

SEG 2026 Conference in Salt Lake City, United States

The Upstream Bottleneck: Educational Capacity and the Future of the Mineral Exploration Workforce

Lauren Terry¹

¹Colorado School Of Mines, Golden, United States

Ensuring a resilient mineral supply chain requires a workforce capable of discovering, evaluating, and developing new resources. While some attention has been directed toward mining engineering and mineral processing education, less focus has been placed on the upstream segment of the minerals workforce.

Mineral exploration in the United States currently employs an estimated 9,500 geoscientists across approximately 350 companies. Workforce demographics indicate a rapidly aging population. Assuming a 40-year career span, sustaining workforce capacity would require approximately 250 new graduates per year entering the field.

However, current U.S. educational output is far lower. Preliminary estimates suggest that fewer than 100 students graduate each year with training sufficient for careers in economic geology and mineral exploration. This shortfall reflects a significant contraction of economic geology programs over the past two decades. An initial look at US institutions identified approximately 20 economic geology faculty across 17 programs, some of whom are approaching retirement. Only a small subset of universities currently maintain sufficient faculty depth to sustain robust graduate training programs.

These findings suggest that the future mineral exploration workforce may be constrained not by industry demand but by limited educational capacity. Addressing this gap will require coordinated efforts among universities, professional societies, and industry partners to rebuild faculty capacity, expand training opportunities, and strengthen pathways into exploration geology. Strengthening the upstream workforce is essential to ensuring the long-term sustainability of the global minerals supply chain.