G.D.GOENKA PUBLIC SCHOOL

Subject: Science (8th)

Saturday, 28th August, 2021

Topic: Fossil fuels

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LEARNING OBJECTIVE: To understand the fuels that are formed by the decomposition of dead organic matter.

SKILL FOCUS: Classification of fossil fuels.

A fossil fuel is a fuel formed by the decomposition of buried dead organisms under the pressure and heat in the earth's crust. It takes millions of years for organic matters to chemically alter and form fuels. Fossil fuel is continuously formed by natural process.

Coal is formed from fossilised dead plant matter. It contains chiefly carbon, along with hydrogen, sulphur, oxygen and nitrogen. It is a combustible sedimentary rock.

Petroleum is formed from fossilised dead organisms, like zooplankton and algae buried underneath the earth's surface and subjected to intense heat and pressure. It is a yellowish-black liquid. It is composed of various hydrocarbons and other organic compounds. Petroleum is further processed (distilled) to obtain numerous products like petrol, kerosene etc.

Since, both petroleum and coal is derived from fossilised organic remains, they are called fossil fuel.

Coal

Coal is a black or brownish sedimentary rock with a high carbon content that is typically used as fuel. It was formed millions of years ago during the Carboniferous Period of the late Paleozoic Era, which lasted from 360 million years to 290 million years.
Based on the degree of coalification that it underwent, coal can be classified into several groups which are as follows.

1) ANTHRACITE:

This is the best quality coal that is available on the surface of Earth. It is of a dark black colour which signifies the fact that it is high in carbon content, which is nearly 95%. Aside from that, this coal type is hard, low in moisture content.

Anthracite coal is that while burning it produces very less smoke as compared to other types of coal and petrol.

2) BITUMINOUS:

Next to anthracite, bituminous is the second-best quality of coal found on Earth with a carbon content that ranges from 76 – 86%. This coal type formed around 300 million years ago and has a low moisture content and energy density at 27 MJ/Kg. These features make it ideal for usage in the production of steel, cement, electricity.

3) LIGNITE:

Lignite, which is brownish, is the lowest quality coal available. Since it is only 60 million years old, it is also low in carbon content, around 65% - 70%. Lignite coal is also high in moisture content with an energy density of 18 MJ/Kg.

Apart from coalification, other factors significantly affect the quality of coal. These are as follows.

1. Duration of the coal formation in the deposit
2. Temperature and pressure in the depths
3. The depth of coal deposit
4. Type of vegetation from which the coal was first formed

Coal and petrol are extracted from the Earth's surface either via surface mining or through underground mining. After it has been extracted, it can be directly used for several purposes such as fuel, generating electricity, production of steel, and manufacturing a variety of synthetic products.

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