

Air pollution

Most air pollution is the result of burning things, such as fuels or rubbish. Petrol is a good example. It is made of **hydrocarbons**, which are compounds of **hydrogen** and **carbon**. If petrol burns in plenty of air, the main products are **carbon dioxide** and **water vapour**. But in a car engine there is not enough air. The petrol burns, but not completely, and harmful products come out in the exhaust.

1. What are hydrocarbons?
2. a) What happens when petrol burns in plenty of air?
b) What happens when petrol burns in a car engine?

The harmful products that come out of a car exhaust are:

- **Carbon monoxide**. This is the main harmful product. If this gas gets into your bloodstream, it stops red blood cells from carrying oxygen from the lungs to the rest of the body. Too much carbon monoxide causes death.
- **Unburnt hydrocarbons** make up the next largest harmful part of the exhaust. They are unburnt gases from the petrol. They smell horrible, and can cause liver damage and even cancer.
- Petrol contains a little sulphur. This means that when petrol burns, some **sulphur dioxide** forms. It attacks the lungs and breathing tubes, causing bronchitis and other diseases. It also dissolves in rain, making it acidic. The acid rain damages trees, plants, buildings, and metalwork.
- The air in the engine gets so hot that its nitrogen and oxygen react together. This **makes nitrogen oxides**. Like sulphur dioxide, nitrogen oxides attack the breathing system, and cause acid rain.
- The **smoke** is mainly tiny particles of carbon. Smoke makes everything black and grimy, and it attacks the lungs. It can coat plant leaves, reducing their ability to make food by photosynthesis.

3. Make a list of the harmful products from car exhausts.
4. Which product can cause cancer?
5. a) Which products can cause damage to the breathing system?
b) What damage do they cause?
6. Which products can cause acid rain?
7. What damage can acid rain do?
8. What problems do the smoke cause?

Cars and lorries are not the only problem. Nearly half of the pollution comes from those factories, power stations and homes that burn coal and oil. These fuels also contain hydrocarbons, and a little sulphur. When they burn in a limited supply of air they produce carbon monoxide, hydrocarbons, sulphur dioxide and smoke. If the temperature is high, nitrogen oxides form too. Many factories also produce other pollutants, such as solvent fumes and cement dust. Air pollution costs money. For example, acid rain costs farmers many millions of pounds because it damages crops.

9. What other air pollutants are there? Where do they come from?