

10.6 Limiting the damage earthquakes do

We cannot prevent earthquakes. But we can limit the damage they do by following these steps:

- 1 Predict → 2 Plan → 3 Take action

1 Predict

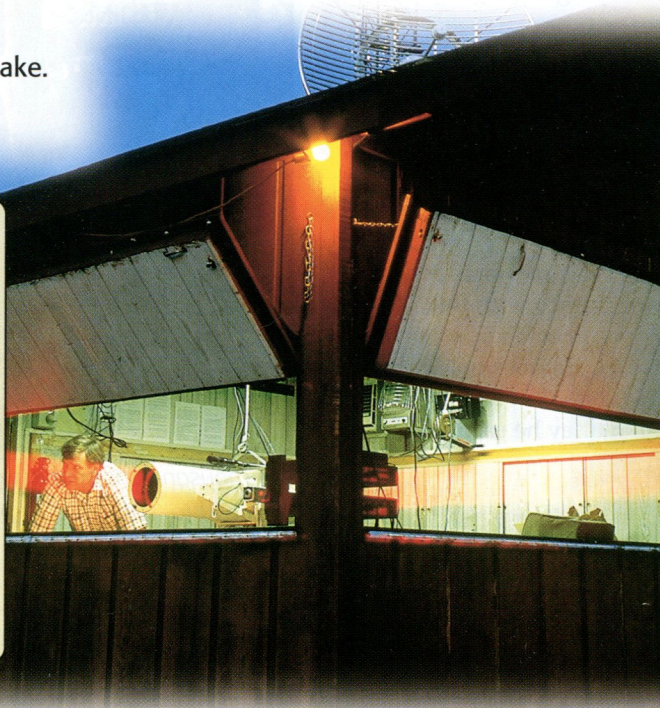
It is hard to predict an earthquake. But there are warning signs.

Long before it happens ...

If two plates are sliding past each other and sections get locked, there will be an earthquake one day.

You can check plate movement using a laser system, as in this photo.

Here, laser beams are being bounced off reflectors placed along the San Andreas fault. They can detect a movement of just 1 mm.



Did you know?
♦ Scientists have developed Roboroach – a cockroach fitted with a computer chip.
♦ They plan to add a tiny camera and use it to search for earthquake victims!

- ### Closer to the quake ...
- When a quake is getting closer, tiny cracks develop in the rock.
- ♦ They cause the rock to bulge. You can check this using a **tiltmeter**.
 - ♦ The cracks fill with groundwater, so the water level falls in nearby wells.
 - ♦ **Radon gas** escapes from the rocks through the cracks, and bubbles up in wells.
 - ♦ There will also be small **foreshocks** before the main quake. Check using a seismometer.
 - ♦ Animals act strangely. Snakes and rats crawl out of their holes. Dogs howl.

2 Plan

If you expect earthquakes in the future (like the people of Los Angeles) you need to make plans. Like these ...

Architects and builders must follow these new rules for safe buildings.

We need an earthquake centre where people can phone for advice.

We must tell people what to pack in their emergency kit. Things like food and torches ...

Over the next 12 months, we must strengthen all our bridges.

The new power station must be built as far as possible from the fault.

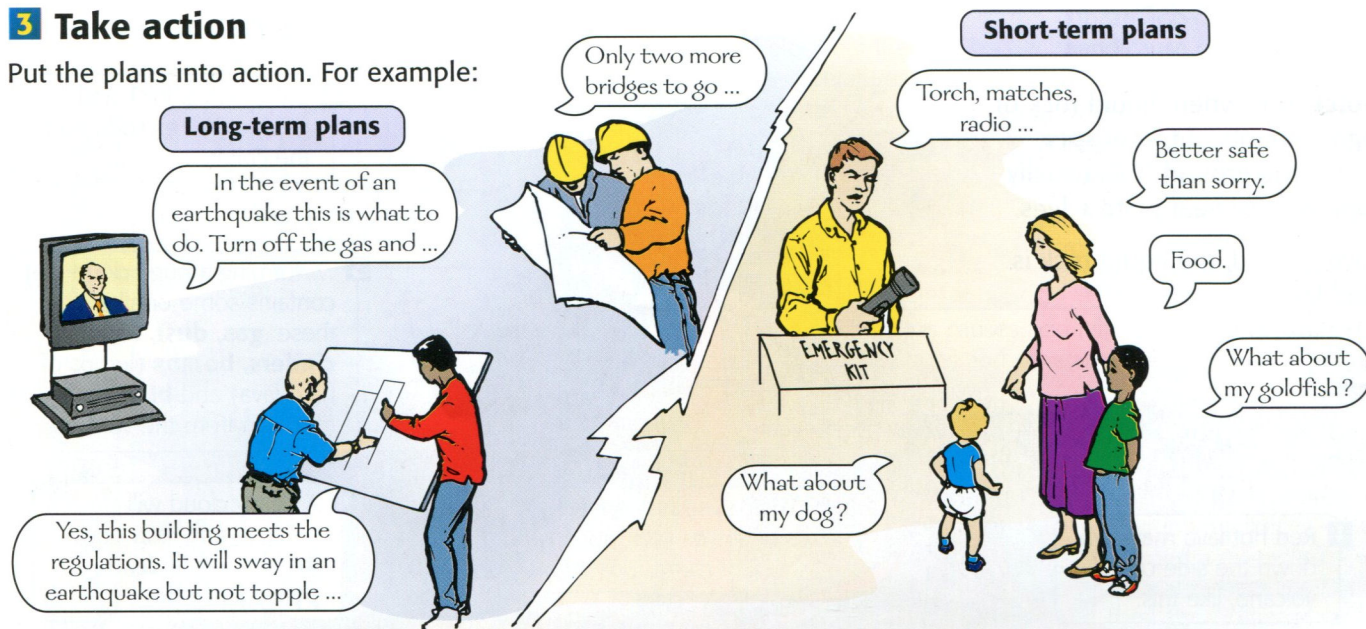
Every 3 months schools must practice what to do in an emergency.

We need an emergency plan for helping people who get injured.

We need an emergency plan for warning everyone about the earthquake.

3 Take action

Put the plans into action. For example:



Why do people still get killed?

We could save everyone if we could predict exactly *where* and *when* an earthquake will strike, and *how large* it will be. But we can't – yet.

For example scientists are sure California will have more earthquakes, but they can't say when.

Sadly, many countries in earthquake zones are too poor to protect themselves against earthquakes by building stronger buildings.

Just lucky?

- ◆ Early in 1975, people in Haicheng city in China noticed gas bubbling from wells, and snakes crawling from their holes in icy weather.
- ◆ On 4 February scientists predicted a large earthquake within hours. They told the people to turn off their stoves and go to the parks.
- ◆ At 7.36 pm an earthquake of magnitude 7.6 destroyed most of the homes in Haicheng.



▲ Surviving among the ruins of Tangshan City.

Not lucky ...

- ◆ In 1976, scientists in China predicted an earthquake in the Tangshan region between 22 July and 5 August.
- ◆ They could not say exactly which day – so no action was taken.
- ◆ On 28 July, a quake of magnitude 7.8 hit Tangshan City. A quarter of a million people were killed.

Your turn

- 1 It is not easy to predict an earthquake.
 - a What does *predict* mean?
 - b Write down three signs that an earthquake may happen quite soon.
- 2 You are in charge of city planning.
 - a Name three things you would never allow people to build in an earthquake zone. Give reasons.
 - b Is there anything you might allow to be built there? Explain your answer.
- 3 You are packing your earthquake emergency kit. List ten things you will include.
- 4 You are in charge of Los Angeles. Which will you do?
 - a help the city prepare for earthquakes ... or ...
 - b order everyone to move out for good. Give reasons for your answer.
- 5
 - a List the three steps for limiting earthquake damage.
 - b Could these steps be useful in other situations? If you think so, give examples.