

# 3.11 The causes of wildfires

The causes of wildfires are both natural and human.

## Natural causes of wildfires

- Lightning is the biggest single natural cause of wildfires (Photo A). Some lightning strikes may cause a fire to start, but most of these are small and soon die out. However, when the conditions are right, fires started by lightning can spread rapidly.
- Spontaneous heating is where material becomes heated to the point at which it will catch fire without a spark being present. This occurs where large amounts of plant material build up and the flow of cooling air is restricted. It occurs mostly in warm, humid conditions.
- Volcanic eruptions emit red-hot lava and ash. These can also start wildfires.

Wildfires can spread very quickly when they occur during a period of hot, dry weather. Fallen branches and leaves dry out and can catch fire very easily. The situation can be made worse if there are also strong winds to fan the flames. Wildfires in California are most extreme when a period of **drought** is accompanied by the dry Santa Ana winds which blow from an area of desert (Photo B and Map C). These winds can gust up to 140 km/h.



**B** Satellite image of the Santa Ana winds fanning wildfires in California

The physical geography of an area can also affect the speed at which wildfires spread. On south-facing slopes the sun dries the vegetation out, increasing the risk of fire. Steep slopes mean that fires spread quickly as the flames come into contact with vegetation upslope.

### In this section you will learn:

about the natural and human causes of wildfires

that many wildfires occur as a result of a combination of natural and human causes.



**A** Lightning striking trees

### Key terms

**Drought:** a long period of low rainfall.

### Did you know ??????

Lightning strikes the planet hundreds of thousands of times a day.



**C** Santa Ana winds, California

## Human causes of wildfires

- Accidents are to blame for starting many wildfires. Children playing with matches, campfires that have not been put out properly and discarded cigarettes have all caused major wildfires.
- Broken bottles can act as a magnifying glass. The pieces of glass concentrate the sun's rays onto a small area. This can set fire to dry vegetation/leaves or litter that has been dropped by people.
- Slash and burn is a method farmers use to clear land to grow crops. Sometimes these fires can get out of control and spread.
- Arson is the act of deliberately starting fires. In some areas, it can account for up to 30 per cent of wildfires and was a major cause of the Australian wildfires in 2009.
- Other causes include sparks from train wheels or machinery, military training, household chimneys and barbecues.

Often wildfires start and spread due to a combination of both natural and human factors. One devastating wildfire in California was started when the Santa Ana winds blew down electricity power lines. The resulting sparks set the dry vegetation alight and the fire raged for nine days.

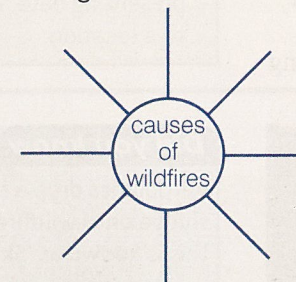
More and more wildfires are a result of the actions of people. The numbers vary from area to area, but in one state in Australia, arson was the biggest cause of wildfires (Diagram D). However, nature can still be a highly destructive force, as the following newspaper headlines show.

**Lightning Storms Cause California Wildfires**

**5,000 to 6,000 lightning strikes start 842 wildfires over a two-day period**

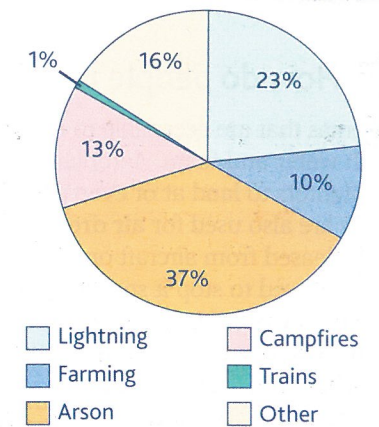
### Activities

- 1 Draw a spider diagram to show the causes of wildfires.



- 2 Explain three natural and three human causes of wildfires.
- 3 Suggest why the Santa Ana winds aid the rapid spread of wildfires in California.
- 4 In Diagram D, what percentages of causes were due to the actions of people?

**extension** To what extent are wildfires a natural hazard? Investigate the causes of some recent wildfires.



**D** Causes of wildfires in New South Wales, Australia (1974-2000)

### links

Learn more about wildfires at [www.usgs.gov/hazards/wildfires](http://www.usgs.gov/hazards/wildfires)

### AQA Examiner's tip

Know the natural and human causes of wildfires.

### Did you know ??????

The wildfires in Australia (February 2009) spread very quickly. They started during a period of drought and at a time when there were very high temperatures (over 40 °C) and winds of over 100 kph. The most destructive fire and several smaller ones were deliberately started by arsonists.