

O'Kane Consultants Inc.'s cover system over the backfilled open pit at Vale Inco's decommissioned Whistle mine near Sudbury, Ontario.



The green cycle

Supplying environmentally friendly options throughout the mining cycle

by Michelle Sabourin

Suppliers in the mining industry contribute a great deal to the environmental improvement of the sector. In order to secure new business with mining companies, vendors now need to be not only cost-effective and safe, but also provide environmental solutions that will help a mine meet strict regulatory guidelines. As a result, a broad range of companies have stepped up to the challenge, each specializing in a different area of the mining process, and each one doing its part in making the industry, as a whole, more environmentally sustainable.

The early years — exploration

Storage: Initially, when operations consist largely of exploration camps, or are within the first stages of construction,

onsite fuel storage can pose a considerable challenge. Historically, the options in these usually remote locations included the use of drums, steel tanks or the freezing of fuel-filled barges in winter ice. However, these methods cause an abundance of environmental problems including possible ruptures and fuel spills, the hazards posed by abandoned drums and tanks, and the exorbitant price — carbon cost included — that is necessary to transport these fuel recipients.

SEI Industries Ltd.'s collapsible tanks offer an alternative solution. Made from a high-durability fabric, these tanks have a volume capacity that is equivalent to 545 drums of fuel and can fold into the size of a sofa, making them highly efficient for shipping. Tank removal is also cost-effective and easy,



Collapsible fuel tank

which encourages their proper disposal after use. "We're offering a long-term and environmentally friendly solution rather than a temporary and disposable one," said divisional sales manager Paul Reichard. As an added "green" perk, SEI is currently working with Environment Canada to develop national standards for these types of tanks.

Waste management: Another environmental issue associated with exploration camps is waste. Landfills are simply not an option in these remote and environmentally sensitive areas, nor is the open-pit burning of waste.

One company, Eco Waste Solutions, is focusing on building clean-burning camp waste incinerators, which are distinguished for their capability to meet regulatory guidelines for emissions such as dioxins and mercury. "It's a dual-stage system that has a primary burning chamber and an after-burner," explained Steve Meldrum, the company's CEO. "We maintain a two-second retention time of all the gases that are produced at 1,000°C, to ensure that it is clean-burning when run properly."

The use of clean-burning incinerators in mining camps has not been restricted to solid waste. During the Polaris mine closure in the High Arctic, Eco Waste Solutions helped process vast amounts of glycol, which had been used in cooling and heating systems within the camp. "We processed all of the glycol onsite so that they didn't have to deal with the risks associated with shipping it over thousands of miles and, at the end, still having to dispose of it," said Meldrum.

Other liquid wastes that are generated in camps, such as sewage or grey water from showers and laundry, also need to be dealt with. Seprotech Systems Inc. specializes in wastewater treatment plants designed for mining camps. These are compact, portable, energy-efficient and simple to operate, making them suitable for remote sites. According to Wilf Stefan, the company's resource sector manager: "We work with our clients to understand their water board or permit requirements and we make sure the equipment meets those criteria." Once water quality guidelines are met, water from the treatment plants can be released into local streams or, depending on the permit, into the subsurface.

Up and running — production

Waste treatment: Once mining operations are well underway, other environmental issues subsequently arise. These include the generation of tailings and waste rock, the ensuing production of acid mine drainage, and heavy metals contamination.

Using high-density sludge (HDS) technology in the water treatment plants they design for mines, SGS-CEMI Inc. is able to neutralize acidic water as well as precipitate heavy metals from industrial wastewater. Their area of expertise lies in the removal of heavy metals, including selenium and molybdenum, even when present at very low concentrations. "There are a limited number of companies who know how to remove them successfully," claimed Sohan Basra, president and CEO.

Emissions: Mining equipment can also negatively impact the environment and expose underground miners to harmful emissions. This is particularly the case with diesel-powered machines, which are heavy polluters with regards to particulate matters and nitrogen dioxide. Environmental Solutions Worldwide Inc. is tackling this problem head-on by providing leading-edge emissions control technologies such as its latest product innovation, a fully automated diesel particulate filter system. As Juergen Jennewein, vice president of sales for the company explained: "The ThermoCat™ system was specifically engineered to com-



Eco Waste Solutions' ThermoCat features a fully automated diesel particulate filter system.