

U.S. faces hurdles in rebuilding rare-earth supply chain -- GAO

Katie Howell, Environment & Energy Publishing, 4-14-10

The United States can rebuild a domestic supply chain for rare-earth materials in 10 to 15 years if it invests significant capital in developing new technologies and acquires patents from companies in Japan, according to a federal audit released today.

Rare-earth minerals -- 17 chemically similar metallic elements -- have become important in the national push for a "clean energy" economy.

The minerals are used in wind turbines, hybrid cars and fluorescent light bulbs. And they are crucial for making defense technologies like lasers and night-vision equipment, as well as computer hard drives and cell phones.

Though it once had a strong foothold in the global rare-earth supply chain, the United States now gets most of its processed rare-earth materials and products manufactured from China.

"The United States previously performed all stages of the rare earth material supply chain, but now most rare earth materials processing is performed in China, giving it a dominant position that could affect worldwide supply and prices," the Government Accountability Office says in its report.

The Obama administration has been taking note. The Energy, Commerce and Defense departments have all launched separate efforts to study the effects of potential rare-earth shortages. But the nation nonetheless is at least a decade away from establishing a full supply chain, the report says.

California's Mountain Pass mine, owned and operated by Molycorp Minerals, is the only current U.S. rare-earth producer, and its outputs are low. Molycorp is planning to scale up to 20,000 metric tons of production a year by 2012, but the U.S. supply chain stops there.

Once ore containing the minerals is pulled from the ground and the minerals are extracted, the raw materials have to be shipped overseas for processing and production into components like high-performance magnets for wind turbines.

"This is truly an issue that needs to be addressed," Molycorp CEO Mark Smith said in a recent interview. "Is the sky falling today? Absolutely not, but we're heading toward serious consequences."

The United States has other rare-earth deposits, but they are in early exploratory stages.

Once a company has secured capital to start mining, GAO said, it could take seven to 15 years for the effort to come fully online.

And capital investment in such ventures is not easy to come by, the report says, because investors are concerned about the Chinese undercutting U.S. prices and hurting returns.

A number of other factors will also affect development of a domestic rare-earth supply chain, the report says.

Building processing plants to refine rare-earth oxides into metal could take two to five years, and companies with existing infrastructure to do so say they are hesitant to restart metal production without a consistent source of oxides outside of China, according to the report.

Environmental concerns could also affect development of a domestic rare-earth supply chain, the report says. Some minerals are found along with radioactive materials like thorium and radium. Extracting those minerals and complying with federal environmental regulations can be difficult and expensive.

To compete with Chinese companies on price, the United States must develop new processing technologies, and those will not be available on a full-scale production level for at least four years, experts say.

Even developing a U.S. magnet-production industry will be difficult, the report says, because Japanese and other foreign companies currently hold key technology patents. Some of the patents do not expire until 2014, so companies preparing to enter the magnet market must wait until then, the report says.

Development of alternatives to rare-earth materials could also be a long process, the report says, requiring 10 to 15 years. And once developed, the report says, those materials might not meet current application requirements.