



Mining Basics

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The mining process is used to separate rock or ore from surrounding rock. There are four main mining methods: underground, open surface (pit), placer, and in-situ mining. The method used depends on the type of mineral resource that is mined, its location beneath the surface, and whether the resource is worth enough money to justify extracting it. The potential environmental impacts of mining depend on the resource being mined, how it is mined, and local factors like climate. In the United States, these impacts are now closely regulated, and mine areas are often reclaimed for another purpose after mining is over.

Why does mining matter?

Mining is essential to provide the 38,000 lbs of mineral resources per person per year that we use in the United States.[1] Mineral resources are integral to the roads, vehicles, buildings, technologies, and personal products we rely on every day. Mining also produces a large proportion of the fuels that power and transport our society.

How does geoscience inform decisions about mining?

Geoscientists determine how to mine mineral resources economically, help to protect water and minimize environmental damages around the mine, and help reclaim disturbed land after mining.

References

1How many pounds of minerals are needed for each person in the U.S. per year?, AGI Critical Issues Program, www.americangeosciences.org/critical-issues/faq/how-many-pounds-minerals-are-required-average-person-year

Learn More

Introductory Resources

- Metal Mining and the Environment (Booklet), *American Geosciences Institute*
Provides basic information about the mining cycle, from exploration for economic mineral deposits to mine closure. The booklet discusses the environmental aspects of metal mining and illustrates the ways science and technology assist in preventing or reducing environmental impacts.

Resources for Educators

- Education Resources Network, *AGI's Center for Geoscience & Society*
Search for coal resources in: Professional Resources, Organizations, Curricula & Instruction, Teaching Media, Outreach Programs
- NGSS Performance Expectations, *Next Generation Science Standards*
K-ESS3-1, K-ESS3-3, 4-ESS3-1, 5-ESS3-1, MS-ESS3-1, MS-ESS3-3, MS-ESS3-4, HS-ESS3-1, HS-ESS3-2, HS-ESS3-3, HS-ESS3-4
- NGSS Disciplinary Core Ideas, *Next Generation Science Standards*
ESS3.A, ESS3.C

Frequently Asked Questions

What is biomineral?

American Geosciences Institute

What are tar sands?

American Geosciences Institute

Which mineral commodities used in the United States need to be imported?

American Geosciences Institute

What happens before, during, and after mining?

American Geosciences Institute

How can metal mining impact the environment?

American Geosciences Institute

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Maps & Visualizations



Interactive visualization of United States coal data

U.S. Energy Information Administration

The U.S. Energy Information Administration's Coal Data Browser provides a variety of state-specific and nationwide visualizations for their coal reports and data sets. The annual data sets go back to 2008 and can be displayed as a time series graph, bar graph, U.S. map, or coal basin map. Data set...

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