

Physics: Natural Gas

Name:

Read through the content and then answer the question(s) at the end. When you have finished don't forget to save the document to your device or computer.

Natural Gas

Physics



Natural Gas

Natural gas is a non-renewable resource.

Non-renewable resources cannot easily be replaced or are finite in nature.

The Sun is the original source of the energy stored in natural gas.

Natural gas is formed from the remains of plants and animals that lived and died millions of years ago. Organic remains became covered by layers of mud and rock, over millions of years, due to intense heat and pressure, natural gas then formed.

Natural gas is a fossil fuel and takes millions of years to form.



Natural gas is a fossil fuel. One estimate puts the Earth's natural reserves at around 70 years left at current consumption rates. We are using the Earth's supply of natural gas at a far greater rate than the millions of years it takes to form - this is unsustainable.

Using Natural Gas

Why do we still use natural gas?

Natural gas is used in many homes for **heating** and **cooking** and some power stations burn natural gas to **generate electricity**.

Natural gas is a **concentrated source of energy** compared to renewables such as wind and solar energy.

Natural gas is easily transported by **pipelines**.

Natural gas is found underneath **land and sea**.

Natural gas is accessed through **drilling**.

Sometimes natural gas is found on its own, sometimes near coal, sometimes near crude oil.

When used to generate electricity natural gas is **reliable** compared to wind (it is not always windy) and solar (it is not always sunny).



Natural gas is burned in power stations to generate electricity.

Pollution: Carbon Dioxide

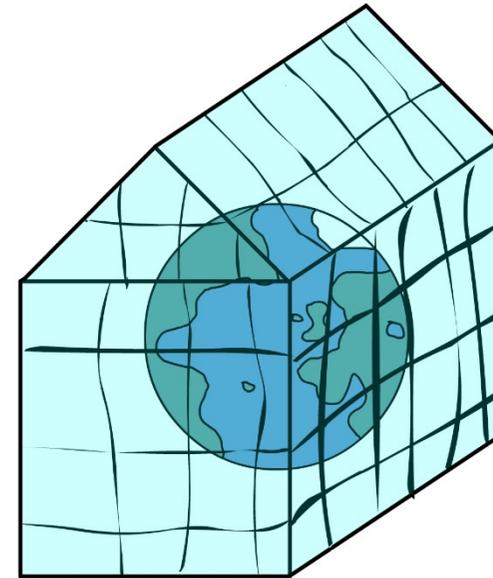
Natural gas is a finite resource and is used at a far greater rate than it is being formed. **Our use of natural gas is unsustainable.**

Natural gas is comprised mostly of **methane.**

Burning natural gas produces **carbon dioxide (CO₂)**, which is a **greenhouse gas.** Greenhouse gases cause the Greenhouse Effect which causes **Global Warming.**

The majority of scientists now agree that **the observable effects of human-caused Global Warming are now being seen.**

Burning natural gas is considered cleaner than burning coal.



Burning natural gas produces carbon dioxide, which is a greenhouse gas.

Shale Gas

Shale gas, as the name suggests, is found near a type of rock known as shale.

Shale gas is hard to extract, but recent developments have made extracting shale gas more cost-effective.

Some countries are looking at extracting shale gas to reduce their energy dependency on other countries. The United Kingdom is an example of such a nation.



Shale.

Extracting Shale Gas: Fracking

Shale gas can be extracted by a method known as **hydraulic fracturing**; which is more commonly known as **fracking**.

In fracking, water and sand are injected at high pressure down a drilled well to cause fractures in the rock.

The fractures in the rock caused by fracking then allow the gas to more easily reach the surface.

Fracking is considered more controversial in some countries than others.

Some people think fracking could cause earthquakes.

Some scientists think if fracking does cause earthquakes, these earthquakes will only be minor ones of the sort that go unnoticed every day. In 2015 there is little evidence to support that fracking could cause a major earthquake.

Some think people fracking could cause nearby groundwater to be polluted with contaminants.

In 2015 there is research evidence that supports the theory of fracking causing nearby groundwater to be polluted with contaminants. Some think the contamination found in groundwater near fracking locations is caused by poor processes and is not true for all fracking.

Summary

- ✓ Natural gas is a non-renewable resource
- ✓ Natural gas is a fossil fuel and takes millions of years to form
- ✓ Burning natural gas produces carbon dioxide which is a greenhouse gas
- ✓ Burning natural gas is considered cleaner than burning coal
- ✓ Natural gas is found underneath land and sea. Natural gas is accessed through drilling. Sometimes natural gas is found on its own, sometimes near coal, sometimes near crude oil
- ✓ Shale gas is found near a type of rock known as shale. It is hard to extract
- ✓ Shale gas is extracted in a process called fracking. Fracking is considered more controversial in some countries than others
- ✓ Some people think fracking could cause earthquakes. Some think people fracking could cause nearby groundwater to be polluted with contaminants

Knowledge Check

Enter your answers below.

KC1 How is natural gas formed?

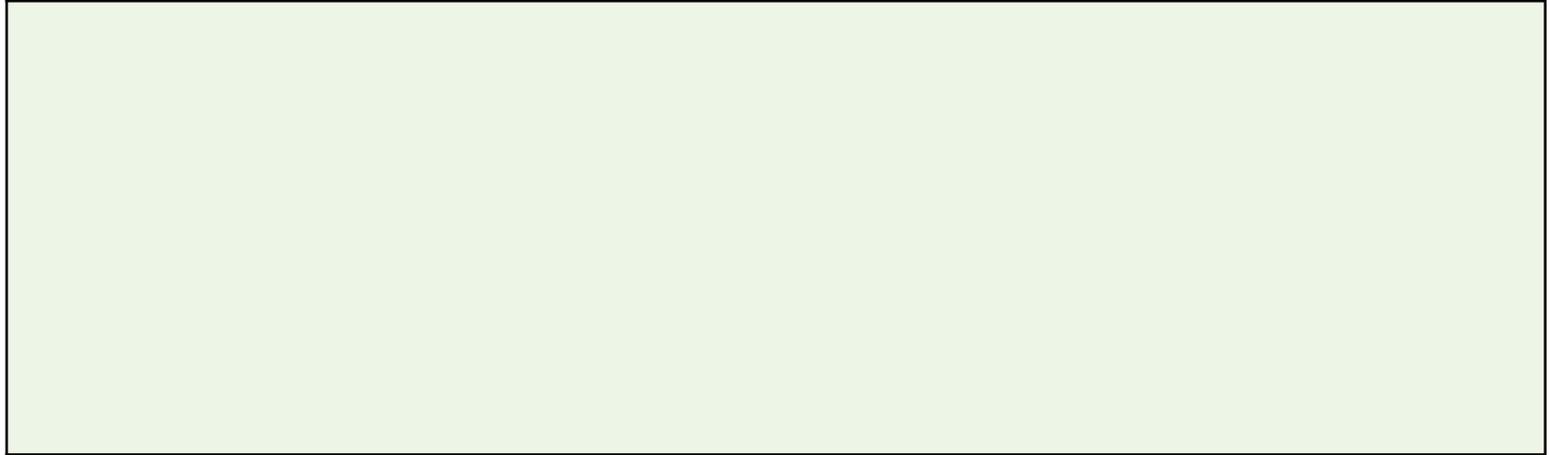
KC2 What are the advantages associated with using natural gas?

KC3 What are the disadvantages associated with using natural gas?

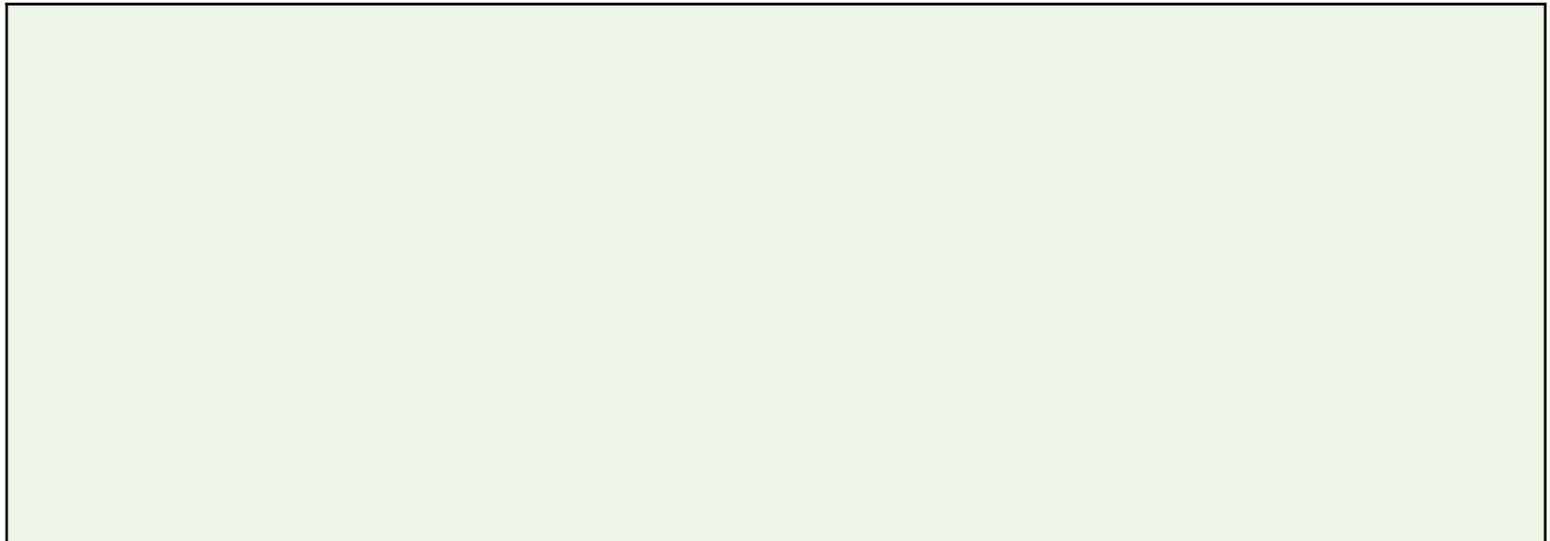
Knowledge Check

Enter your answers below.

KC4 What is fracking?



KC5 Detail some of the problems associated with fracking:



Enter text below as needed.

Feedback/Notes

