

Earthquakes and Volcanoes | Sample Answer

Predicting and reducing the effects of seismic activity. (2017 Q3C)

Seismic activity is defined as the types, frequency and size of earthquakes that occur due to tectonic movement. Seismologists are the scientists that study earthquakes, and they often use seismographs to detect and measure the magnitude of the earthquakes. Seismographs record the vibrations of foreshocks of earthquakes and in this way, they can predict when the main tremor of an earthquake will occur. The Richter Scale uses information gathered by the seismographs to scale the amount of energy produced by the vibration. Anything under 3 on the scale cannot be noticed by tremors. By studying the frequency, and previous pattern of earthquakes in an area, scientists can try to discover patterns in the seismic gaps between earthquakes and predict their next occurrence. Predictions can be more accurate by use of a tiltmeter. Tiltmeters are instruments that measure the land bulges or tilts that happen before quakes. Laser beams from satellites are used to measure even the slightest rock movements in areas prone to earthquakes. Rock movements are a sign of plate movements that cause earthquakes. Radon gas levels are monitored as they rise before earthquakes. Water levels in wells are also monitored as they too rise prior to an earthquake. It is believed that changes in animal behaviour are a sign of seismic activity as snakes are known to leave their nests before earthquakes.

As we can predict the occurrence of earthquakes, we can find ways to reduce their effects, and stop the loss of human life. Strict planning laws are in place and constructions are not possible within certain distances of the fault lines. Such laws are in place where the Pacific plate passes the North American plate in California, USA. Measures can be taken to make buildings earthquake-proof, as their destruction is often the cause of most deaths, Very deep foundations are used in buildings, and rubber layers are added to them to act as shock absorbers. Steel reinforced concrete frames allow high buildings to sway a little rather than collapse during an earthquake. Buildings can also be wider at the base and narrower at the top to prevent falling over. Houses are normally built using wooden frames and hollow concrete blocks that cause less damage if they collapse as the materials are lighter. Many countries have a national emergency plan and practice it frequently. This allows for better preparation and recovery after earthquakes, thus reducing their long-term effects.