Critical Minerals Search

THIS ACTIVITY WAS DEVELOPED BY THE MINERALS EDUCATION COALITION FOR EARTH SCIENCE WEEK 2026.

MATERIALS

- Device with internet access.
- Copy of this activity with Worksheet and a pen or pencil.

INTRODUCTION

There is concern over the large quantity of mineral commodities crucial to defense, medicine, and technology that must be imported by the United States (U.S.) each year. The U.S. faces three key challenges in securing mineral commodities: obtaining mining permits, managing supply chain disruption, and navigating restrictions on imports and exports.

In this activity, you will use, analyze, and research information from the U.S. Geological Survey 2026 Mineral Commodity Summaries (https://pubs.usgs.gov/periodicals/mcs2026/mcs2026.pdf), which lists the 60 minerals, elements, and metals designated as "critical minerals," and provides the information for each (p. 23).

Beryllium is refined from ores, like beryl (above), and can be used to construct components of military aircraft and aerospace equipment, such as the mirrors on the James Webb telescope (below).

Credits: top: SME; bottom: Rob Gutro, NASA's Goddard Space Flight Center, Greenbelt, Md.

Lithium can be extracted from brines, or from ores like spodumene (above). Lithium is used to make batteries like those used in electric vehicles like this LiV Dash (below), which is used at NASA's Kennedy Space Center in Florida.

Credits: top: SME; bottom: NASA/Jim Grossmann

Uranium extracted from uranium ore (above) is used in nuclear medicine and as a highly concentrated energy source used to produce electricity without emission of greenhouse gases (below).

Credits: top: SME; bottom: Photographs in the Carol M. Highsmith Archive, Library of Congress, Prints and Photographs Division

PROCEDURE

1. In the worksheet, subtract the Net Imported % from 100 to find the % Self Sufficiency for the U.S. for each material.
2. Conduct research to find the state(s) where each critical mineral is naturally found in the U.S. List these in the right column using the two-letter abbreviation for each state.
3. Research in which state(s) each mineral is currently being mined and circle those states.

ANALYSIS

1. What do you think is the most important critical mineral and why?
2. Do you think that the U.S. could supply more of its own critical mineral needs? Why or why not?
3. What if the minerals for these important uses were not available to import? Are there other options? What are the difficulties/challenges with each of these other options?

FURTHER STEPS

Use the QR code to visit MineralsEducationCoalition.org/esw for more related information and activities.

Student Worksheet

Information from the U.S. Geological Survey 2026 Mineral Commodity Summaries (https://pubs.usgs.gov/periodicals/mcs2026/mcs2026.pdf) has been inserted in the worksheet below for 10 of those commodities.

Mineral Commodity	Critical uses	Net % Imported	Imported from	% Self Sufficiency	US States where found; circle if mined there currently
Antimony (metal and oxide)	Flame retardants, lead-acid batteries	91	China, Belgium	9	AK, ID, MT, NV, UT, AZ
Beryllium	Aerospace, defense	0	Net exporter		
Copper (refined)	Cables, wiring	57	Chile, Canada		
Gallium	Integrated circuits, optical devices	100	Canada, Japan		
Graphite (natural)	Batteries, fuel cells, industrial lubricants	100	China, Canada		
Lithium	Batteries, especially for electric vehicles	>50	Chile, Argentina		
Manganese	Batteries, metallurgy	100	Gabon, South Africa		
Metallurgical Coal	Steel production	0	Net exporter		
Platinum	Catalytic converters, aerospace alloys, chemical refining, petroleum processing	89	South Africa, Belgium		

Silicon (metal and ferrosilicon)	Metallurgy and silicon wafers required for semiconductors	>50	Russia, Brazil		
Silver	Batteries, electrical circuits, anti-bacterial medical instruments, solar cells	77	Mexico, Canada		
Uranium	Nuclear fuel, medical applications	99	Russia, Canada		