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# What Happens When Fossil Fuels Burn

KS4 CHEMISTRY

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## What Are Fossil Fuels?

**Fossil fuels** are natural materials formed from dead plants and animals that died millions of years ago. The three main types are **coal**, **oil (petroleum)**, and **natural gas**. We dig these up from deep underground and burn them to produce energy for heating homes, powering cars, and generating electricity.

## What Happens When They Burn?

When fossil fuels burn, they go through a **chemical reaction** called **combustion**. This happens when the fuel combines with **oxygen** from the air, releasing huge amounts of energy in the form of heat and light. This is why a campfire feels warm and gives off light—the wood is a fuel burning in oxygen.

Think of it like a cake recipe: if you mix the right ingredients in the right way, you get a delicious cake. When fuel and oxygen mix and heat up, you get a chemical reaction that releases energy.

## What Are the Products?

The main products created when fossil fuels burn are **carbon dioxide (CO<sub>2</sub>)** and **water (H<sub>2</sub>O)**. These are made from the **carbon**, **hydrogen**, and **oxygen** atoms that were in the original fuel. When you see smoke from a fire, much of it contains these gases—though some smoke is also tiny particles of unburnt fuel.

The energy released heats things up and can be used. In a power station, this heat boils water to make steam, which spins turbines to generate electricity. In a car engine, the hot gases expand to push pistons and make the wheels turn.

Think of it like a birthday balloon: when you blow air into it, the balloon expands. When fossil fuels burn, the hot gases expand in the same way, and we can use that expansion to do work.

## Why Should We Care?

While burning fossil fuels gives us useful energy, it also releases **carbon dioxide** into the atmosphere. Scientists have discovered that too much carbon dioxide is warming our planet and causing **climate change**. This is why many countries are trying to use cleaner energy sources like wind and solar power instead.

Understanding what happens when fuels burn helps us make better choices about energy in the future.