

Explore a Career in Geology



What Geologists Really Do...

- Protect human and ecological health
- Investigate environmental contamination



LA County Department of Public Works, 2017

- Explore for the minerals used in solar cells or the feedstock to make the plastic
 - Investigate a collapsed road or help build a dam



Cadmium Gallium Germanium Indium Selenium Tellurium



<https://pubs.usgs.gov/circ/1365/Circ1365.pdf>



Depgreenport.state.pa.us/ Greys Ferry Crescent



<https://s.abcnews.com/images/US/> Cheltenham Township, PA

- Help turn an abandoned industrial site into productive land



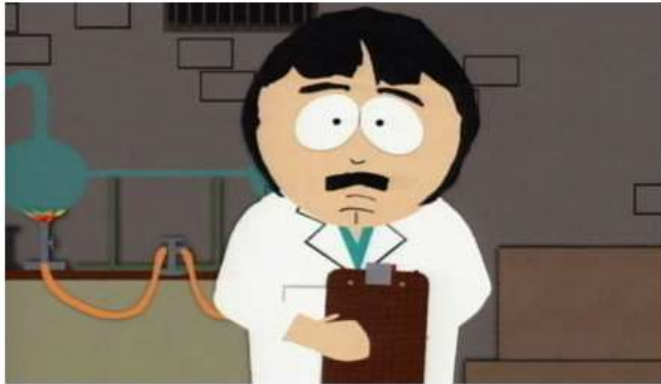
Geology Students Happiest

- A 2015 UK National Survey polled 220,000 students*
- 95% of geology majors said they were satisfied with their major
- Geoscience ranked top 20%, #28 by the Most Valuable College Majors**

Forbes / Science

DEC 18, 2015 @ 05:43 PM 170,360 VIEWS

Geology Students Are The Happiest On College Campus Study Finds



South Park's resident geologist Randy Marsh (Credit: southpark.cc.com)

Geology students are the happiest with their degrees according to the National Student Survey, which polls university students across UK colleges and universities for satisfaction in their school and their major. An impressive 95% of



1. Allows you to pursue your curiosity.
2. Field Trips!
3. Geology can take you around the world
4. Solve Problems
5. Variety of different career paths
6. Cutting edge technology
7. Employment growth
8. Job opportunities right out of college with a BS and MS
9. Laid back field and small community of colleagues
10. Geology lets you study ROCKS!!!



*<http://www.forbes.com/sites/trevornace/2015/12/18/geology-students-happiest-college-campus-study/>

**<https://www.bankrate.com/career/most-valuable-college-majors/>



Industries Where Geologists Work

- Environmental Science/Protect Human Health
- Energy Resources
- Mineral Resources
- Engineering Geology and Natural Hazards
- Research
- Education



Environmental Science/Human Health

Geologists make use of their special knowledge for the benefit of others.
No profession affects the public more than geology. "Civilization exists by geological consent, subject to change without notice," William Durant



- Investigate environmental contamination, protect human and ecological health, remediate contaminants, assess water resources
 - Jobs across the US, major metropolitan areas, cities, suburbs, towns, rural, and remote areas



LA County Department of Public Works, 2017



<https://www.nps.gov/gate/learn/management/images/DSC00396.JPG>



[https://sovcon.com/Clients/General/Wawa%20Picture%200006\(1\).jpg](https://sovcon.com/Clients/General/Wawa%20Picture%200006(1).jpg)



USGS, 2017



Industry / Consulting

- Brownfield's/PA Act 2 – clean up a contaminated sites so they are safe for future re-use.
- Underground or Above-Ground Gas or Oil Storage Tanks (UST/ AST) Investigation and Remediation
- Landfill Design and Investigation
- Environmental Permitting
- Large Companies and utilities hire geologist ensure environmental compliance



Government Agencies

Over 25% of Geologists are Employed by Public/Government agencies

- US Geologic Survey
- US Environmental Protection Agency
- PA Department of Environmental Protection
- Department of Conservation and Natural Resources
- PA Geological Services
- Susquehanna River Basin Commission
- County Conservation District Agencies
- Etc.



Energy Resources

- Study the subsurface and explore for oil, natural gas, coal, uranium, geothermal resources

- Responsibly extract resources



- Jobs in PA, OH, & WV with Marcellus/Utica Shale Gas
 - USA - Worlds #1 Producer of Natural Gas; PA produces 20% of US production
 - Natural Gas Liquids(NGL) provide feedstock in petrochemical plants to make chemicals, plastics, synthetic rubber and fuels for heating, cooking, & drying.
 - Projections show renewables gain significant market share through 2050 while fossil fuels remain important for the industrial, transportation and building sectors of the economy
- Many jobs in Gulf Coast states, Colorado, Dakotas, and overseas in Australia and the middle east

Marcellus Shale Drill Rig, SW PA, Ken Skipper, USGS



Mineral Resources



- Explore for mineral resources. Find aggregate, ore bodies, and direct mining operations.

- Identify and develop water resources
- Jobs available world-wide and in our backyard



Extraction Industries

- Coal Mining / Quarries

- Steel
- Cement



- Alternative Energy Needs Minerals for their Component Parts

- **Solar Photovoltaics***

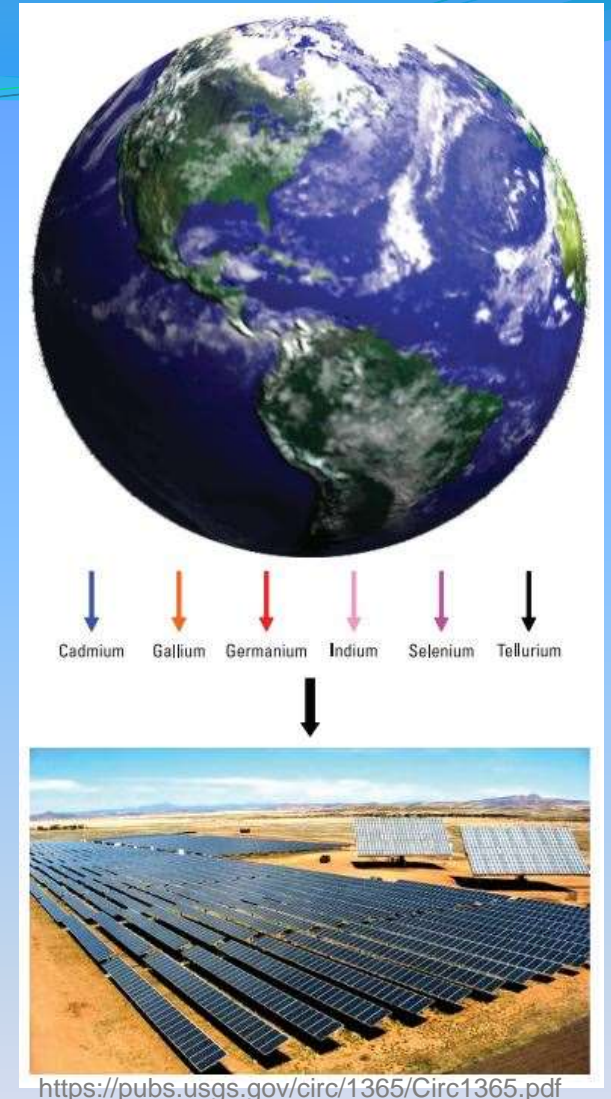
- Aluminum, cadmium, copper, gallium, indium, iron/steel, lead, nickel, silica, silver, selenium, tellurium, tin, zinc

- **Lithium Battery storage***

- Aluminum, cobalt, iron, lead, lithium, nickel, manganese

- **Wind Turbines****

- Bauxite(Aluminum), Coal, Iron Ore & molybdenum(steel), Cobalt and rare earth elements(magnets), Copper(wiring), Limestone, gypsum, silica sand, aggregate(concrete), zinc



*<http://www.levinources.com/assets/pages/Green-Economy-Series-Solar-Photovoltaic-and-Energy-Storage-in-the-Electric-Grid.pdf>

**https://mineralseducationcoalition.org/wp-content/uploads/mec_fact_sheet_wind_turbines_0.pdf



Engineering Geology and Natural Hazards

- Investigate the physical properties of the Earth for our Nation's infrastructure
- Mitigate natural disasters



Industry / Consultants / Public Safety

- Flooding
- Water Treatment
- Water Supply Management
- Solid Waste
- Earthquakes
- Landslides and Karst
- Road & Building Construction



International Options



- **Energy**

- Petroleum – Saudi Arabia, Canada, Venezuela, Iran, Iraq, Kuwait, Russia, Libya, Nigeria, China
- Natural Gas – Russia, Qatar, Iran, Canada, China, Norway, Netherlands, Algeria

- **Extraction**

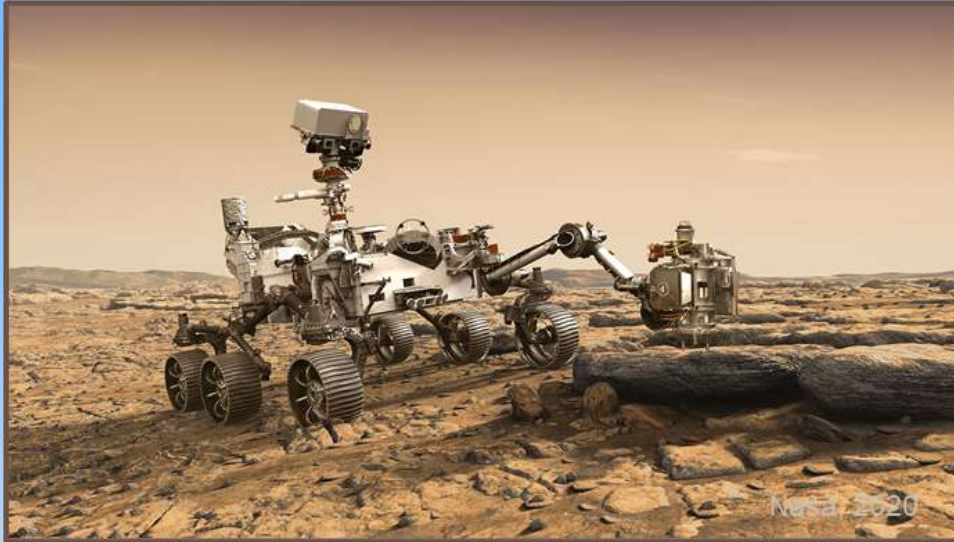
- Mining - Australia, Peru, Chile, South Africa, Mexico, Russia, China, Germany have a large mining industry
- Coal, gold, uranium, bauxite, copper, lead, silver, zinc, diamonds, chrome, manganese, platinum, vermiculite, rare Earth elements

- **Environmental**

- Geology, geophysics, geotechnical, hydrogeology, water resources, engineering, research science
- Developing countries, Asia, India, Saudi Arabia, Africa

Research

- Pure and applied research to study all aspects of the earth, including laboratory, field, numerical, and theoretical fields.



- Developing new methods to support future generations.



- Research geoscientists work as college professors, government employees, and commercial research and development teams.

Education

- Teaching earth science and related fields in the early, middle, and secondary grades
- College professor



- Job security and competitive salary

