

---

ESSENTIAL  
MINERALS  
ASSOCIATION

September 19, 2023

The Honorable Joseph A. Manchin  
Chairman  
Committee on Energy & Natural Resources  
304 Dirksen Senate Building  
Washington, DC 20510

The Honorable John A. Barrasso  
Ranking Member  
Committee on Energy & Natural Resources  
304 Dirksen Senate Building  
Washington, DC 20510

Dear Chairman Manchin and Ranking Member Barrasso:

We all recognize that our nation's ongoing transition to clean, renewable technologies will require a dramatic increase in the extraction and processing of the necessary minerals. Benchmark Mineral Intelligence projects that the world will need to open more than 380 new mines for graphite, lithium, nickel and cobalt alone, in order to meet demand by the year 2035. At the same time, the Bipartisan Infrastructure Investment and Jobs Act is stimulating demand for mined construction materials such as aggregates and cement. All told, the Biden administration projects 600 new mines and 1,800 expansions of existing mines.

Moreover, of the 50 minerals on the USGS List of Critical Minerals, we are 100 percent net import reliant for 12, and over 50 percent reliant for 31 more, including 14 rare earth lanthanides. Recognizing our dependency on foreign, often adversarial nations for green energy minerals, Congress has prudently begun to incentivize the domestic production of these minerals and the manufacturing of the advanced products they go into. Mining companies already are developing new mines, midstream manufacturers are siting battery gigafactories across the country, and end-use manufacturers like automakers are signing offtake agreements committing to use the resulting minerals and batteries.

Yet our nation faces another critical shortage that jeopardizes our ability to produce the necessary quantity of these minerals efficiently, safely, and sustainably: a lack of college graduates sufficiently skilled in the key geological and engineering disciplines (mining, metallurgical, mineral, and geological). The mineral exploration, extraction and processing industry struggles to hire qualified engineers and scientists who specialize in these disciplines, and the shortage grows more acute each year. In fact, nearly three quarters of industry executives said this talent shortage is holding them back from discovering and delivering on production targets and strategic objectives, according to a survey by global consultancy McKinsey & Company.

Two primary dynamics are contributing to this shortfall in talent. The first is mass retirement of the postwar baby boom generation, with 10,000 individuals in this cohort reaching retirement age each day. Indeed, according to the Society for Mining, Metallurgy & Exploration (SME), 58 percent of its members are over the age of 50, with up to five percent retiring annually over the next decade.

The second dynamic is a dearth of high school graduates entering the relevant post-secondary degree programs. Even if more students were to pursue such degrees, the United States currently lacks the capacity to train them. Forty years ago, 25 American universities maintained accredited mining and mineral development programs. Today, only 14 exist. According to SME, the number of graduates has decreased by 43 percent since 2015 alone. The number of geological engineering programs has dwindled to only 13, and metallurgical engineering stands at just eight. Meanwhile China, our chief competitor in the production of clean technology minerals, operates 29 percent of the world's top 100 mining and mineral engineering universities, versus our nation's 7 percent share.

The current trend toward friend-shoring might curtail our dependence on Chinese minerals, but we cannot, as some have suggested, count on allied nations to supply us with talent we need to produce minerals at home. In theory, the minerals industry could seek qualified employees through the H-1B work visa program, which allows U.S. employers to hire foreign workers with specialized skills to work here. But the U.S. Citizenship and Immigration Services (USCIS) received 758,994 H-1B registrations for fiscal year 2024, against a cap of just 85,000. The agency selected 110,791 registrations to meet the annual cap, equaling a 14.6 percent chance of selection—an all-time low. Furthermore, USCIS reports that nearly 70 percent of approved H-1B visas fill computer-related occupations in the technology sector.

Moreover, our closest allies face their own critical shortages of graduates. According to Canada's Mining Industry Human Resources Council, that country's mining and mineral engineering enrollment was down 10 percent in 2020 compared with 2016. McKinsey & Company reports that the total number of Australian mining graduates fell 63 percent between 2014 and 2020. The U.K. Mining Education Forum has estimated that at least 48 mining engineering and 18 mineral processing graduates are required per year to sustain that country's mining industry. Yet despite being host to mining giants like Rio Tinto and Anglo American, as of 2022 no undergraduate mining engineering or mineral processing degrees were being offered in the United Kingdom, with only post-graduate courses available at one school. Worse, four universities in the U.K. have banned mining firms from recruiting on campus and attending career fairs.

Clearly, the only solution is to strengthen our domestic schools that offer the degree programs vital to upstream mineral development and production, as well as to mid- and downstream manufacturing of products that use those minerals. We therefore applaud your leadership in revitalizing university-level mining programs through the Mining Schools Act of 2023 (S. 912), and we appreciate your timely consideration of the bill in the Committee this week. We wholeheartedly endorse S. 912 and its House companion bill (H.R. 2685) and stand ready to advocate for this important legislation's timely passage by both chambers of Congress.

Sincerely,

**Universities:**

Cal Poly Pomona Geology Department  
The College of Mines and Earth Sciences at the University of Utah

Colorado School of Mines  
The Mackay School of Earth Sciences and Engineering at the University of Nevada  
Michigan Technological University  
Montana Technological University  
New Mexico Institute of Mining and Technology  
Penn State College of Earth and Mineral Sciences  
The Pigman College of Engineering at the University of Kentucky  
South Dakota School of Mines & Technology  
University of Alaska Mining and Mineral Engineering Department  
University of Arizona  
University of Mississippi  
University of North Dakota College of Engineering and Mines  
University of Wisconsin-Madison, Geological Engineering Program  
University of Wyoming  
Virginia Tech, Department of Mining and Minerals Engineering  
West Virginia University

**Associations & Professional Societies:**

Essential Minerals Association (EMA)  
Alabama Mining Association (AMA)  
Alaska Miners Association (AMA)  
American Exploration & Mining Association (AEMA)  
American Geosciences Institute (AGI)  
American Institute of Professional Geologists (AIPG)  
Arizona Mining Association (AMA)  
Arizona Rock Products Association (ARPA)  
California Construction & Industrial Materials Association (CalCIMA)  
Florida Independent Concrete and Associated Products (FICAP)  
Georgia Construction Aggregate Association (GCAA)  
Georgia Mining Association (GMA)  
Illinois Association of Aggregate Producers (IAAP)  
Kentucky Crushed Stone Association (KCSA)  
The Minerals, Metals & Materials Society (TMS)  
Missouri Limestone Producers Association (MLPA)  
National Society of Professional Engineers (NSPE)  
Nevada Mining Association (NVMA)  
New York Construction Materials Association (NYMaterials)  
North Carolina Aggregates Association (NCAA)  
Ohio Aggregates & Industrial Minerals Association (OAIMA)  
Society of Economic Geologists (SEG)  
Society for Mining, Metallurgy & Exploration (SME)  
Tennessee Mining Association (TMA)  
Tennessee Road Builders Association (TRBA)  
Virginia Transportation Construction Alliance (VTCA)  
Women's Mining Coalition (WMC)  
Wyoming Mining Association (WMA)