weather, the surface cracks. In addition, at the mill, the weight of the equipment simply tore it up.

"We came across Midwest and they suggested Road Pro NT," he says. "We're



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trying to use it essentially as a BMP to reduce dust loading as much as possible. We've been using it for approximately three years."

Road Pro NT, from Midwest Industrial Supply Inc. in Canton, OH, is a polymer-modified asphalt emulsion. The polymers change the properties of liquid asphalt so it can stand up to sun, wind, weather, and traffic loadings. Road Pro NT is not only considered nonhazardous, but it also can help lock in place the hazardous polynuclear aromatic hydrocarbons (PAHs) in asphalt.

For the past year, Midwest has been applying Road Pro NT to the unpaved roads in the coil area at the mill once every two weeks. It soaks into the unpaved road base and binds with it, trapping the dust so it can't be released into the air. Some of the previous application remains on the roadways, so each treatment establishes a more solid base. Sanicola says this potential for reducing treatments and costs is another benefit of the product.

The emulsion takes about one day to dry. Vehicles can drive on it while it's wet, but it does have a tendency to dilute or wash away if rain falls the day before or after it's applied, so the application time should be adjusted if rain is expected. Once the emulsion dries, it essentially acts like asphalt.

"The product has worked very well for us. It costs more initially than lignin-based emulsions, but it's much, much more effective," Sanicola says. "Overall, from a cost-benefit standpoint, it's been very effective and good for us. And the employees are very happy with the lack of dust entering the shop area."