Pollutants Worksheet

Combined Science - Chemistry - Key Stage 4

C9 - Chemistry of the Atmosphere

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Pollutants can be produced by the

combustion of fuels.

Which of the following is not a pollutant?

Option 1

Sulfur dioxide

Option 2

Carbon

Option 3

Carbon monoxide

Option 4

Nitrogen

Carbon monoxide is an example of what type of pollutant?

Option 1

Solid pollutant

Option 2

Gas pollutant

Independent Practice

Match each pollutant to its chemical formulae and how it is produced.

Carbon monoxide	**Production of solid particles from the incomplete combustion of fuels containing carbon**	**SO_2**
Sulfur dioxide	**Oxidation of atmospheric nitrogen inside the engine of a car for example**	**CO**
Nitrogen oxides	**Production of a gas from the incomplete combustion of fuels containing carbon**	**C**
Carbon / soot	**Combustion of a fossil fuel which contains sulfur impurities**	**NO_x**

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True or **false**

Sulfur dioxide can result in acid rain

TRUE

True or false

Sulfur dioxide can form nitric acid

FALSE

True or false

Carbon monoxide can cause smog

FALSE

True or **false**

Carbon monoxide is a colourless, odourless gas

TRUE

Independent Practice

1. Name the 4 pollutants
2. State the problems each pollutant causes

Pollutant	Problems pollutant causes

Self-assess

Pollutant	Problems pollutant causes
Carbon monoxide	Toxic and difficult to detect
Sulfur dioxide	Forms acid rain, damages plants, statues and buildings
Nitrogen oxides	Forms acid rain, forms smog
Carbon/ soot	Global dimming, health problems

Complete combustion occurs when a fuel is burnt in...

Option 1

Plenty of oxygen

Option 2

Insufficient oxygen

The products of complete combustion are...

Option 1

Carbon dioxide + Water

Option 2

Carbon monoxide + carbon + water

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Insufficient oxygen

The products of incomplete combustion are...

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Option 2

Carbon monoxide + carbon + water

Independent Practice

1. Write the general equation for the complete combustion of hydrocarbons.
2. Write a word equation for the complete combustion of propane.
3. Write a symbol equation for the complete combustion of propane.

4. Write the general equation for the incomplete combustion of hydrocarbons.
5. Write a word equation for the incomplete combustion of ethane.
6. Write a symbol equation for the incomplete combustion of ethane.

Self-assess

1. Hydrocarbon + oxygen → carbon dioxide + water
2. Propane + oxygen → carbon dioxide + water
3. $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

4. Hydrocarbon + oxygen → Carbon monoxide + carbon + water
5. Ethane + oxygen → Carbon monoxide + carbon + water
6. $C_2H_6 + 2O_2 \rightarrow CO + C + 3H_2O$

See you next time.