



## CAREER PROFILE

# Senior Geologist

## OVERVIEW

Senior geologists are communicative problem-solving, critical thinkers who study and collect information about the physical aspects of the Earth to help resource producers locate and safely extract deposits of minerals and fuels. They collaborate with others to plan mining sites, design wells, and ensure efficiency and environmental sustainability of resource extraction activities. They plan and conduct detailed projects called field studies, visit sites to collect soil and rock samples, and analyze aerial photographs of locations on Earth. Senior geologists use a variety of simple and complex tools to collect and test samples. These range from hammers and chisels to sensing equipment and geographic information systems (GIS). They often supervise technicians who assist with field studies. Successful senior geologists use information to help operators identify and extract natural resources efficiently and as cleanly as possible.

## EVALUATE YOUR INTEREST

I love learning by doing. My favorite activities at school involve hands-on experiences such as labs, field trips, and research.

I am a natural leader who works well with others. During group activities, people turn to me for help overcoming challenges.

I am a problem-solver. I have a knack for asking smart questions that help others identify problems and issues. I work with others to formulate solutions to problems.

I am a highly organized multi-tasker who can keep track of several projects at once, each with many moving parts.

I love seeing how the complicated science and math concepts I learn about in the classroom apply to the real world.

I am fascinated by the natural history of Earth and enjoy learning about rocks, minerals and soils.

## CAREER CONNECTIONS

How does this career affect me?	What are some other similar careers?	How does this career affect the world?
<p>Many of the goods and services you use on a daily basis, including energy you and your family and friends use for transportation, heating your home, and electricity, comes from minerals and energy sources that originate below Earth's surface. Geologists use scientific concepts to locate resource deposits and then help others formulate extraction plans. Their job is to make sure resource production is safe and efficient. In doing so, they help keep everyday products affordable for you and other consumers.</p>	<p><b>Mining and geological engineers</b> design mines and wells to safely and efficiently extract fuel sources and minerals from below the Earth's surface.</p> <p><b>Geochemists</b> use chemistry to learn about the composition of elements in groundwater.</p> <p><b>Geophysicists</b> use physics to advance understanding of the Earth's surface and interior layers. They study the Earth's magnetic, electric, and gravitational fields.</p> <p><b>Seismologists</b> study the causes and impacts of earthquakes and tsunamis.</p> <p><b>Geological and Hydrologic Technicians</b> help geologists conduct field studies for locating and extracting natural resources from The Earth.</p> <p><b>Hydrologists</b> study the movement of water around Earth.</p>	<p>Most of the world's transportation, industrial, and residential energy needs are met with products that originate below Earth's surface. The energy needs of countries such as India and China, with large populations and rapidly expanding economies, are also increasing quickly. Geologists conduct field studies to locate different types of resource deposits, and then they help others formulate safe and efficient extraction plans. In doing so, they help to ensure that products are affordable for consumers around the world.</p>

## TAKE ACTION

- Conduct research to learn more about how geologists identify where deposits of a specific fuel source or minerals are located and about how the resource you selected is extracted from below Earth's surface. As an alternative, learn about the role geologists play in the rapidly growing alternative fuels industry, such as identifying site locations for geothermal power plants.
- Think about a much-discussed infrastructure or construction need in your community, such as a new bridge or road, a new swimming pool or recreational facility, or a new school building. Consult maps and visit locations in the community to compile information about where this need might be constructed. Formulate a proposal for adding the facility to the location you selected.
- Join a science-oriented club at school that is involved with using principles of math and science to construct products, conduct outside research, or address community problems. Possibilities include robotics, the recycling club, or the engineering society. Establish as a personal goal working to earn the opportunity to occupy a leadership position on a specific project or within the group as a whole.