Your notes

GCSE Chemistry: revision notes

Atmospheric pollutants

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Burning fuels

- The combustion of fuels is a major source of atmospheric **pollutants**.
- Most fuels, including coal, contain carbon and/or hydrogen, and may also contain some sulfur.
- Gases released include carbon dioxide, water vapour, **carbon monoxide**, **sulfur dioxide** and **oxides of nitrogen**. Solid particles and unburned hydrocarbons form particulates (soot).

Carbon monoxide and particulates

- **Carbon monoxide** forms from **incomplete combustion**, when there is not enough oxygen.
- It is a toxic gas that is colourless and odourless, so it is not easily detected. It binds to haemoglobin, reducing the blood's ability to carry oxygen.
- **Particulates** cause **global dimming** (by reflecting sunlight) and health problems for humans, because they can get into the lungs.

Sulfur dioxide and oxides of nitrogen

- **Sulfur dioxide** forms when fuels containing sulfur burn.
- **Oxides of nitrogen** form when nitrogen and oxygen from the air react at the high temperatures in engines.
- Both cause respiratory problems and **acid rain**, which damages buildings, trees and aquatic life.

Reducing pollution

- Removing sulfur from fuels before burning, and scrubbers in power stations, reduce **sulfur dioxide**.

- Catalytic converters in cars change **carbon monoxide** and **oxides of nitrogen** into less harmful gases.
- Good ventilation and **carbon monoxide** detectors protect people at home.

Key terms

Pollutant	A harmful substance released into the environment.
Carbon monoxide	A toxic, colourless, odourless gas from incomplete combustion.
Incomplete combustion	Burning with too little oxygen, producing carbon monoxide and soot.
Particulates	Tiny solid particles, such as soot, released by burning fuels.
Global dimming	A reduction in sunlight reaching the Earth, caused by particulates.
Sulfur dioxide	A gas formed when fuels containing sulfur burn; causes acid rain.
Oxides of nitrogen	Gases formed when nitrogen and oxygen react at high temperatures in engines.
Acid rain	Rain made acidic by sulfur dioxide and oxides of nitrogen.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. Which gas is produced by incomplete combustion?
2. Why is carbon monoxide dangerous?
3. Why is carbon monoxide hard to detect?
4. Where does sulfur dioxide come from?
5. How are oxides of nitrogen formed?
6. Which pollutants cause acid rain?
7. What are particulates?
8. What do particulates cause?

Answers

1. Carbon monoxide
2. It stops the blood carrying oxygen
3. It is colourless and odourless
4. Burning fuels that contain sulfur
5. Nitrogen and oxygen from the air react at high temperatures in engines
6. Sulfur dioxide and oxides of nitrogen
7. Tiny solid particles such as soot
8. Global dimming and lung problems

Your notes

What to do next

Practise 10 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

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