Breaking China’s Grip: U.S. and Canada’s Next Steps in Mining

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In a strategic move to bolster domestic production of critical minerals, President Donald Trump has invoked the Defense Production Act (DPA). He signed an executive order aiming to reduce U.S. dependence on foreign sources, particularly China, which dominates the global rare earth minerals market. This market dominance poses economic and security risks for countries reliant on these materials for advanced technologies, such as the U.S. and Canada.

The executive order leverages the DPA to provide financing, loans, and investment support for domestic processing of rare earth elements (REEs) and critical rare earth elements (CREEs). REEs are profoundly valuable and are essential in the manufacture of electronics (*e.g.*, microchips, semiconductors, and essentially any product with a computer chip). This initiative seeks to enhance national security by ensuring a stable supply of materials essential for technologies ranging from batteries to defense systems. Standard NdFeB magnets, without terbium (Tb) or dysprosium (Dy), cannot be used in high-temperature applications such as in electric vehicles (EV) critical components. The production of high-value pre-magnetic REE alloys, requires the purchase of separated Tb and Dy oxides from China.

Recent concerns about future supplies of REEs have now narrowed chiefly to the heavy rare earth elements (HREEs). Essentially, all of the world's HREEs are currently sourced from the south China ion-adsorption clay deposits. The ability of those deposits to maintain and increase production is uncertain, particularly in light of environmental degradation associated with some mining and extraction operations in the region.

As the U.S. intensifies efforts to secure its mineral supply chains, Canada, rich in mineral resources, has an opportunity to strengthen its position as a key supplier. However, Canada must also navigate its own strategic interests, ensuring that domestic extraction and processing capabilities remain competitive.

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REE mineral deposits typically contain appreciable levels of radioactive elements such as thorium (Th) and uranium (U), making the extraction of REE values environmentally challenging. Novel processes for the extraction and separation of REE values in high yield and purity, with an environmentally cleaner design and overcoming the technical and economic limitations of the existing commercial processes, are of commercial interest. Additionally, diversifying export markets beyond the U.S. could shield Canada from potential shifts in American policy while strengthening its role as a global player in the critical minerals industry.

As the Trump administration's directive underscores the strategic importance of CREEs and the necessity to develop resilient supply chains, we can expect more news in the upcoming months from the U.S. regarding its efforts to lessen its dependence on other countries in the mining industry. Stay tuned!

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