

Ores to Minerals

Lesson 2

Where in the World?

LESSON PLAN

Standards Alignment, Learning Objectives, Materials List, Step-by-Step Instructions, Vocabulary Bank, Differentiation Suggestions



Standards

AP® Environmental Science Standard: 5.9 Impacts of Mining - LEARNING OBJECTIVE-EIN-2.K: Describe natural resource extraction through mining.

Next Generation Science Standard: HS-ESS3-1 - Construct an explanation based on evidence for how the availability of natural resources [and/or the] occurrence of natural hazards...have influenced human activity.

Learning Objectives

- Define "critical minerals."
- Relate the strategies for identifying critical minerals.
- Analyze the supply of a mineral resource in terms of geographic region.



Materials

1

A device with access to the USGS.gov website

2

Student Slides

3

Student Worksheet

Step-by-Step Instructions

1. Introduce the list of critical minerals to students and tell them they will explore the locations of one such mineral.
2. Display the Student Slides to support your lesson on critical minerals and explain the importance of critical minerals as well as the role of the U.S. Geological Survey in tracking the critical minerals supply for the United States.
3. From the list to the right, assign students a critical mineral to investigate using the interactive map for “Mineral Resources Online Spatial Data” on the USGS.gov website.
4. Provide the Student Worksheet so that students can complete the assignment. You may have students work individually or in teams.

Critical minerals

- Antimony
- Barite
- ▲ Beryllium
- ◆ Cobalt
- Fluorite
- Gallium
- ▲ Germanium
- ◆ Graphite
- Indium
- Lithium
- ▲ Manganese
- ◆ Niobium and Tantalum
- Platinum-Group Elements
- Rare-Earth Elements
- ▲ Rhenium
- ◆ Tellurium
- Tin
- Titanium
- ▲ Vanadium
- ◆ Zirconium and Hafnium

Vocabulary Bank

- **Critical minerals** - Minerals that are vital for the economic or national security of the United States and have supply chains that are vulnerable to disruption

Differentiation Suggestions

- Use a Cooperative Learning Strategy: Add a Think-Pair-Share or similar activity and ask students to reflect on the meanings of selected slides.
- Scaffold Support: Provide or allow aids, like additional text or images.
- Reduce Cognitive Load: Limit the amount of text you include in each slide and simplify the definitions.
- Ongoing Check-Ins: Regularly check in with groups to provide feedback and support, ensuring all students participate and understand the task.
- Use translation technology or a bilingual dictionary.
- Read the text aloud.