

LESSON NOTES

Year/Level: 11 C/D

week 23

Subject: Chemistry

Strand	4 Materials
Sub Strand	4.3 organic substances
Content Learning Outcome	<ul style="list-style-type: none">✓ Outline the sources and formation of oil, natural gas and biogas✓ Describe the impact of using fossil fuels on the environment and present measures of reducing these impacts

Oil – Source and Formation

- The most important liquid fuels are gasoline (petrol), kerosene (paraffin), diesel oil and fuel oil.
- All of these are mixtures of hydrocarbons obtained from crude oil.

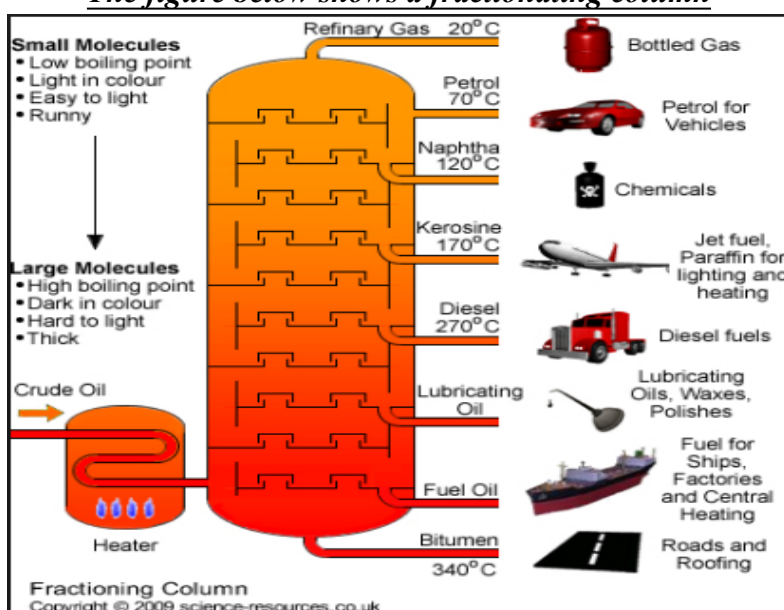
Crude Oil

- Is a fossil fuel formed on the bottom of oceans over millions of years.
- Scientists believe that the remains of sea plants and animals become trapped in the sediment on the sea bed where they decomposed without air to form oil.

Refining Crude Oil

- Fuel and many other equally important products are obtained from the crude oil.
- Alkanes can be separated because large alkanes have high boiling points and small alkanes have low boiling points.
- The apparatus that is used to separate alkanes is called a **fractionating column**.

The figure below shows a fractionating column



Natural gas and Biogas

- Is formed when plants decay in the absence of air. Natural gas is an inexpensive fuel because it requires very little treatment before use.

- Biogas is made by bacteria from plant and animal waste. It is used for cooking, or for powering automobiles.

Advantages of using Fossil Fuels

- ✓ The main advantages of non-renewable energies is that they are abundant and affordable. For example, oil and diesel are still good choices for powering vehicles
- ✓ Non-renewable energy is cost effective and easier to produce and use

Disadvantages of using Fossil Fuels

- ✓ When fossil fuels are burned they produce lots of carbondioxide which contributes to global warming and sulphur dioxide and nitrous oxide which causes acid rain
- ✓ A major disadvantage of non-renewable energy is the challenge of breaking humans of their habit of leaning on it

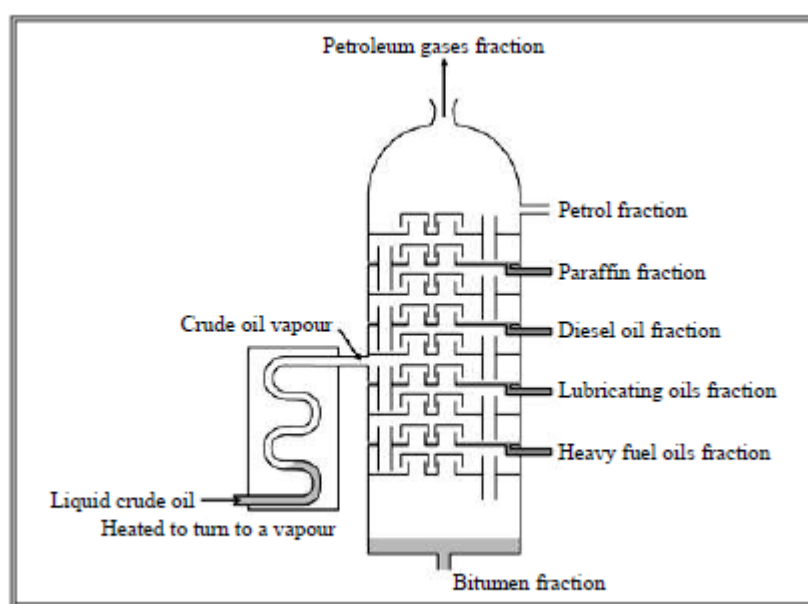
Reducing the negative effects of using fossil fuels

Usage of renewable energy

- as they are pollution free
- clean and safe to use
- Produces less amount of carbon dioxide.

Activity

(1) Crude oil, which is mixture of hydrocarbons, can be separated into its constituents in a refinery using the process illustrated in the diagram below.



Source: <http://chemicalminds.wikispaces.com>

- Describe the separation process shown above. _____
- The Paraffin fraction of crude oil is also known as kerosene. State **one** use of kerosene in everyday life. _____