

Atmospheric Pollutants

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Explain why carbon monoxide is dangerous. (3 marks)

Step 1 · Effect on the body

It combines with haemoglobin in red blood cells, reducing the blood's ability to carry oxygen.

Step 2 · Danger

This can cause drowsiness, unconsciousness and death.

Step 3 · Detection

It is colourless and odourless, so it is hard to detect without an alarm.

Answer: Reduces oxygen transport; colourless and odourless

Check: This is why homes with gas or solid-fuel appliances should have CO alarms.

2. Now try one with the steps

Explain how oxides of nitrogen are formed in a car engine. (2 marks)

Step 1 · Reactants

Step 2 · Conditions

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Name the products of the complete combustion of a hydrocarbon. [2]

2. Name two products of incomplete combustion that are not formed in complete combustion. [2]

3. Explain why carbon monoxide is toxic. [2]

4. Explain why carbon monoxide is difficult to detect without an alarm. [1]

5. State where the sulfur in sulfur dioxide pollution comes from. [1]
- _____
- _____
6. Give two problems caused by sulfur dioxide and oxides of nitrogen. [2]
- _____
- _____
7. Explain how oxides of nitrogen form when fuels burn in engines. [2]
- _____
- _____
8. Give two effects of particulates in the atmosphere. [2]
- _____
- _____
9. Balance the equation for the incomplete combustion of methane: $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO} + \text{H}_2\text{O}$ [2]
- _____
- _____
10. Balance the equation: $\text{N}_2 + \text{O}_2 \rightarrow \text{NO}$ [1]
- _____
- _____
11. Calculate the mass, in g, of sulfur dioxide formed when 3.2 g of sulfur burns. $\text{S} + \text{O}_2 \rightarrow \text{SO}_2$ (S = 32, O = 16) [2]
- _____
- _____
12. 1.0 tonne of coal contains 2.0% sulfur. Calculate the mass of sulfur dioxide produced, in kg. (S = 32, O = 16) [3]
- _____
- _____
- _____
13. Explain why particulates cause global dimming. [1]
- _____
- _____
14. Suggest two ways of reducing pollutants from cars or power stations. [2]
- _____
- _____

4. Before you hand it in

"Nitrogen oxides come from nitrogen in petrol."

NO_x forms from nitrogen and oxygen in the AIR at high engine temperatures.

"Carbon monoxide causes acid rain."

Acid rain is caused by sulfur dioxide and oxides of nitrogen.

Confusing particulates with greenhouse gases

Particulates: global dimming and lung damage.