

Burning fuels: three sources of pollution

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1. Combustion of hydrocarbons

Complete combustion of hydrocarbons produces carbon dioxide (CO_2) and water (H_2O).

Incomplete combustion occurs when oxygen is restricted eg in a faulty gas fire. There are two possible product combinations:

- Carbon monoxide (CO) and water
- Carbon particulates (C) and water

2. Combustion of impurities in solid fuels.

Solid fuels like coal contain sulphur-based impurities. Sulfur reacts with oxygen to give sulfur dioxide.

3. Reaction of atmospheric nitrogen

At high pressure and temperature (in an internal combustion engine) nitrogen and oxygen in the air combine and produce oxides of nitrogen (NO_x)

- These include nitrogen monoxide (NO)
- Nitrogen monoxide then reacts with oxygen to make nitrogen dioxide (NO_2)

Air pollution: associated risks

Pollutant	Risk
Carbon dioxide	Greenhouse gas, causes global warming
Carbon monoxide	Poisonous gas
Particulate carbon	Makes buildings dirty Causes breathing difficulties
Nitrogen monoxide	Contributes significantly to acid rain Causes breathing problems and can worsen the effects of asthma
Nitrogen dioxide	
Sulfur dioxide	Contributes significantly to acid rain