



# What is an



# EARTHQUAKE

As plates collide and grind over or past each other, stress builds up locally within the rock until the rock breaks along lines of weakness (faults). An earthquake is the vibration of the earth due to the energy released as the rock breaks. Additionally some earthquakes can be caused by volcanic activity or underground collapse. Both shallow (0-70km deep) and (down to 700km) earthquakes are associated with oceanic subduction zones such as the Tonga trench connecting New Zealand, Tonga and Samoa and the New Hebrides trench, which connects Vanuatu, Solomon Islands and Papua New Guinea. Regionally these countries and Fiji are at greatest risk from earthquakes.

## Tsunami Hazards.

Earthquakes, both deep and shallow can release huge amounts of energy and so can be extremely damaging to Pacific island countries.

Ground Shaking is caused by energy waves known as seismic waves hitting the surface of the earth. They cause the ground to shake up and down, back and forth and from side to side. This cause damage to buildings, roads, dams and reservoirs, buried pipelines, infrastructure and overhead cables, leading to dangers from collapsing buildings, falling debris, uneven ground, landslides, flooding and fires.

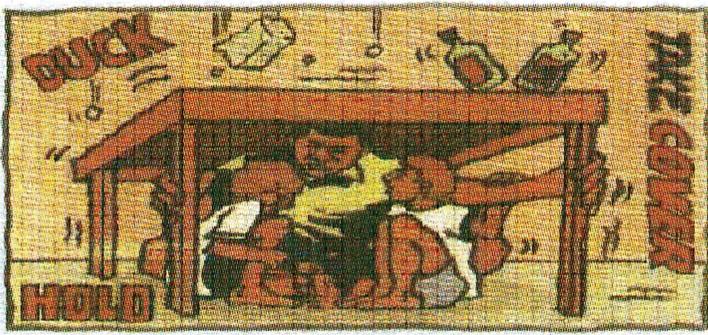
Ground shaking occurs at different intensities according to distance from the magnitude of the earthquake. The larger and shallower the earthquake and the closer to the centre of it you are, the more intense the ground shaking

**Surface faulting** is where an earthquake causes the ground surface to permanently split apart along a fault within the ground rock and soil. Faulting tends to occur when the earthquake is very shallow (0-10km deep) and strong.

**Liquefaction** is where the vibrations of the ground cause the soil to behave like a liquid. It happens on mainly sand and mud/clay soils – the soil flows, acting like quicksand and results in failure of building foundations. It is an especially dangerous effect in urban areas.

**Secondary Hazards.** In addition, earthquakes can trigger secondary hazardous events such as health problems due to interrupted water supply on broken sewage disposal systems, landslides, tsunamis, seiches, fires (due to gas leaks and broken live electricity wires) and flooding.

**EARTHQUAKES ARE SUDDEN, STRIKING WITH LITTLE OR NO WARNING. BE PREPARED IN CASE IT HAPPENS.**



## Modified Mercalli Earthquake Intensity Scale.

I. Instrumental. Not felt except by a very few under especially favourable conditions detected mostly by Seismography.

II. Feeble. Felt only by a few persons at rest, especially on upper floors of buildings

III. Slight. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing cars may rock. Vibrations similar to the passing of a truck.

IV. Moderate. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like a heavy truck striking building. Standing cars rock noticeably

V. Rather strong. Felt by nearly everyone; many awakened,

### Earthquake Warning

Currently there are no effective prediction or warning systems to provide advance warning that an earthquake is about to happen. Thus, it is vitally important that you are aware of what to do should one occur.

## What you can do before, during and after an earthquake.

### PREPARE FOR AN EARTHQUAKE

Always keep an emergency kit in your home, including water, food, necessary medicines, a reliable torch with fresh batteries and spares, portable radio, first aid kit, emergency phone numbers.

### DURING AN EARTHQUAKE;

If you are inside

- Drop, cover and hold.
- Stay inside – do not attempt to run outside. However, be prepared for aftershocks and evacuate if necessary. Listen to your radio for information and advice.
- Take cover under strong support like an internal door frame, table, desk or bed. Stay away from windows, overhead fittings, shelves containing heavy objects etc.
- If in a high-rise buildings, stay away from windows and outer walls. Never use the elevator
- If in a crowded public place, try not to panic. Do not attempt to barge at the door.

If you are outdoors:

- Keep well clear of buildings, power lines, trees etc. and stay in the open. Do not attempt to seek shelter in a building.
- If you are in a vehicle, pull off the road to clear areas and stop the car.
- Beware of fallen power lines, damaged roads and bridges.

### AFTER EARTHQUAKE

- Check people for injuries and apply first aid. Call the ambulance and do not move the seriously injured unless they are in immediate danger.
- Do not use the telephone unless it is absolutely necessary
- Do not use your vehicle unless there is an emergency
- Do not enter damaged buildings.
- Turn off cooking stoves. Do not light matches until you have checked for gas or fuel leaks.
- Turn utility off at source if you have water leaks or damaged electrical wires or sewerage lines.
- Check food and water supplies
- Stay calm and lend a hand to others if possible.

Earthquakes triggered the submarine landslides that caused the 1953 Suva, Fiji tsunami.



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