UK Critical Minerals Intelligence Centre

CRITICAL MINERALS

KS3 lesson 2 resource sheet: life cycle of a mineral – geoscience careers

British Geological Survey

Department for Business & Trade

Cut up the photographs and job descriptions. Shuffle and, in pairs or small groups, match up the photo to the correct label. Then complete the final task in your workbook.

Image	Job	Description
	Jewellery designer	Many jewellery designers are self-employed or work freelance because this provides opportunities to work on a part-time basis.
	Waste disposal expert	We need waste disposal sites to dispose of rubbish that cannot be reused or recycled. Geoscientists working in waste disposal identify suitable landfill sites (areas where rubbish can either be deposited directly on the ground (land raising) or dumped to fill unwanted holes in the ground (landfilling).
	Landscape architect	Landscape architecture is designing environments of varying scales that encompass elements of art, environment, architecture, engineering and sociology. Outdoor environments consider the local geology.
	Petroleum geologist	Working as a petroleum geologist provides great opportunities to travel. The average annual salary for petroleum geologists is very rewarding.
	Hydrogeologist	Hydrogeologists are concerned with deep groundwater. Their work involves studying the quality of groundwater and how contaminants move through the ground.
	Volcanologist	Volcanologists study volcanoes, particularly with a view to predicting how people may be affected by volcanic activity. A volcanologist's job takes them to exciting places like Hawaii, Java and the Andes.

Image	Job	Description
	Geophysicist/ seismologist	Geophysicists and field seismologists use complex equipment to collect data on earthquakes and seismic waves. Here a scientist is using a seismograph to monitor data.
	Civil engineer	Civil engineering is about creating, improving and protecting our built environment. Civil engineers provide facilities such as tunnels, bridges, harbours, railways, hospitals, roads and buildings.
	Quarry or mining geologist	The roads, footpaths, bridges and buildings (houses, schools, hospitals and shops) that make up our built environment are made from raw materials extracted from the earth by quarrying and mining industries. A mining geologist is a professional who applies this science to mining. It is the primary responsibility of this geologist to ensure that minerals, rocks and gems are extracted from mines, pits and quarries in a manner that allows maximum profit and involves minimal problems.
	Forensic geoscientist	Forensic geoscientists work with the police, environmental agencies and humanitarian organisations to help bring some types of crimes to successful conclusions. Forensic geoscientists may be laboratory-based, providing physical evidence, or field-based, using their skills in exploration to search the ground to locate items related to a crime.
	Disaster and hazard risk expert	Disaster hazards include landslides, flooding, earthquakes, volcanic eruptions, coastal erosion, storm surges and tsunamis. Disaster hazard risk reduction includes modifying natural events, determining the risks posed by the events and assessing their possible outcomes.
	Palaeontology	Palaeontology is the branch of earth science that studies the fossils of plants and animals to learn about the history of life on Earth and record patterns of how life has changed, providing a reference point for current events. If the study of ancient life excites you, palaeontology may be the field for you.

Image	Job	Description
	Mining Engineer	Mining engineers deal with the safe, economic, and environmentally responsible recovery of mineral resources from the Earth. No two days as a mining engineer are ever the same. Work may involve: • advanced computer aided design • mine planning technical work setting off blasts with the shot-firing crew
	Astronaut	This is James Reilly. He studied and gained a doctorate in geosciences. A career as an astronaut provides opportunities to travel to places that are *literally* out of this world!
	Mapping/surveying geologist	Geological surveying and mapping involve looking at how rocks are: • folded and fractured • altered by geological processes • dated Geological maps and databases are basic tools underpinning the use of Earth's resources. The work is both indoors (in laboratories and offices) and outdoors (on land or at sea).
	Museum worker/ curator	An earth science museum worker cares for rock, mineral, gemstone and fossil collections by applying scientific methods to preserve and restore artefacts. Work involves interpretation of specimens to inform and educate the public.
	Flood management expert	About 5 million people live in flood-risk areas in England and Wales alone. Flood management involves protecting people and the environment. It can be a challenging and rewarding career. Work may involve: • investigating the causes of flooding • assessing the risks associated with flooding • examining the effect of climate change on flooding patterns • modelling water resource systems

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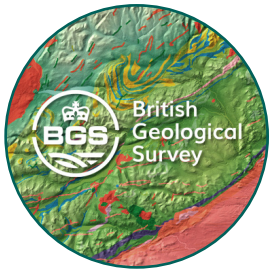
	Geo-conservationist	Geological conservationists work to preserve the natural geological and geomorphological features in our landscapes and liaise closely with other conservationists to protect the diverse range of habitats and natural resources produced in the different geological environments. Spectacular scenery attracts visitors and helps to sustain local tourist industries. You can expect to work in some interesting areas of the world.
	British Geological Survey	The British Geological Survey is a world-leading geological survey and global geoscience organisation, focused on public-good science for government and research to understand earth and environmental processes. We help society to use its natural resources responsibly, manage environmental change and be resilient to environmental hazards.
	Science communicator	Sir David Attenborough studied geology and zoology at university and obtained a degree in natural sciences. He has worked in the media as a film maker, concentrating on natural history including many geological topics, in a wide range of places around the world.
	Industrial mineralogist	Industrial minerals are vital to a modern economy. They underpin the manufacturing industry, construction and agriculture and they have important environmental applications. A industrial geologist studies the properties of rocks, gems and other minerals, including their chemical and physical properties and crystalline structures. They are vital in the exploration for critical minerals used in modern technologies.
	Climatologist	Climatology is the study of the Earth's weather patterns and the systems that cause them. Climatologists today are directing their efforts towards understanding, explaining and attempting to do something about global warming since it became clear that human actions are damaging the environment and changing the climate.
	Environmental Lawyer	This area of work focuses on the legal rules that regulate pollution and otherwise protect the environment. Work deals with public international law in regulating environmentally harmful activities.

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	Environmental impact assessor	In environmental impact assessment, you apply an understanding of different aspects of the environment based on firm scientific foundations. Work is varied. Examples of the types of project you could work on include: • recycling schemes • effects of road building proposals on wild life habitats • impacts of dams on migratory fish in rivers
	Nuclear geologist	Geologists are employed in the nuclear sector in a variety of roles, from resources (uranium mining) to engineering and hazard consultancy. Another growing sector is geological storage of radioactive waste.
	Teacher	Science subjects are core subjects in secondary schools. Teaching is a rewarding profession, offering a variety of career prospects and development opportunities.