

Hydrogeologist

Introduction

Hydrogeologists study the location, nature and movement of underground water (groundwater). They use their knowledge to find new groundwater resources, and to maintain the quality and quantity of existing ones. They also advise people in agriculture, industry, mining and civil engineering on water usage and environmental problems.



Work Activities

Hydrogeologists have the vital job of managing and preserving existing groundwater resources, and finding new resources.

Water is one of the Earth's most important natural resources, and a lot of our water comes from below the ground. Growing populations around the world mean that finding and preserving clean water supplies is more important than ever.

Fieldwork could include drilling to gather information about groundwater and underground structures (such as their nature and capacity to store water), and tests on the quality of water, identifying the presence of pollution.

Back at the office or laboratory, hydrogeologists can use computers to produce models of the distribution and flow of the groundwater, and the chemicals it contains. They also produce maps, charts and reports.

Hydrogeologists use their findings in a number of ways. Some work for government agencies, monitoring and managing water environments.

Others study droughts and floods, assessing how these will affect groundwater supplies. They use their findings to advise people both in the UK and other countries.

Some hydrogeologists work as consultants, for example, assessing the use of water in agriculture, forestry and town planning. They advise people on the best ways to avoid polluting rivers and groundwater supplies, helping farmers to prevent chemical 'run off' from fertilisers and pesticides into the water system, and advising local government on safer waste disposal systems.

Hydrogeologists work with organisations in agriculture, industry, engineering and mining to ensure that these areas comply with environmental legislation and regulations.

They advise civil engineering and mining companies on how water will affect their projects and, in turn, how mining and engineering work could impact on water systems. This work is known as impact assessment.

The search for new groundwater supplies is particularly important in hot, developing countries, so there is a need for hydrogeologists to use their expertise abroad. This could involve identifying the presence of groundwater and assessing its quantity and quality, or it could mean training people in the use of hydrogeological technology.

Being able to read, write and speak Welsh may be an advantage when you're looking for work in Wales.

Personal Qualities and Skills

To be a hydrogeologist, you'll need:

- A thorough, methodical approach to your work.
- Attention to detail, for example, for analysing samples and producing geological maps.
- Good teamwork skills to work alongside people like geochemists, geophysicists and engineers.
- Willingness to do fieldwork in all types of weather and terrain, possibly on your own for long periods.
- The ability to explain your findings and give advice clearly and concisely, including in written reports.
- Computer skills to produce reports and geological models, and to analyse data.
- Strong number skills for mathematical modelling.

Good colour vision is very important in most areas of geology because of the need to describe and recognise the subtle colour characteristics of rocks and minerals, and to read geological maps, which depend on colour to indicate different rock types.

Pay and Opportunities

Pay

Salaries for hydrogeologists vary. The pay rates given below are approximate.

Hydrogeologists earn in the range of £22,000 - £30,000, rising to £40,000 - £46,000 with experience. Higher salaries are available, depending on employer, role and responsibilities.

Hours of work

Hydrogeologists usually work around 35-40 hours, Monday to Friday. However, they might need to have early starts, late finishes and some weekend work.

Where could I work?

Hydrogeologists work for companies involved in the location and development of water supplies, such as water companies and civil engineering firms.

There can also be opportunities in organisations such as the British Geological Survey and the British Antarctic Survey.

Some hydrogeologists become teachers or consultants.

Opportunities for hydrogeologists occur in towns, cities and rural areas throughout the UK.

There can also be opportunities for hydrogeologists to work in other countries with British civil engineering firms. Many hydrogeologists work in countries outside the UK for voluntary or charitable organisations early in their career to gain experience.

Self-employment

Experienced hydrogeologists can work as self-employed consultants.

Where are vacancies advertised?

Vacancies are advertised on the Geological Society website, in science magazines such as New Scientist (which also posts jobs on its website), on specialist job boards for the oil, gas and coal industries such as OilCareers.com, oilandgaspeople.com and Earthworks-jobs.com, academic recruitment sites and in national newspapers.

Entry Routes and Training

Entry is with at least a first (undergraduate) degree in geology, geoscience or Earth science (there are no first degree courses in hydrogeology).

Many entrants have a relevant postgraduate qualification, such as an MSc. A small number of hydrogeology courses are available.

Entry can be possible for people with first degrees in related subjects such as physics, environmental science and civil engineering, followed by a postgraduate hydrogeology qualification.

There are several types of first (undergraduate) degree course. BSc (Hons) degrees usually take three years to complete (four in Scotland). MGeol/MSci degrees are four-year courses, allowing for a wider range of taught subjects and research than in the BSc.

Some universities offer degree courses with a foundation year. This is an extra year for students who don't have the specified science A levels for entry.

The Geological Society accredits a number of first degree courses. Accreditation demonstrates that the university department's teaching is of a high quality. Having an accredited degree reduces the amount of experience you need

before you can achieve Chartered Geologist and Chartered Scientist status through the Society (see 'Progression' below). You can find a list of accredited courses on The Geological Society's website.

The Society also accredits some postgraduate courses, including in Hydrogeology and Water Management at Newcastle University.

Employers are likely to prefer candidates with relevant work experience, either paid or voluntary, that demonstrates a range of hydrogeological skills and a proven track record of technical competence.

Training

You might have on-the-job training, combined with short courses and going to conferences and seminars. Some employers enable hydrogeologists to complete a postgraduate qualification while working.

The Society of Geologists runs a continuing professional development scheme.

Progression

You could be promoted to a senior position or a management role.

Usually with a degree or equivalent in geology (or a related subject), you can become a Fellow of the Geological Society. Then, with at least five years' relevant experience, you can apply for Chartered Geologist (CGeol) status. You can also achieve Chartered Scientist (CSci) status through the Society.

Experienced hydrogeologists can become self-employed consultants.

Qualifications

For entry to a degree in geology, the usual minimum requirement is:

- 2/3 A levels, including at least one science subject, Maths or Geology. Some universities accept Geography as a science subject.
- GCSEs at grade C and above in your A level subjects.
- A further 2/3 GCSEs at grade C and above, often to include English and Maths.

Alternatives to separate science GCSEs (Biology, Chemistry and Physics) are:

- Science and Additional Science, or
- Science and Additional Applied Science.

Alternatives to A levels include:

- Edexcel (BTEC) level 3 Nationals
- the International Baccalaureate Diploma.

However, course requirements vary, so please check prospectuses carefully.

Some universities accept the Welsh Baccalaureate as equivalent to 1 A-level.

Adult Opportunities

Age limits

It is illegal for any organisation to set age limits for entry to employment, education or training, unless they can show there is a real need to have these limits.

Courses

If you don't have the qualifications needed to enter a degree course, you might be able to start one after completing an Access course, such as Access to Science. You don't usually need any qualifications to enter an Access course, although you should check this with the course provider.

A foundation year before the start of a science degree is available at some universities and higher education colleges for students who don't have the science A levels usually needed for entry to the course.

Birkbeck, University of London offers degree and postgraduate courses in geology and earth sciences on a flexible basis: part-time (evenings) or by distance learning.

A number of other universities offer part-time degrees in geology and Earth science.

The Open University offers a degree in Geosciences and a postgraduate degree in Earth Science, by distance learning.

The University of Newcastle offers an MSc in Applied Hydrogeology by distance/flexible learning. The University of Strathclyde and the University of Sheffield offer MScs in hydrogeology by part-time study.

Funding

Funding for postgraduate study and research is available, through universities, from the Natural Environment Research Council (NERC).

Statistics

- 6% of people in occupations such as hydrogeology work part-time.
- 14% have flexible hours.
- 8% of employees work on a temporary basis.

Further Information

Contacts

- **GreenJobs**
Email: info@greenjobs.co.uk
Website: www.greenjobs.co.uk
- **New Scientist**
Publisher: Reed Business Information Ltd
Email: ns.subs@quadrantsubs.com
Website: www.newscientist.com
- **Open University (OU)**
Tel: 0845 3006090
Website: www.open.ac.uk
- **Natural Environment Research Council (NERC)**
Address: Polaris House, North Star Avenue, Swindon SN2 1EU
Tel: 01793 411500
Website: www.nerc.ac.uk
- **Earthworks-jobs.com**
Website: www.earthworks-jobs.com
- **Geological Society**
Address: Burlington House, Piccadilly, London W1J 0BG
Tel: 020 7434 9944
Website: www.geolsoc.org.uk
- **Rockwatch**
Address: Rockwatch at the GA, Burlington House, Piccadilly London W1J 0DU
Tel: 020 7734 5398
Email: rockwatchatga@btinternet.com

Website: www.rockwatch.org.uk

- **myOilandGasCareer.com**
Publisher: OPITO
Email: myoilandgascareer@opito.com
Website: www.myoilandgascareer.com
- **Rigzone**
Oil jobs
Tel: 0207 997 7624
Website: www.oilcareers.com
- **Oilandgaspeople.com**
Website: www.oilandgaspeople.com
- **British Geological Survey (BGS)**
Address: Keyworth, Nottingham NG12 5GG
Tel: 0115 9363143
Email: enquiries@bgs.ac.uk
Website: www.bgs.ac.uk
- **Quarterly Journal of Engineering Geology and Hydrogeology (QJEGH)**
Publisher: Geological Society
Website: www.geolsoc.org.uk/qjugh
- **The Hydrographic Society (THS UK)**
Address: PO Box 103, Plymouth PL4 7YP
Email: helen@ths.org.uk
Website: www.ths.org.uk

Related Careers

- Palaeontologist
- Geochemist
- Geological Technician
- Geotechnical Engineer
- Geologist - Minerals/Mining
- Geophysicist
- Meteorologist
- Oceanographer
- Geologist
- Mudlogger
- Epidemiologist
- Carbon Capture Technician