



NATURAL RESOURCES RESEARCH INSTITUTE

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critical

Have you been eyeing the new hybrid cars on the market? Do you use a computer? Paint your house recently? You may not realize that minerals are key ingredients for products you use everyday—and supplies of some may be threatened.

The U.S. National Academies of Sciences released a report in October on “Minerals, Critical Minerals and the U.S. Economy.” The report’s primary goal is to identify minerals which are critical to the U.S. economy that have the potential for supply restriction.

Minnesota is in a strong position to help our nation lessen its dependence on imported raw materials. Sizable deposits of copper, nickel, manganese, titanium and platinum group metals lie underground in northeastern Minnesota—the extent and quality of the deposits defined by economic geologists at the Natural Resources Research Institute, University of Minnesota Duluth. Of those, platinum group metals and manganese are on the Academy of Science’s list of minerals “most critical” to the U.S. economy.

“Every year over 25,000 pounds of new minerals must be provided for every person in the United States to make the items that we use every day, and a growing number of these minerals are imported,” the report states.

Current interest in Minnesota is focused on copper, nickel and associated platinum group metals, used in a variety of products (see sidebar). The potential in Minnesota’s manganese deposit may also have potential. The U.S. currently imports 100 percent of the manganese it needs from South Africa and Russia. Political unrest between nations can impact that supply at any time. Manganese is used to harden and prevent defects in steel—even the aluminum in pop cans.

“This is a boom time for minerals exploration,” said NRRI geologist Steve Hauck. “Prices for most minerals are up and we have a number of small companies with the funds to seek out and develop Minnesota’s resources.”

While Minnesota’s deposits are extensive, they are relatively low grade so the question of economic feasibility is important. And any development of these deposits is subject to heightened environmental scrutiny.

Fortunately, processing options for getting at mineral deposits today are more economically feasible and environmentally sound. New hydrometallurgical processing methods avoid high-temperature smelting of ores, which is good news for air quality. Minnesota ore bodies have less sulfur than other state’s deposits, reducing the potential for acid rock drainage problems. Mitigation techniques have also improved considerably.

Franconia Minerals Corp. recently announced that their resource estimates show 124.4 million metric tons of copper resources (0.59 percent) and nickel resources (0.21 percent) at their underground Spruce Road copper-nickel deposit, part of their Birch Lake Project in northern Minnesota. This brings Franconia’s total underground resource at Birch Lake (Birch Lake, Maturi and Spruce Road deposits) to 307.9 million metric tons.

Brian Gavin, president and CEO of Franconia, explained that their current pre-feasibility program is focused on the Birch Lake and Maturi deposits, not Spruce Road at this time.

“We are looking at the feasibility of developing mines that will be in business for a quarter century and provide more than 500 well-paid, permanent jobs in the region,” he



minerals

Geologists mapping mineral deposits in Northern Minnesota



said. “The recent estimates at Spruce Road dramatically expand the long-term potential of the Birch Lake Project.”

Duluth Metals has defined an underground deposit near Ely, Minn., containing 347 metric tons of indicated copper, nickel and platinum group metal resources.

“Final recoveries of 95 percent for copper and 72 percent for nickel are tremendous, with excellent recoveries on platinum and palladium,” stated Henry “Rick” Sandri, Duluth Metals president and CEO, in press release dated October 4.

PolyMet Mining Corp. is engaged in the environmental permitting process to develop a copper-nickel-platinum group mine and plant prior to full-scale mining and production in the Babbitt-Hoyt Lakes area.

Demand for copper, primarily from the growing nations of China and India, has driven the price up to the point where it’s targeted by scrap thieves. Robberies in the Duluth area have been reported in which both operating and abandoned buildings have been stripped of their aluminum, copper wiring and copper pipes.

“The key for our region, and for the nation, is that these critical minerals are found in our lands and at levels that can make an impact in the amount of imports that we require to satisfy our nation’s needs,” said NRRI Center Director Don Fosnacht. “The need is especially acute as we compete with China and India for minerals that all industrial societies require.”

Minnesota Minerals

Copper

Nickel

Manganese

Titanium

Platinum Group Metals

Consumer Use

Automobiles (75 lbs. for one hybrid car); construction

Key ingredient for high temperature alloys; stainless steel

Hardens steel and aluminum; prevents defects in steel during rolling

Pigments, surgical instruments, artificial hips and knees

Vital for catalytic converters and advanced fuel cells; electronics