Fossil Fuels

What are fossil fuels?

Coal, crude oil and natural gas are called **fossil fuels**.

Fossil fuels are found in the top layer of the Earth's crust.

Fossil fuels are so called because they are the remains of plants and animals that died and became trapped in the layers of sedimentary rocks millions of years ago.

Most fossil fuels are made of chains of hydrogen and carbon atoms, called **hydrocarbons**.

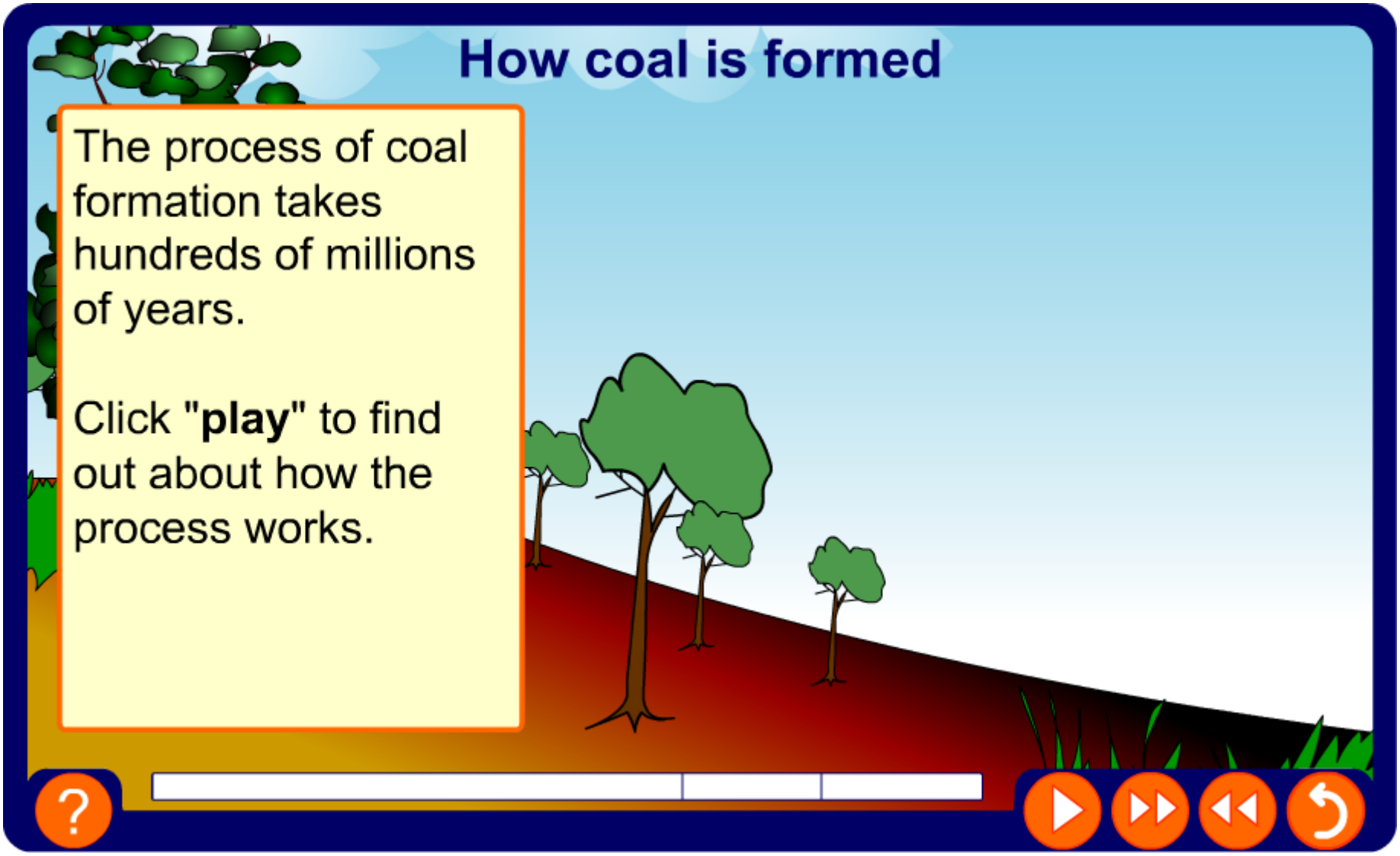
Why are fossil fuels used?

Fossil fuels provide more than 90% of the energy we need to produce electricity, power, heat and gasoline, etc., for our homes and transportation.

As well as fuels, the fractions obtained from crude oil can be used to make many other useful substances, such as:

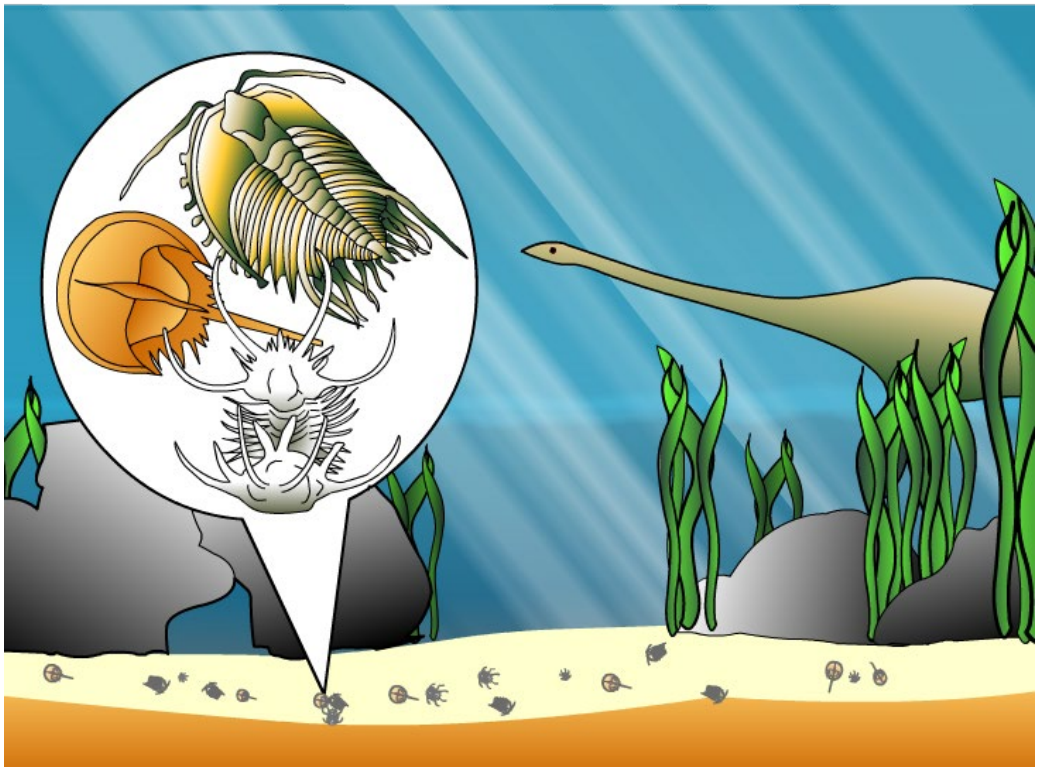
- plastics, e.g. polyethylene and PVC
- paints and dyes
- fibers and fabrics
- fertilizers and pesticides
- perfumes and soaps
- certain types of medicine.

How is coal formed?



Early stages of oil and gas formation

Oil and gas are also biological in origin. Millions of years ago, tiny animals lived in the sea. Like today, their ecosystem was dependent on heat and light from the Sun and photosynthesis by plants.



When they died, the animals fell into mud and sand at the bottom of the sea, but did not rot away.

Over millions of years they were buried deeper by the mud and sand.

Later stages of oil and gas formation

The temperature and pressure (caused by the weight of the sediments and deep burial) changed the mud and sand into rock, and the dead animals into crude oil and natural gas.

The oil and gas is extracted from the seabed or under the ground by drilling oil wells.

Oil wells drilled at sea are supported by oil platforms.

Fossil fuels summary

Complete these sentences about fossil fuels

1. Oil, natural gas and coal were created millions of years ago and are called _____ fuels.

2a. Coal started off as _____ that stored energy from the Sun by photosynthesis.

2b. The dead plants fell to the bottom of swampy waters and over millions of years were buried by _____ of mud.

Sun's	plants	sand	layers
fossil	coal	pressure	sea creatures

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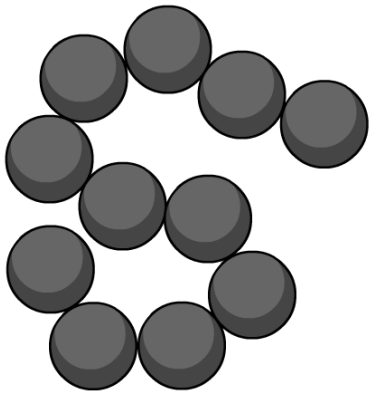
Crude oil and fractional distillation

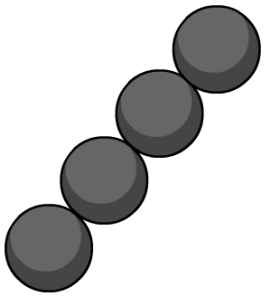
The oil that comes out of the ground is called **crude oil**. It cannot be used as it is, because it is a mixture of many different substances with different boiling points.

How can you separate a mixture of substances with different boiling points?

To separate out the useful substances, a process called **fractional distillation** is carried out.



big molecules boil at a high temperature



small molecules boil at a lower temperature

Fractional distillation

Fractional distillation: summary

Complete these sentences about fractional distillation

1. Crude oil is a mixture of different chemicals called _____.

2. Fractional distillation is the process used to _____ crude oil.

3. The distillation is carried out in a tall tower which is _____ at the bottom and cool at the top.

low	separate	higher	heated
hydrocarbons	hot	temperatures	boiling

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