Career Pathways in Geology

Geology is a subject which opens the door to a plethora of career opportunities. A geologist's job involves two main functions; *Exploration* and *Research*. Exploration involves detailed identification and investigation of the natural resources of a region (to locate water, mineral, energy resources), predict future geologic hazards like earthquakes, floods, and landslide. Research deals with compilation of field data into a geological map, which shows the distribution and relationship of the resources. It is supplemented by laboratory investigation, where a geologist uses microscopic, electronic equipment and computing techniques to analyse samples collected from the field. A geologist's work significantly includes - field activity, office-based data processing, report writing and project planning. The scope of the job depends on the work area of the company or organization, you work for.

To kickstart a career as a Geologist one must have a Master's degree in Geology. A Master's degree is enough for any entry-level positions. But an advanced degree like PhD will help you enter colleges to teach. The basic qualities required for the job includes ability to visualize, good scientific/technical skills, physical fitness, ability to interpret statistical and graphical information and report-writing skills.

Typical careers in geology generally fall into the following categories:

- Corporate (oil, mining, environmental, engineering)
- Nonprofit Organisations (environmental, planning, educational)
- Government (local and regional planning, state and central government geological survey agencies, environmental regulation and protection agencies)
- Academic (College and University)
- Research
- Entrepreneurs (exploration geologist, hydrogeologist, geotechnical, environmental assessment)

A pathway to various careers in Geology with work description, responsibilities and salary, are described herewith.

Getting a Career in the Petroleum Industry

The major oil companies tend to hire only geologists with masters or PhD degrees. The PSUs have their own recruitment procedure. The oil industry includes a lot of oil-field support services companies. For example, Schlumberger's subsidiary GeoQuest provides a range of software programs to analyze and display subsurface seismic and wireline data. GeoQuest has hired people with undergraduate geology degrees to help service and support their software packages. Schlumberger and another major player, Halliburton, have offices around the world. Check out their websites for employment listings. The best way to get a petroleum job is to scan the corporate web pages. One advantage of working in the petroleum industry is the high salaries and great benefits. As long as they are drilling they still need mud loggers (geologists who identify the rocks coming out of the drill hole) to tell the drillers where their bits are in the stratigraphy. This job entails being at remote drill

sites for odd hours. They drill 24-7, so a mud logger might live continuously at the drill site for X days, then get Y days off.

Careers in the Mining Industry

Most mining jobs require at least a master's degree in economic geology, so choose an appropriate graduate program and ask lots of questions before embarking on this career. The PSUs have their own recruitment procedure. Although many economic jobs can require you to live overseas, there are mining and quarrying operations all over the country, and persistent investigation and informational interviewing could easily turn up a job.

Careers in Environmental Geology

Environmental geology is a broad field that includes such things as site assessment, site remediation, groundwater geology, surface water hydrology, and ensuring that various organizations comply with the relevant environmental regulations. You could work for a government agency, for a company wanting to ensure its own compliance with environmental regulations, or for a private environmental consulting company. Many private companies hire at the bachelors and masters levels, with pay corresponding to your level of training and experience. There is a large number of firms with a correspondingly large range in size and personality. Talk to the people you meet at the society meetings to get a sense of what the different companies do and how they operate.

Careers in Engineering Geology and Geotechnical Geology

Engineering geology is concerned with the stability of soil and rocks in a host of civil engineering, mining, and petroleum situations. Lower level geotechnical work often involves soil sampling and assessment of new construction sites. Higher level work involves the application of rock mechanics, geomorphology, and various engineering principles to the construction of road cuts, bridges, dams, locks, dikes, and major buildings. The way to become an engineering geologist is to excel at structural geology and geomorphology and then simply get an entry-level job in the field. Hands-on work on field projects under the guidance of a senior environmental geologist is excellent training! Or you can go on to get at least a master's degree in engineering geology and start out in the professional world with sharper skills and a higher-level position.

Government and Nonprofit Careers

These jobs include basic field research for purposes ranging from the assessment of contaminated waste sites to the viability of future waste sites to the stability of road cuts and bridge pilings. They also include library and field research aimed at developing policy papers or undertaking basic outreach and public education. You could end up working for various environmental organizations, the Environmental Protection Agency, regional and city planning agencies, and other such agencies that need geological expertise. Government jobs include positions in the Geological Survey of India, Central Groundwater Authority and State Directorate of Geology & Mining which has divisions that cover basic geology, economic geology, water resources, and disaster management.

Academic Careers

To become a professor you will have to get a PhD. Be aware that the academic career track is highly competitive. Getting into a good PhD program is relatively easy, getting a postdoctoral position is somewhat challenging, getting a tenure-track position is quite challenging, and earning tenure is sometimes even more challenging. Be prepared for stress the whole way. In general, the pursuit of an academic career requires enough love of research and teaching that you do not mind the years of hard work and stress.

The alumni of School of Studies in Geology & WRM have been recruited as teaching faculty members in various Universities and other higher education departments. So far, one alumnus has found his place in Indian Revenue Services as officer, three in Geological Survey of India as geologists and one in Central Ground Water Board as Hydrogeologist. A number of students from this department have been selected as geologists in state DGM, NMDC, IBM etc. Many alumni from this institute have found placements in SAIL.