

Effects of earthquakes on humans and environment



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Earthquakes can have disastrous effects on humans and on the environment. An earthquake is the result of trembling, rolling and vibration of the ground triggered by the sudden release of energy that is stored below the surface of the Earth (Ford 2004). A scientific instrument called a seismometer is used by scientists to record, and measure strengths of earthquakes (McNally 2007). The intensity or the size of an earthquake is measured by a number called the magnitude. Actually, earthquakes occur in everyday and everywhere and as a result, the estimate by scientists for each day is that more than thousands minor earthquakes happen without triggering any physical damage and mostly they are imperceptible. Earthquakes frequently occur in the following countries: China, Indonesia, Pakistan, Iran, United States, Japan, and the Philippines. In these regions there are a lot of earthquakes and also they have numerous volcanoes. There are three main causes of earthquakes: tectonic plate movement, human activities, and volcanic eruptions.

2. Background

Earthquakes destroy property and cause death. On July 28, 1976, there was a 7.8 magnitude earthquake in the city of Tangshan (Rosenberg 1997). The strength of the earthquake was recorded by a scientific instrument called a seismometer, also known as a seismograph. It is an instrument that can detect and measure the ground motion from an earthquake (McNally 2007). At 0342 local time, the earthquake hit Tangshan and over a million of people were sleeping. As a result, hundreds of thousands of people were killed and many people were reported missing and presumed dead. There were a lot of people were badly injured. Tangshan is located in Northeastern China (Ean <https://assignbuster.com/effects-of-earthquakes-on-humans-and-environment/>

area devastated by earthquakes. The earthquake was so strong that it triggered infrastructure collapse including houses, schools, shops, health clinics, roads, railway station, factories, and bridges. The people in Beijing also felt the tremors. A lot of people lost their lives because most their houses were completely destroyed. The city of Tangshan is being rebuilt nowadays by its citizens.

3. Causes

3. 1 Cause 1: Tectonic Plate Movement

The main cause of earthquakes is tectonic plate movement. The crust of the earth consists of many pieces called tectonic plates. There are plates along the outer layer of the earth which are floating on the molten magma under the crust of the earth. (Ganguly 2008) The convection current in the molten magma drive the plates to move inside the earth. They move continuously until they pass through each other. When the two plates meet together, they start to push and rub each other but they are not moving. After a while, the pressure beneath builds up and keeps on rising. Once they cannot contain the pressure, it will be expelled. This sudden release of energy and the strength of the plates cause the ground shake and the two plates start to break. (Why do earthquake happen? n. d.) For example, on December 26, 2004, an earthquake hit the Sumatra, Indonesia where the Indian and Burmese plates in India Ocean are broken and one plate is moved across the top of the other plate. (Magnitude 9. 1-Off the West Coast of Northern Sumatra 2008) The region that breaks on the crust is known as a fault which usually can be seen on the surface of the earth. The point where

earthquakes begin and break the plates underground is known as focus and above the focus, on the surface of the earth is called the epicenter. During plate movement, one plate gets submerged into the molten magma and another plate is moved across the top of it. This plate rises up due to the heat of molten magma. The plates keep on moving until they get stuck against each other. Most earthquakes take place on the edges of the plates where one plate is forced further into the earth crust while another plate is moved across the top of the submerged plate.

3. 2 Cause 2: Human Activities

Another contributing factor to earthquakes is human activities. There are many human activities that cause an earthquake. Building skyscrapers is a good example that may cause an earthquake. Many engineers and scientists are concerned about the types of buildings in construction. Skyscraper Taipei 101 with the height of 508 meters which is the world's tallest building. According to the geologist Cheng Horng Ling (2005), from the National Taiwan Normal University, Taipei 101 may cause an earthquake because the 101-storey skyscraper is built the stress on an earthquake fault. An ancient earthquake fault may reopen as the stress from the buildings exerting on the ground increases. Besides that, the injection of fluids in the mountain or into the crust of the earth also triggers earthquakes. A long time ago, the main purpose of humans injecting fluid was that the injection was the best way to dispose of toxic waste. For example, in the Rocky Mountains where there is a place for waste disposal. (Madrigal, A 2008) The injection of fluids into deep wells causes changing of the stress of the underground and the stress can

generate an earthquake. Furthermore, the release of pressure when extracting oil and natural gas can also cause earthquake.

3.3 Cause 3: Volcanic Eruptions

In addition, volcanic eruptions can also cause earthquakes. Normally, earthquakes are very active in areas of volcanic activity where they can either occur on their own or with the eruption. (Presnell 2002) Most of the time, the earthquakes triggered by the eruption of volcanoes are within ten to twenty miles around the volcanoes. In order to release the huge pressure that builds up by the molten magma underneath the earth crust, it always tries to look for an opening or an area that is fairly weak. (Ganguly 2008) Therefore, areas that have active volcanoes accompanied by volcanic activities are always prone to the earthquakes because the pressure builds up by the magma has surpassed the limit that earth crust can sustain. If a volcano eruption produces acidic lava then it can be predicted that there will an earthquake with the strongest magnitude. It is because acidic lava will solidify once it contacts the air and block the volcano's vents so that pressure cannot escape. As a result, pressure is developed inside and the resultant explosion can be destructive and destroying, producing an earthquake of significant magnitude.

4. Transition Statement

Having looked at the causes of earthquakes, its main effects will be discussed in the following. The effects can be in terms of social, environmental and economic. An earthquake can bring great impacts to the society. It is an unbearable scene as people die in the aftermath of <https://assignbuster.com/effects-of-earthquakes-on-humans-and-environment/>

earthquakes and leaving their loved one to suffer from their death. Some of natural disasters like tsunamis and landslides can be triggered by earthquakes. Earthquakes can also have disastrous effect to the country's economy.

5. Effects

5.1 Effect 1: Social Impacts

One of the biggest effects of earthquakes is the social impact on survivors. Earthquakes have short term impacts as well as long term impacts. The short term impacts can be seen in the aftermath of earthquakes. We can see thousands of people dying and many corpses. The 2008 earthquake in Sichuan, China, for instance, caused tens of thousands of deaths and hundreds thousands of people were injured. (Magnitude 7.9-Eastern Sichuan, China 2008.) A powerful earthquake can destroy buildings, factories, shops, roads, bridges and schools. These cause many people to become homeless. Furthermore, earthquakes can cause disruption to public services like transport systems and communication connections. (Earthquake n. d.) Worst of all, survivors face a lack of drinking water because water pipes burst and water supplies are contaminated. In the cases of long term social impacts, thousands of children became orphans as their parents are killed in the earthquake. Most of the parents are depressed and the town lost a generation because their children were killed in schools that collapsed.

5.2 Effect 2: Environmental Impacts

There are also environmental impacts. A tsunami, for instance, is produced by an earthquake. Tsunamis are tidal waves that are caused by the sudden movement of plates under the sea floor during an underwater earthquake. (What are effects of earthquakes? n. d.) This wave can move swiftly a long way across the ocean. (Effects of earthquakes n. d.) When a large scale of tsunami hits the seashore area, it can trigger enormous erosion as well as destroy buildings in its path. Worst of all, people will also be washed away by the tsunami. For example, on December 26, 2004, a tsunami hit some nations around the Indian Ocean and caused hundreds of thousands of deaths. Earthquakes can cause landslides. It is very dangerous especially for buildings in unstable area on hillsides or mountains where soft soils can be liquefied by the tremors of earthquakes. During an earthquake, buildings can fall down hills with soil and bury people under the soil. People will be buried alive. In addition, aftershocks are also effects of earthquakes. Aftershocks are small tremors which disperse it to other places and other people can feel it after the main shocks of an earthquake. For instance, in Penang, Malaysia, there are no earthquakes, but when an earthquake happened in Sumatra it was so great that even Malaysians living in Penang experienced aftershocks. (See 2006)

5. 3 Effect 3: Economics Impacts

Apart from social and environmental impacts, earthquakes also have negative effects on a nation's economy. Governments have to be responsible for the damage caused by earthquakes. As we can see, earthquakes cause infrastructures to collapse, reservoirs dams, shops, and hospitals are devastated after an earthquake. (Earthquake n. d.) Governments have to <https://assignbuster.com/effects-of-earthquakes-on-humans-and-environment/>

spend sizeable amounts of money to rebuild the place. Earthquakes also cause spending of the capital to distribute food and medicine to victims. Markets in particular may be disrupted and this causes uneasy trade. Furthermore, investors whose money is in that particular area for development may decide to withdraw. Once the investors withdraw the investment in the particular country, it will cause a loss of job opportunities as well as the country's income diminishing and an unstable economy.

6. Conclusion

In conclusion, earthquakes are hard to predict and can happen any time. Tectonic plate movement, human activities and volcanic eruptions are 3 of the causes of earthquakes, whose effects can be felt socially, environmentally, and economically. As we can see, prevention of earthquakes is absolutely impossible, so, suitable action to reduce injury and death is of uttermost importance. Some safety action should take place, such as evacuation and safety build structures to resist earthquakes. Some countries, such as the United States and Japan carried out research about public buildings designed to resist earthquakes. (Moleworth 2008) The results are that the whole building will move to and fro without trembling. It is very important to have this facility in earthquakes zones as damage and lives are at risk.

(1775 words)

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