



Canada primed for metal mining motherlode

May 17, 2010: By Judy Monchuk, Senior Editor, Troy Media

CALGARY, AB, May 17, 2010/ Troy Media/ – A junior mining exploration company with mineral rights to a motherlode of metals says Alberta is primed to develop the world's next super-mine, one that could keep the economy supplied with a steady stream of raw materials for the next century and beyond.

Toronto-based DNI Metals Inc., (TSX-V: DNI) says mineral wealth from its virtually limitless source of polymetallic shales can be captured for decades to come using an emerging and sustainable mining technology called bio-heapleaching.

DNI holds mineral rights in the black shales of northern Alberta's Birch Mountains that stretches over 2,500 square kilometres. It's north of Fort McMurray, adjacent to where the world's biggest energy companies mine oilsands. Mining the black shale could take advantage of industrial infrastructure built to harvest the tar-like crude oil.

Metal equivalent of the oilsands

"We have the metal equivalent of the oilsands," says geologist Shahe Sabag, president and chief executive of DNI Metals Inc. "We believe these deposits are as large as the oilsands, and that this can have as lucrative an impact on Alberta as the oilsands."

DNI's metal resources are locked in rock with unique mineral and biological components. The black shales are like time capsules, preserving history's kill zones that form at times of major biological change. They are filled with the residue of mass extinction and tremendous amounts of raw organic material that have been fused together by the pressure of being on an ocean floor.

Within these shales is a collection of base and precious metals that has held Sabag's interest for two decades. These are massive deposits of metals in relatively low concentrations whose origins date back 84 million years, a valuable store that includes nickel, cobalt, copper, zinc, uranium, gold and silver. DNI's geologists have also found in the shale lithium, molybdenum and vanadium, elements used in plating processes and products such as rechargeable batteries being developed for the transportation and green energy sectors. They believe there may be more than 20 billion tonnes of mineral deposits in the parcel, enough to generate billions of dollars in revenue over the next century.

Until now, the low concentration of metals in the shale has made it uneconomic to recover through traditional mining methods.

"Prior to 2005, you couldn't develop black shale deposits if your life depended on it," Sabag says. But bio-heapleaching has made recovery economically feasible. Bio-heapleaching takes advantage of the unique organic and metal composition of the black shales to produce a cocktail of metals that can be captured, separated and brought to market in a most sustainable way.

As the 21st century dawned and climate change debates escalated, interests in the European Union began to look for cleaner, better ways to bring Europe's metal assets to market. Bio-heapleaching is proving to be the answer. The process involves crushing the metal-bearing rock into large compost piles that steadily does its magic using air, water, sulphur and microbes to leach out minerals. It's a low-cost alternative to energy- and chemical-intensive mining, making it the cutting edge of sustainable mining technology in the world.

Formerly Dumont Nickel Inc.

DNI used to be known as Dumont Nickel Inc. Its board recently approved a name change to DNI Metals Inc. to reflect the polymetallic potential of what Sabag calls the Alberta Black Shale Metals project. In April, the company completed its first laboratory test program at the Bureau de Recherches Geologiques et Mineres (BGRM) in France that shows the effectiveness of bio-heapleaching. Sulphuric acid leaching tests in March showed similar signs that metals can be effectively leached from the rock in concentrations higher than 88 per cent in nickel, uranium and cobalt. These tests are preparing DNI for its next phase, where it's seeking major industrial partners that can help bring the project through approval and production stages.

Technology that's come of age

Tom MacNeill, president and chief executive at 49 North Resources Inc. in Saskatoon, Sask., is excited with what could be unlocked in northern Alberta and he's backing his faith in DNI management as the company's biggest investor.

"The metals are there. We know that the technology works and I believe in the people moving this project forward," says MacNeill. "Management of DNI has the vision and expertise that can shape the future of metal extraction in Canada."

Bio-heapleaching was introduced to the world as recently as 2003, when it graduated from test-tube technology to field-testing. By 2008, it was put into production in Finland by Talvivaara Mining Co. to extract nickel, zinc, cobalt, copper and uranium out of low-grade ore that is similar to Alberta's black shales.

"Talvivaara can operate when commodity prices are very low. It can operate profitably when nickel is priced as low as US\$3 a pound," says Sabag, noting that when nickel prices dropped to US\$5.50 in April 2009, the Vale Inco mine in Sudbury, Ont., announced an eight-week shutdown. "We are proposing an operation like Talvivaara's. We won't rely on mining one metal, because we have a polymetallic resource."

Sustainable process

Traditional mining uses chemicals and extreme heat to recover minerals from raw material. Mining companies need high concentrations of those minerals to make it economic to mine and must often dig deep underground to reveal the stores they seek.

Bio-heapleaching is different. It takes advantage of the organics that Mother Nature left in the ground. Simply put, a solution is created from bio-organisms that are harvested from the rock. When the solution is dripped through the pile, it creates a chemical and biological reaction that dissolves the metals from the rock. The metal particles seep through strainers into collection tanks and the composting continues as long as new raw material and the bio-leaching solution is dripped through the heap.

Bio-heapleaching needs no power source and constantly recycles any non-metallic liquids. It's a process that leaves no wet residue.

The difference from traditional mining methods is striking. Residue, or tailings from "wet" mining processes, contains harsh chemicals such as cyanide and arsenic, and is often toxic. Flue gases from smelting also have a negative impact on the environment. Bio-heapleaching has none of those ill effects. In fact, there are several eco-upside to bio-heapleaching. To maintain the pH level of the heap, large amounts of sulphur are consumed in the heap. Sulphur is a waste by-product of refining the nearby oilsands, and a bio-heapleach mine could consume thousands of tonnes of sulphur every year, cleaning it from the environment. DNI is also testing the compost to gauge its value as a carbon sink.

Deposit of the future

"I view black shale as the deposit of the future. Provided you can mine in large quantities, they have an incredible economic upside," says Sabag. With mineral rights in six adjoining properties, "each of these could mine for 50 to 100 years. That makes eminent business sense."

Michael Dufresne, an international mineral exploration consultant, is a believer in what DNI has located. Dufresne, chief executive of Edmonton-based Apex Geoscience, studied the Birch Mountains black shale in the early 1990s and says it is the biggest metals resource in the province.

"That appears to be the most widespread and highest concentration," said Dufresne, noting the shale is up to 25 metres thick and spread over wide areas. In the 1990s, low prices for base metals and low mineral concentrations made mining there uneconomic. With offshore demand rising and today's higher metal prices, the potential grows for metal mining in the Birch Mountains.

"With this new technology, DNI can look to previously non-productive mineral holdings as valuable metal-yielding assets," said Dufresne. "There's a huge amount of base metals, but a low concentration of any particular one. Mining just one would be uneconomic, but there are 10 of them."

Dufresne knows metals mining is a tough sell in Alberta, where oil and gas rules. But that could be changing. The Alberta Chamber of Resources is conducting a study on how the metal mining industry could contribute to the Alberta economy.

Sabag says attracting a local partner to help develop the DNI mine may be difficult and interest from investors could be higher outside Canada, particularly in Asia.

"The part of the world that lives off metals is not Alberta, it's not Canada. It's China," Sabag says, pointing to a country that is making major investments in Canadian resource plays.

DNI is continuing its technical and economic studies, having invested almost \$1 million so far to lay the foundation for Alberta's and Canada's new super-mine, one that could have profound impacts on local, national and world economies.