

VI SEMESTER HONOURS

PAPER XIV

UNIT II

2(d)Earthquake as natural hazard

Earthquake can be defined as the shaking of earth caused by waves moving on and below the earth's surface and causing: surface faulting, tremors vibration, liquefaction, landslides, aftershocks and/or tsunamis.

Aggravating factors are the time of the event and the number and intensity of aftershocks.

Compound hazards are fire, landslide, and tsunami.

Earthquake can also be defined as any sudden shaking of the ground caused by the passage of seismic waves through Earth's rocks. Seismic waves are produced when some form of energy stored in Earth's crust is suddenly released, usually when masses of rock straining against one another suddenly fracture and "slip."

Earthquakes occur most often along geologic faults, narrow zones where rock masses move in relation to one another. The major fault lines of the world are located at the fringes of the huge tectonic plates that make up Earth's crust.

An earthquake occurs because of the movements of tectonic plates beneath the surface of the earth. These movements create waves that propagate through the earth. These waves are known as seismic waves. It causes mild to heavy shaking and vibrations. The intensity of these vibrations can vary, but sometimes they can bring about great destruction. **Earthquake in oceans is known as Tsunami, which is equally devastating.**

Causes of earthquake:

Earthquakes can be human-made or natural, although the latter is more abundant. These earthquakes are not random; rather, they are the effect of different changes occurring in the earth's crust for a long time. The main **causes of earthquakes** fall into five categories:

1. **Volcanic Eruptions:** The main cause of the earthquake is **volcanic eruptions**. Such type of earthquakes occurs in areas, with frequent volcanic activities. When boiling lava tries to break through the surface of the earth, with the increased pressure of gases, certain movements caused in the earth's crust. Movement of lava beneath the surface of the earth can also cause certain disruptions. This sends shockwaves through the earth, causing damage. These earthquakes are mild. Their range is also limited. However, there have been certain exceptions, with volcanic earthquakes bring havoc and death to thousands of people.
2. **Tectonic movements:** the surface of the earth consists of some plate ,comprising of the upper mantle. these plates are always moving, thus affecting the earth's crust. These movements can be divided into three categories: a) constructive: when two plates move away from each other,they respond to mild earthquakes. b)destructive:two plates move towards each other and collide,cying intensities.)conservative: conservative corresponds to passing by of plates of crust.earthquake of this type have vaying intensities.
3. **.geological faults:** a geological fault is known as the displacement of plates of their original plane.the plane can be horizontal or vertical.the movements of rocks along these planes brings about tectonic earthquakes.earthwquake due to displacement of plnes can be disastrous.
4. **man made causes:** the interference of man with nature can be a cause of the earthquake.some of the human activities which causes earthquakes are:nuclear bomb testing,mining,disturbance of crustal balance due to heavy clubbing of water in dams can cause earthquakes.
5. other causes: some minor caused such as landslides ,avalanches ,the collapse of heavy rocks,etc can also cause minor shockwaves,

effects of earthquakes can be divided into primary effects and secondary effects

Primary effects which occur simultaneously along with the earthquake example: ground shaking, collapsed building etc, where, Secondary effects occur at the end or after the earthquake event example landslide .

Primary	Secondary
<ul style="list-style-type: none"> • Shaking and ground ruptures are the main effects of earthquakes. • Landslides • Collapsed buildings • Gas and water lines burst • Fissures in roads and sidewalks 	<ul style="list-style-type: none"> • Aftershocks • Fires • Diseases form water contamination • Blocked roads • Dam disturbances • Floods • Tsunamis • Soil liquifaction

Table 1 showing primary and secondary effects of earthquake Public health impact of earthquakes

The main public health threats vary according to the magnitude of the earthquake, the nature of the built environment and the secondary effects of the earthquake (eg. tsunamis, landslides and fires). The effects can be summarized in terms of how they relate to risk factors as follows:

1. Immediate health impact

- Trauma-related deaths and injuries from building collapse.
- Trauma-related deaths and injuries from the secondary effects of the earthquake (drowning and physical trauma from tsunamis, trauma from landslides, burns and smoke inhalation from fires).

2. Medium-term impact on health

- Secondary infection of untreated wounds.
- Increased morbidity and risk of complications related to pregnancy, deliveries and newborns due to interrupted obstetric and neonatal services.
- Potential risk of communicable diseases, particularly in areas affected by overcrowding.
- Increased morbidity and risk of complications of chronic diseases due to interruption of treatment.
- Increased psychosocial needs.
- Potential environmental contamination by chemical/radiological agents following destruction of industrial infrastructure.

3. Impact of earthquakes on the health system

- Damage to health facilities and transport infrastructure, with subsequent disruption of service delivery, leading to reduced access to and functionality of all levels of health services.
- Absence of health workers who may not be able to reach the health facilities that are still functional, or whose homes and families may have been directly affected by the earthquake.
- Reduced ability to pay for health services as affected households lose assets and livelihoods.
- Loss of medical supplies and interrupted procurement systems, with many stock-outs.

Mitigation and preparedness for earthquakes

- Strengthen health emergency risk management systems.
- Limit the risk of exposure to earthquakes by improving the quality of the built environment, with better land-use control, including regulating building.
- Ensure that health facilities are resilient to hazards, and that they are able to remain functional and able to respond to increased and changed health needs after earthquakes, with staff trained appropriately.
- Be prepared to mobilize medical response teams, including establishing temporary health structures and field hospitals.
- Invest in community preparedness – communities are often the first responders.