

## 10.9 Limiting the damage from eruptions

We can't stop volcanoes erupting. But we can save lives by following three steps, just as with earthquakes.

### 1 Predict

When a volcano is waking up, it gives out many signs. If you watch or **monitor** it, you can predict when it will erupt and warn everyone.

### Did you know?

- ◆ In 1973, people on the island of Heimaey in Iceland fought a lava flow – and won!
- ◆ They sprayed it with sea water so it went solid before it could reach their harbour.

**1** When magma is on the move, it causes hundreds of tiny earthquakes. You can set up **seismometers** to detect these.

**2** Days before an eruption, hot magma starts moving upwards. You can 'see' the ground getting warmer, on satellite images. (Satellite cameras detect heat!)

**3** The rising magma causes the volcano to swell and bulge. So you could use ...  
a **tiltmeter** to detect changes in the slopes of the volcano  
a **global positioning system** (GPS) which uses satellite signals to detect movement.

**4** Gas seeping from the volcano is another sign. The more sulphur dioxide the volcano gives out, the closer it is to eruption.

In this photo, geologists are collecting gas samples on Mount St Helens volcano (USA).

**5** When magma is moving it gurgles and belches. Now scientists are starting to use these sounds as warning signals.

The more closely you monitor the volcano, the better your prediction will be.

### How prediction helps: Mount Pinatubo

- ◆ On 2 April 1991, dust and steam erupted from Mount Pinatubo in the Philippines, after 500 years of sleep.
- ◆ Scientists began to monitor the volcano.
- ◆ In early June, they gave warning of a large eruption within weeks. Over 75,000 people were moved to safety.
- ◆ On 15 June, there was a violent eruption. Pyroclastic flows and mudflows swept down the valleys, destroying the empty farms and villages.
- ◆ 76 people were killed. Without the warning, it would have been many thousands.

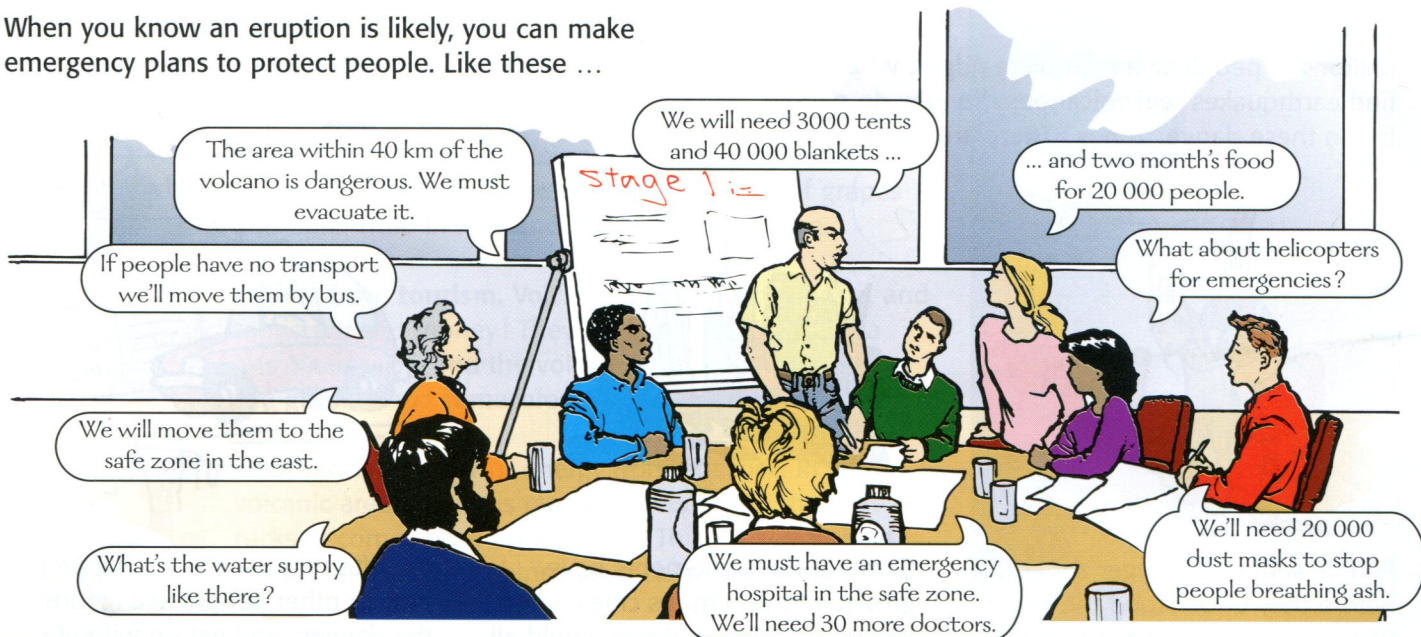


▲ Fleeing from Mt Pinatubo.



## 2 Plan

When you know an eruption is likely, you can make emergency plans to protect people. Like these ...



## 3 Take action

If you have watched carefully and planned well, you can take action before it's too late.



The better your preparations, the safer everyone will be.

## Why do people still get killed?

Volcanic eruptions are easier to predict than earthquakes. But people still get killed in eruptions. This is because:

- ◆ many countries cannot afford to monitor their volcanoes properly
- ◆ or they may not have good emergency plans.

### Your turn

- 1 Write down three warning signs that a volcano will soon erupt.
- 2 Satellites help scientists to predict eruptions. In what ways?
- 3 Monitoring a volcano can be a dangerous job. Explain why.
- 4 You are in charge of evacuating people from the danger zone before an eruption.
  - a What does *evacuate* mean? (Glossary!)
  - b Write down at least six problems you may face.
- 5 'With good planning, you can prevent an eruption from doing any damage.' Do you agree? Explain.