

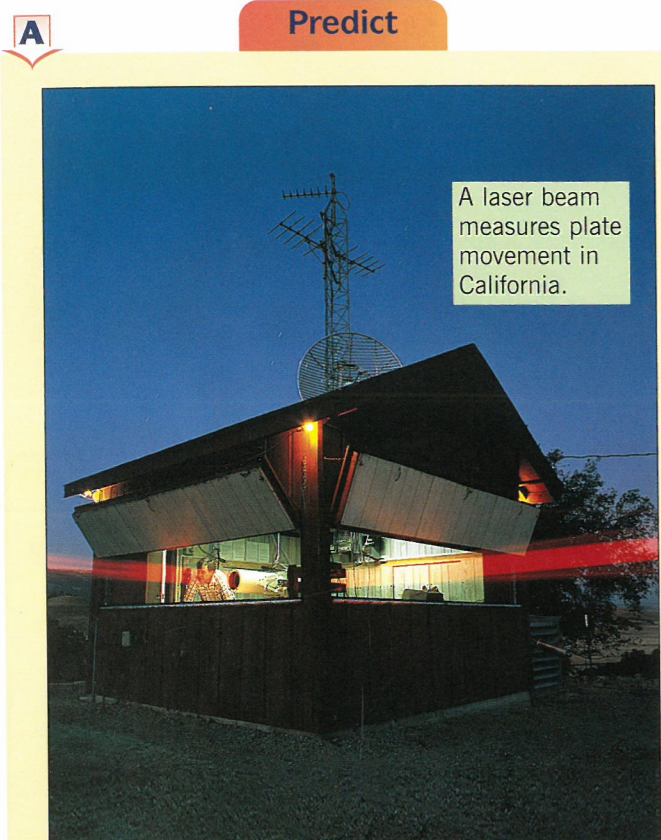
How can the earthquake danger be reduced?

Many towns and cities in California have been built in the active earthquake zone along the San Andreas Fault. Aware of the dangers caused by earthquakes, the state has adopted a 'Three Ps' policy of **Predict**, **Protect** and **Prepare**, to try to reduce the worst effects of this natural hazard.

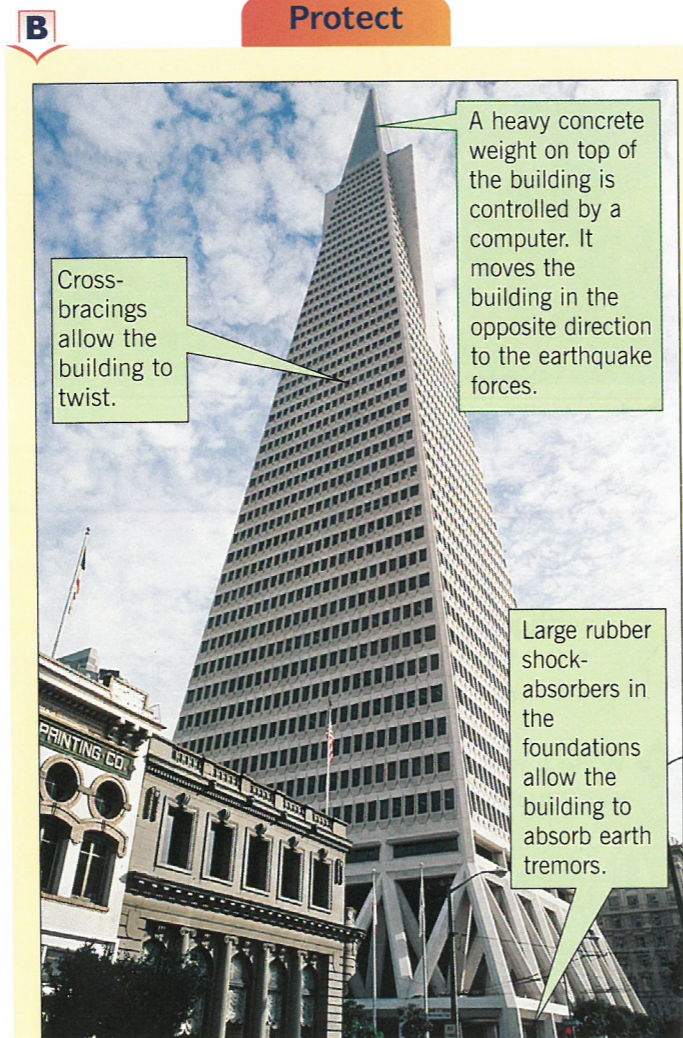
The accurate **prediction** of where and when an earthquake may happen is very difficult. Most earthquakes occur close to plate boundaries and scientists set up sensitive instruments in these areas to

monitor changes in the earth. Figure A lists some of the warning signs that help the scientists forecast where and when an earthquake might strike.

Most loss of life and damage to property in an earthquake is due to the collapse of buildings. The second part of the 'Three Ps' policy is to design and build structures that are safe and provide **protection** rather than cause danger in an earthquake. San Francisco's TransAmerican Pyramid, shown below, is an example of an earthquake-proof building.



- 1 Earthquakes are most likely after long periods without any plate movement.
- 2 Just before a 'quake, small cracks develop in the rock.
 - The cracks cause the rock to swell and bulge.
 - Radon gas seeps out and can be measured as it bubbles to the surface.
 - The cracks fill with water and cause nearby water levels to change.
- 3 There will be many small foreshocks before the main 'quake. These can be measured with a **seismograph**.
- 4 Animals often act strangely. Snakes and rats crawl out of their holes and dogs howl.



- 1 All new buildings must comply with strict earthquake planning regulations.
- 2 Building regulations must be adhered to and frequent safety checks carried out.
- 3 Existing buildings, roads and bridges should be strengthened.

Good **preparation** and planning can help limit the worst effects of an earthquake. This should involve local authorities and emergency services as well as people living in the area.

Most places that are in danger areas have an emergency disaster plan which is usually in three parts. The first prepares the area for the disaster. The second tries to save lives and look after the people worst affected. The third aims to bring the area back to normal as quickly as possible.

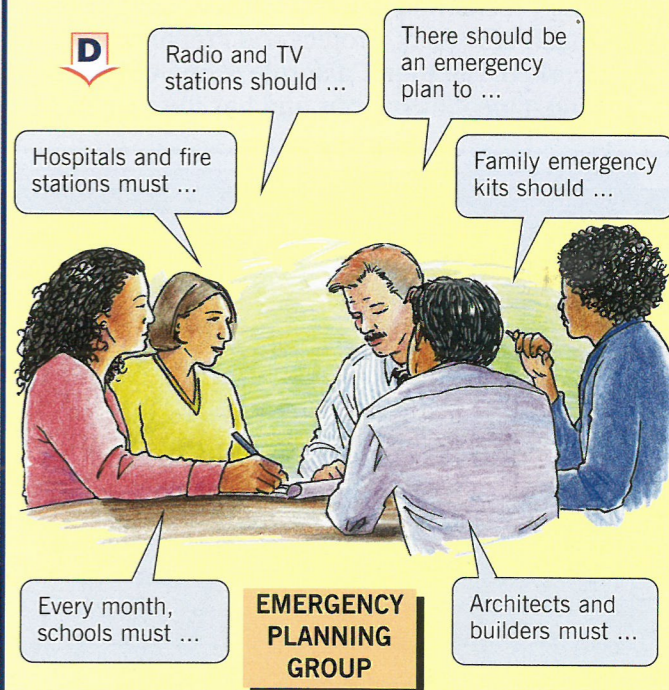
In some parts of California, schoolchildren practise earthquake drills as part of their lessons. At the sound of a bell everyone must shelter under desks and then move quickly outside to be counted.



- 1 Prepare disaster plans and carry out regular practices.
- 2 Train emergency services such as police, fire and ambulance crews.
- 3 Organise and prepare hospitals and evacuation centres in safe areas.
- 4 Educate people on what to expect and what will happen – turning off the gas supply, for example.
- 5 Organise emergency supplies of water, food and power in advance.
- 6 Set up an efficient earthquake warning and information system.

Activities

- 1 It is not easy to predict an earthquake.
 - a What does 'predict' mean?
 - b Draw a star diagram to show four signs that suggest an earthquake may be about to happen.
- 2 Write out the sentence beginnings in drawing D and complete them with the correct endings from the following list:
 - ... follow the rules for safe buildings.
 - ... practise what to do in an earthquake.
 - ... include food, clothing, a radio and torch.
 - ... not be built in earthquake zones.
 - ... be prepared to give out earthquake advice.
 - ... help people who get injured.



- 3 a List the different ways that could be used to inform people about earthquakes.
- b Draw a poster for your classroom wall to show exactly what should be done in an earthquake. Add drawings to make it clearer and more interesting.

Summary

It is impossible to prevent earthquakes from happening. A policy of prediction, protection and preparation can help save lives and reduce damage to property.