

Dust Control Program Delivers Significant Savings to Copper Mine

Background

An open pit copper mining complex in North America used water to reduce the amount of dust generated on their haul roads. The ChemTreat Team developed and proposed a dust suppression program to optimize the control of fugitive dust on the mine's roads, decrease the amount of water required to control dust, and reduce the site's carbon footprint by reducing the amount of vehicular traffic required to control the dust.

Problem

Fugitive dust in hard rock mining has potentially negative impacts on the environment, operating equipment, and effective mineral recovery. Very low dust and silica concentration limits are established for hard rock mining, therefore, treating or reducing fugitive dust is an important part of mining and mineral processing operations throughout the world. As a result, a chemical dust suppression system is needed in most cases to meet these stringent regulations.

Chemical dust suppression systems may be added to improve dust control in processes that may or may not have mechanical dust suppression systems. Proper application of mechanical and chemical dust suppression technology can help reduce fugitive dust and help address environmental concerns associated with dust.

ChemTreat Solution

ChemTreat's laboratory and technical personnel worked with the mine's environmental and operational groups to discuss and prescreen potential dust control chemistries. ChemTreat DT9068 testing indicated compatibility with the site's solvent extraction chemistries and process with no significant adverse effects on kinetics, phase disengagement, or copper selectivity. A trial was conducted on a section of haul road at the mine.

At a dosage of 250 ppm, DT9068 was observed to extend the time between watering of the road in excess of 50 percent. Consequently, the water usage to control dust was reduced by more than 50 percent. More importantly, the mine could project the long-term benefits of reduced diesel consumption by the trucks, with the accompanying reduction in wear and maintenance.

The mine's finance team projected application of the DT9068 dust control program would save the site \$1.7 to 2.0 million per year in reduced operational costs, while reducing their carbon footprint.

Summary

ChemTreat DT9068 was extremely effective in controlling haul road dust at a copper mine. Mine personnel validated its performance in reducing fugitive dust and improving the site's environmental impact without any meaningful negative effect on the process. The ChemTreat Team clearly met the mine's environmental objectives in reducing greenhouse gas emissions and fuel/water conservation. The copper mine was very satisfied with ChemTreat's approach, technology, and program support.