

## Lesson 2: Green Energy



- I can explore non-renewable energy sources and their use.



### True or False?

	True	False
If a car is left in the sun for a long time, the temperature inside will decrease.		
The atmosphere is made of gases.		
The natural greenhouse effect is vital to enable life on Earth.		
As gases are invisible, they do not weigh anything.		
Greenhouse gases are only found in greenhouses.		
Anything that is warm radiates infrared rays.		



### Fossil Fuels – What Are They?

Much of the world's energy is produced by burning fossil fuels such as **oil**, **coal** and **gas**. These natural resources are formed from the remains of plants and animals that died millions of years ago. They are used to power everything from planes to gas cookers.



**Oil**, also called petroleum, is over 300 million years old. Of those 300 million years, civilizations have been making use of oil for about five or six millennia. Oil has a long history of maximizing efficiency and convenience for human civilization. For example, the Native Americans used it for treating wounds and waterproofing canoes. Today, we think of oil as the fuel that we pump into our cars at gas stations, but refined gasoline is not what comes out of the ground at oil wells. On the contrary, crude oil is the type of petroleum that occurs naturally. Once crude oil is extracted from the ground, it is taken to refineries, where it is processed into fuel that we can actually use to fuel our cars, make asphalt (bitumen), jet fuel, kerosene, lubricants, and more. These different categories showcase how widespread the use of oil truly is.



Of the three types of fossil fuels, **coal** is the only one still in a solid state. It appears as chunks of midnight black rock, which are harvested from the Earth by workers in mining operations. Coal is composed of five different elements: carbon, nitrogen, oxygen, hydrogen, and sulphur. Because of the different combinations, there are three different types of coal, each with different energy properties. Coal is a dynamic fossil fuel in terms of how it is used: it ranges from generating electricity to provide light in homes and businesses to producing steel and cement.



Where coal is a solid and oil is a liquid, natural **gas** is, of course, a gas. It is made up primarily of methane and is incredibly lightweight (as well as incredibly flammable). Natural gas is used primarily to heat homes, power air conditioning systems, and fuel stoves and other cooking appliances. Usually, when a mining operation locates a petroleum reserve, it will also have found a source of natural gas. These two types of fossil fuels simply tend to occur close to one another underground, making mining and harvesting the two resources thankfully efficient once they are found. Unlike oil, though, which is pumped from the ground by massive oil rigs, natural gas is channelled into pipeline. These pipelines take the natural gas to storage facilities, eventually making its way to your home to meet a portion of your energy needs. When we use natural gas for cooking, we often notice a distinctive smell that we associate with the gas. Interestingly, natural gas is odourless when it is mined from beneath the Earth's surface, with the smell being added later as a means of alerting people to leaks of the substance.



### Fossil Fuels – How Do We Find Them?

Watch the following video to find out:

[https://www.youtube.com/watch?time\\_continue=184&v=8YHsxXEVBlM&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=184&v=8YHsxXEVBlM&feature=emb_logo)



### Fossil Fuels – Pros and Cons

Choose one fossil fuel and complete the table below: \_\_\_\_\_

ADVANTAGES	DISADVANTAGES