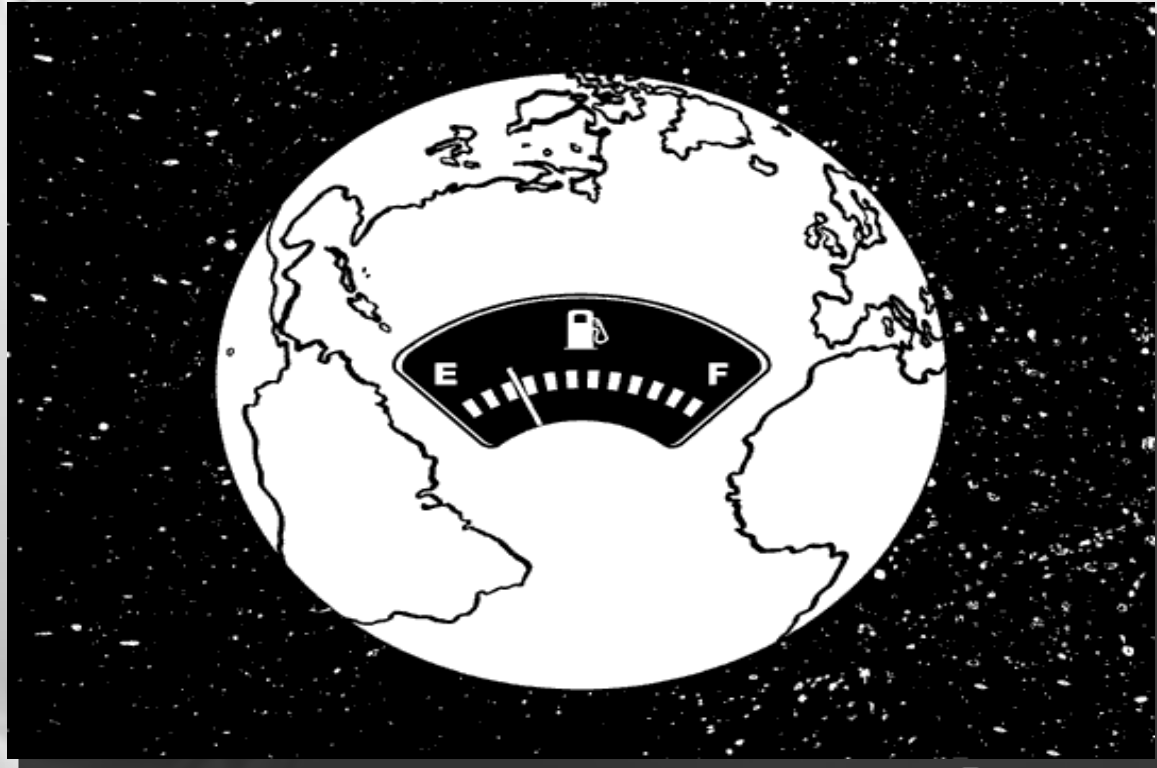




# Coal and Petroleum





Coal and petroleum are sources of energy that are *non-renewable* and thus *exhaustible*.

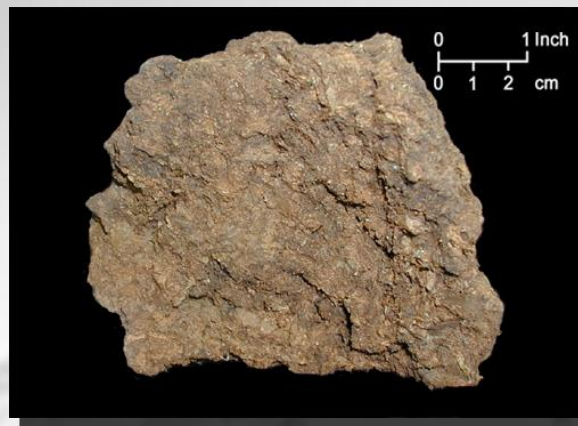
They are made by the nature a long time and will be completely consumed after long-time use.



Coal is a combustible ,sedimentary, organic rock, formed from vegetation. In other words coal is a fossil fuel created from the remains of plants that lived millions of years ago. it is considered as a non renewable source of energy because it takes too much time to form.



- Peat



- Lignite



- Sub-bituminous coal



- Bituminous coal



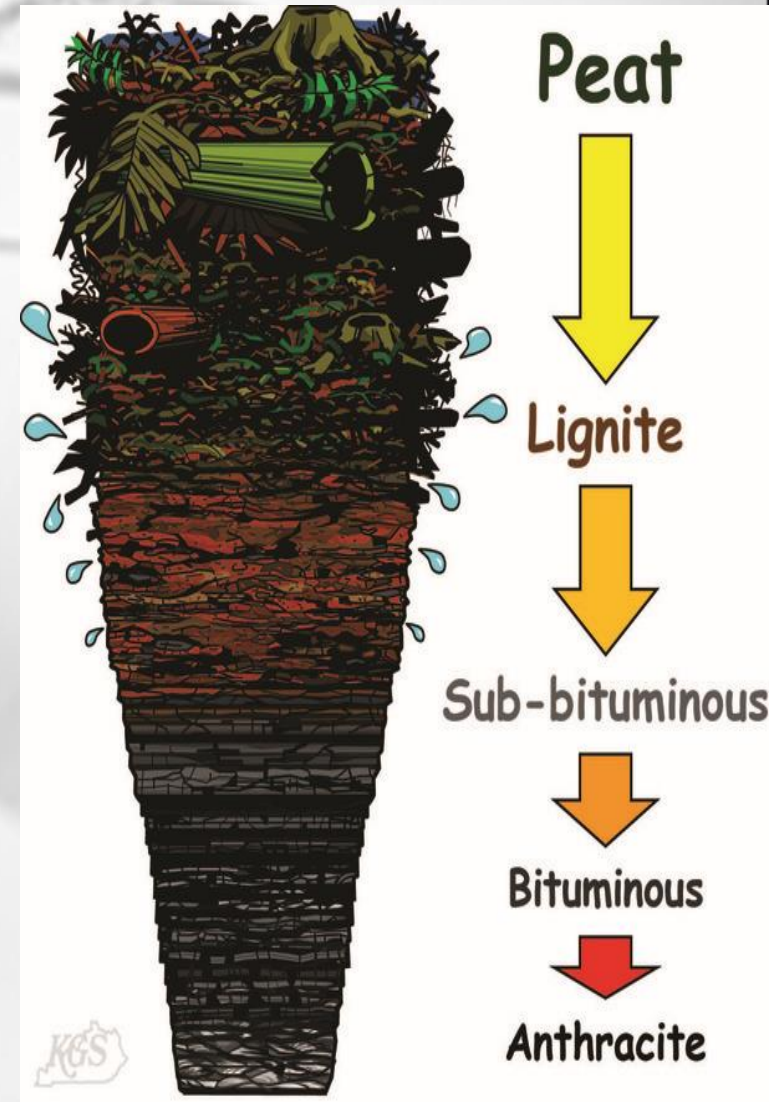
- Anthracite



# ***Formation of Coal***

- Most of the coal we use now was formed about 300 million years ago, when most of the earth was covered by steamy swamps.
- As plants and trees died, their remains sank to the bottom of the swampy areas, making layers and layers of plant material and eventually forming a thick material which down further in the earth gradually forming coal.
- In the process the content of carbon increase and finally leaving carbon with traces of volatile elements and substances.

- Coal formation is a process that still goes on. It takes a very long time though for the whole process to complete.
- The process of formation of coal is called **carbonization**.



## Composition

<b>Element</b>	<b>Percent range</b>
<b>Carbon</b>	<b>83 to 87%</b>
<b>Hydrogen</b>	<b>10 to 14%</b>
<b>Nitrogen</b>	<b>0.1 to 2%</b>
<b>Oxygen</b>	<b>0.1 to 1.5%</b>
<b>Sulfur</b>	<b>0.5 to 6%</b>
<b>Metals</b>	<b>&lt; 0.1%</b>



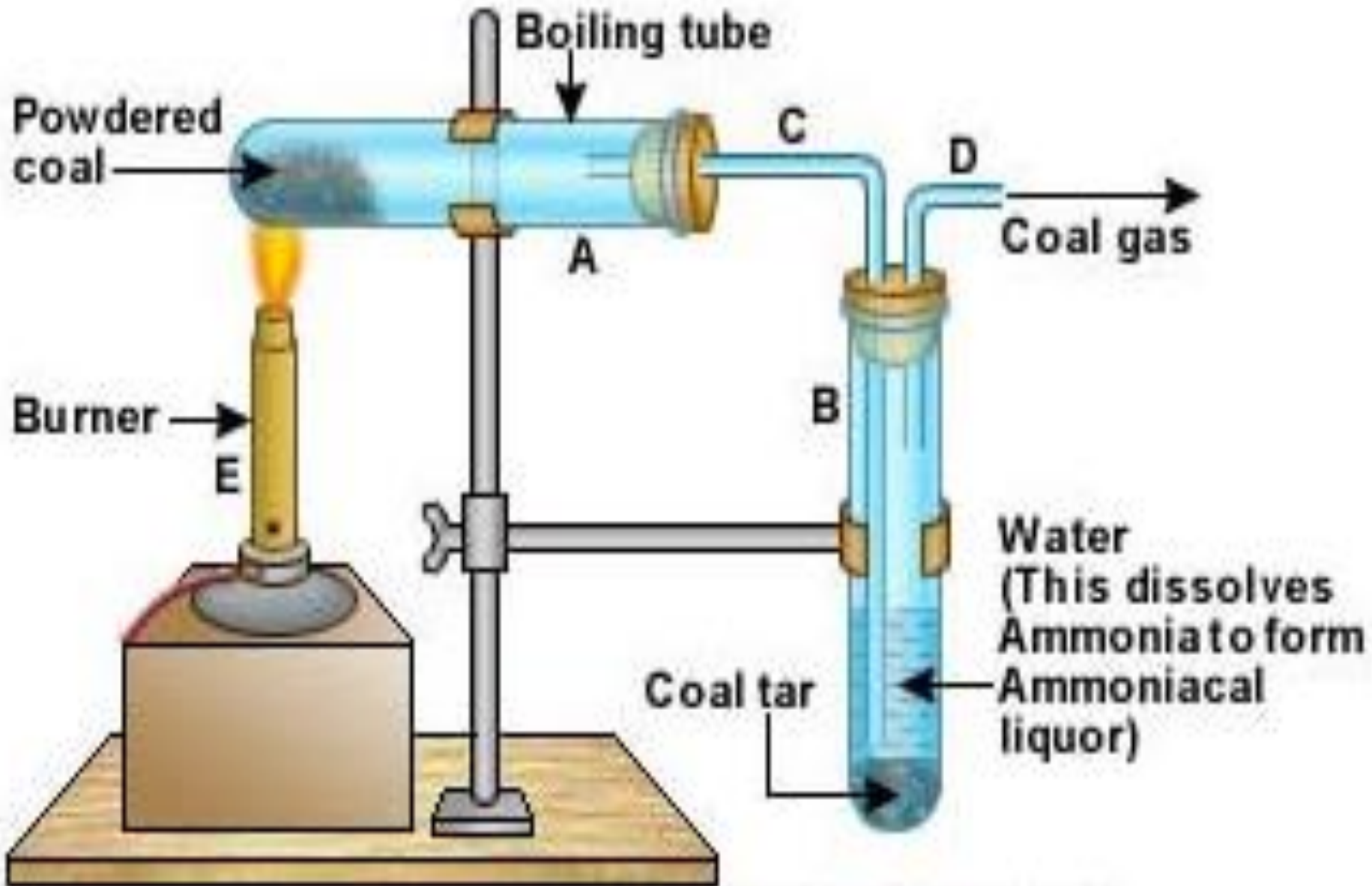
# *Uses of Coal*



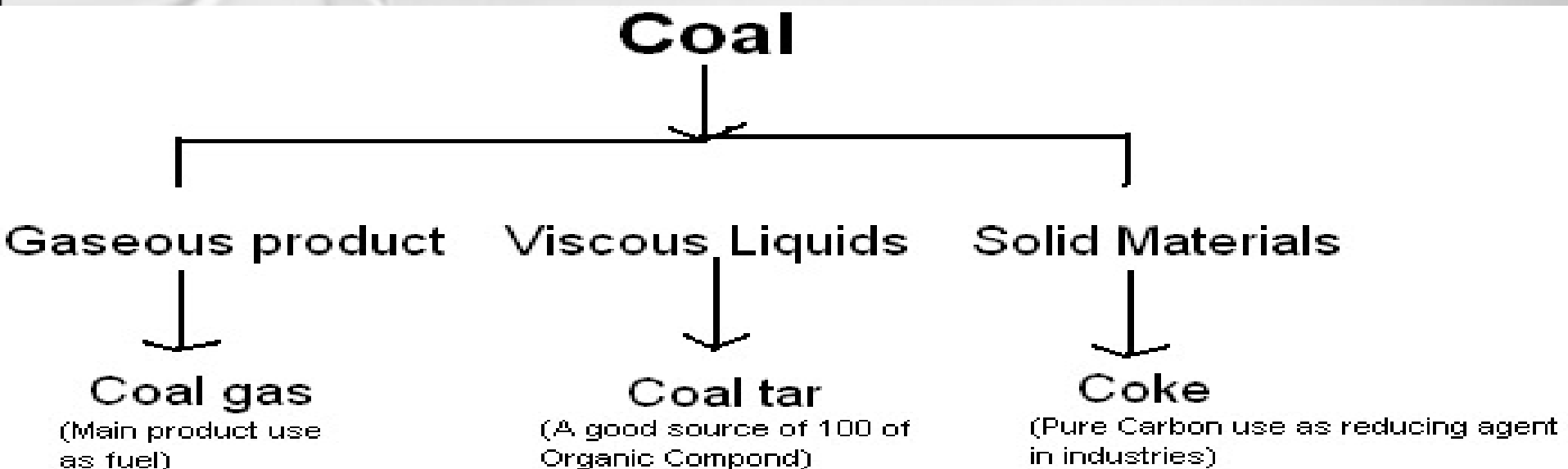
- Coal is used as a solid fuel to produce electricity in thermal electric plants.
- Coal is used as a solid fuel to produce heat through combustion.
- It is used in making coke and chemicals like ethanol.



# *Destructive Distillation of Coal*



# ***Destructive Distillation of Coal***



•It is the process in which a solid material (usually **coal** or wood) is heated at high temperature in absence of air to obtain coke, **coal** tar, or charcoal and coal gas.

•It is called '**destructive**' because the chemical composition of the substance is cracked at high temperature to give smaller substances as end product which are distinctly different from that of the raw material.

# ***COKE***



- Coke is a solid carbonaceous residue derived from low-ash, low-sulfur bituminous coal.
- Coke is used as a fuel and as a reducing agent in smelting iron ore in a blast furnace.
- It is also used in making steel



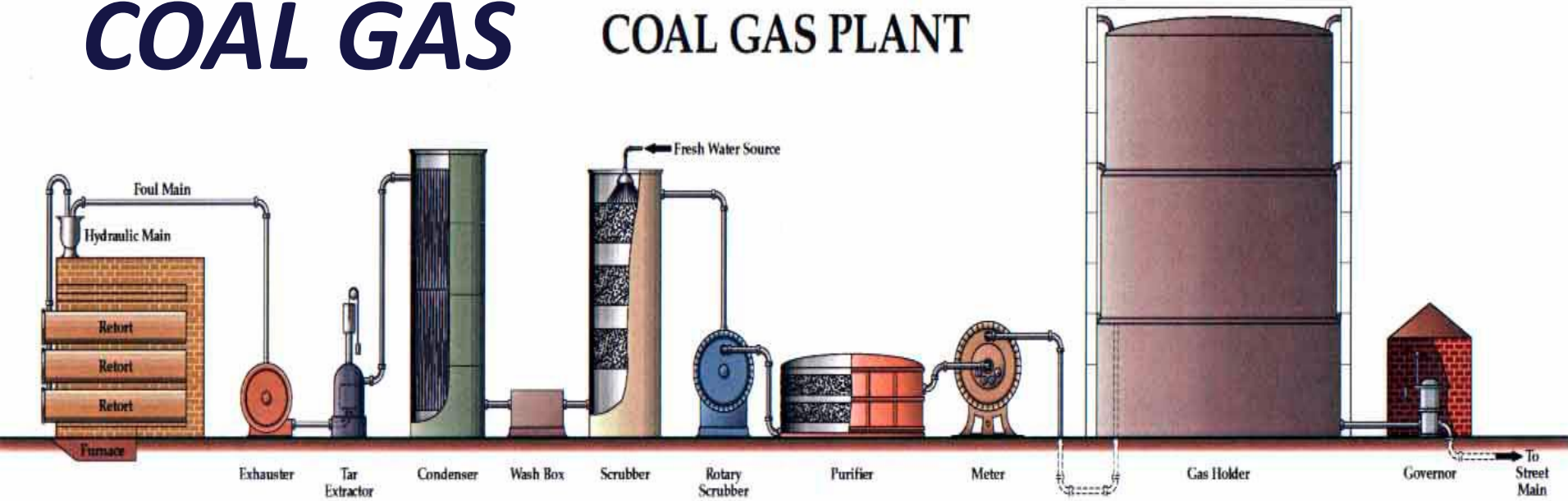
# COAL TAR



- Coal tar is a brown or black liquid of high viscosity, smell of naphthalene and aromatic hydrocarbons.
- Being flammable, coal tar is sometimes used for heating or to fire boilers.
- Tar is used in treatment of the skin disease psoriasis, where coal tar is the most effective.
- It is also used to make roads.

# COAL GAS

## COAL GAS PLANT



- **Coal gas** is a flammable gaseous fuel made from coal and supplied to the user via a piped distribution system.
- The gas obtained when coal is heated strongly in the absence of air is called coal gas.
- **Town gas** is a more general term referring to manufactured gaseous fuels produced for sale to consumers and municipalities

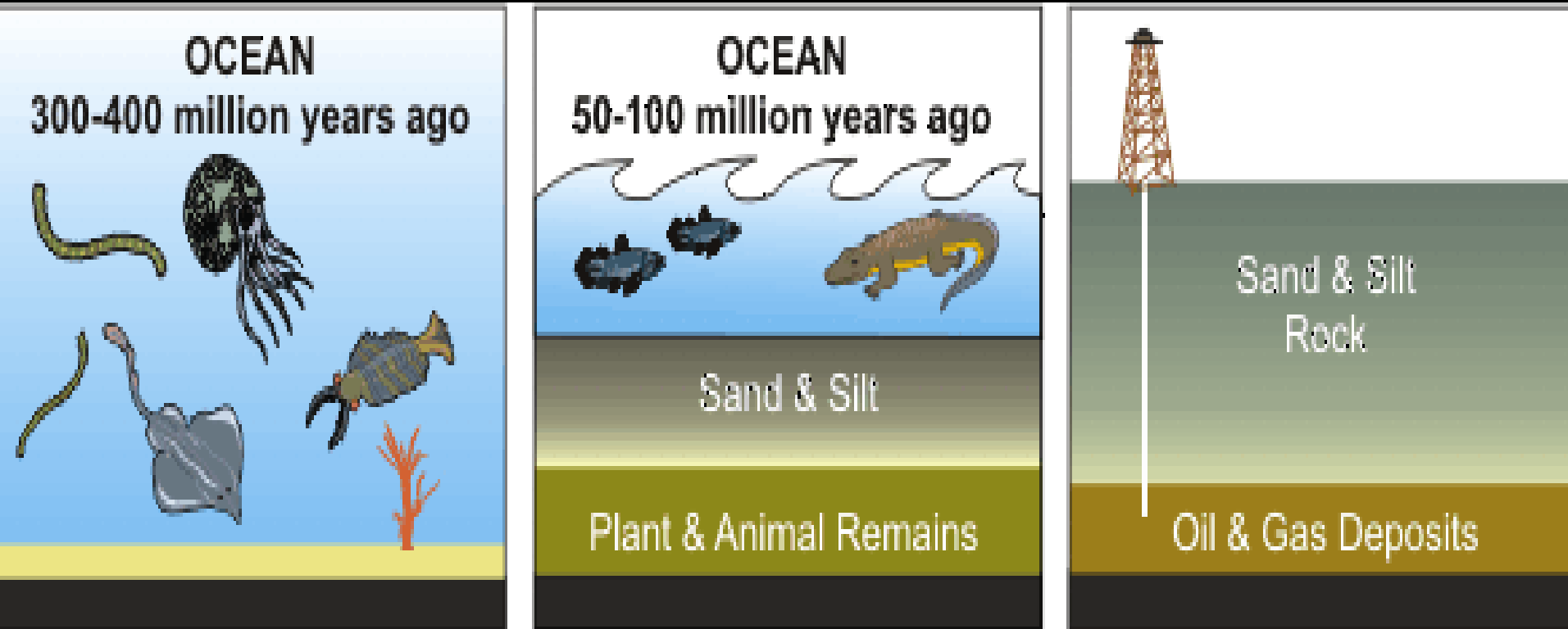


# PETROLEUM

Petroleum is a naturally occurring ,flammable liquid found in geologic formations beneath the earth's surface.



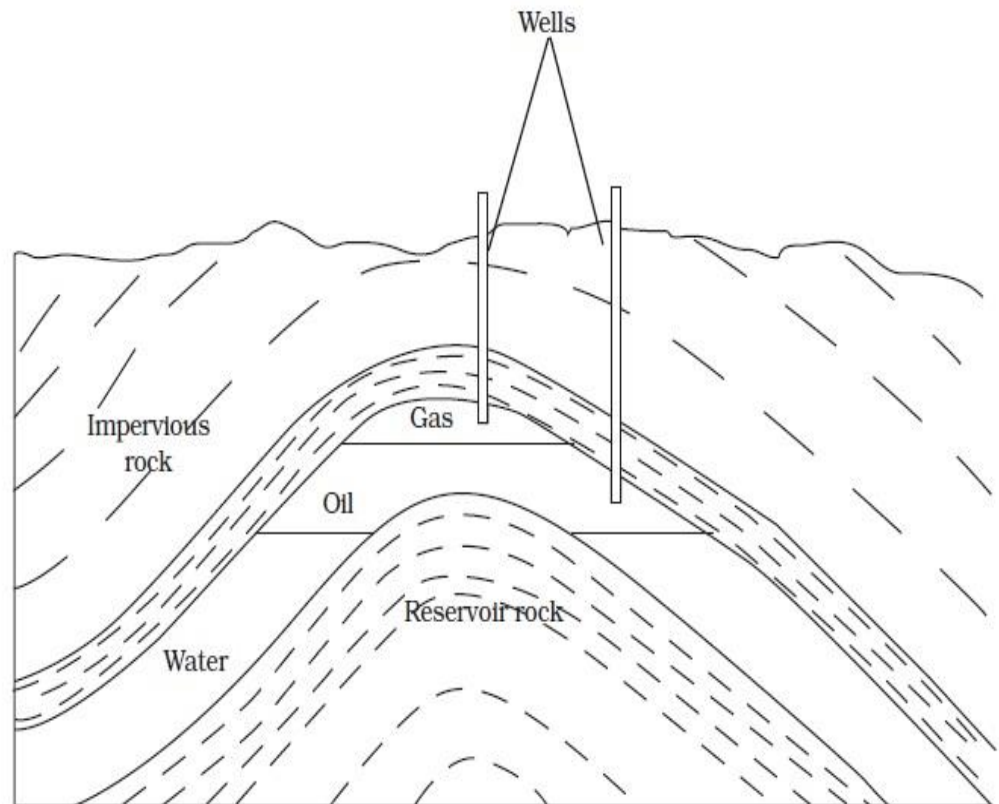
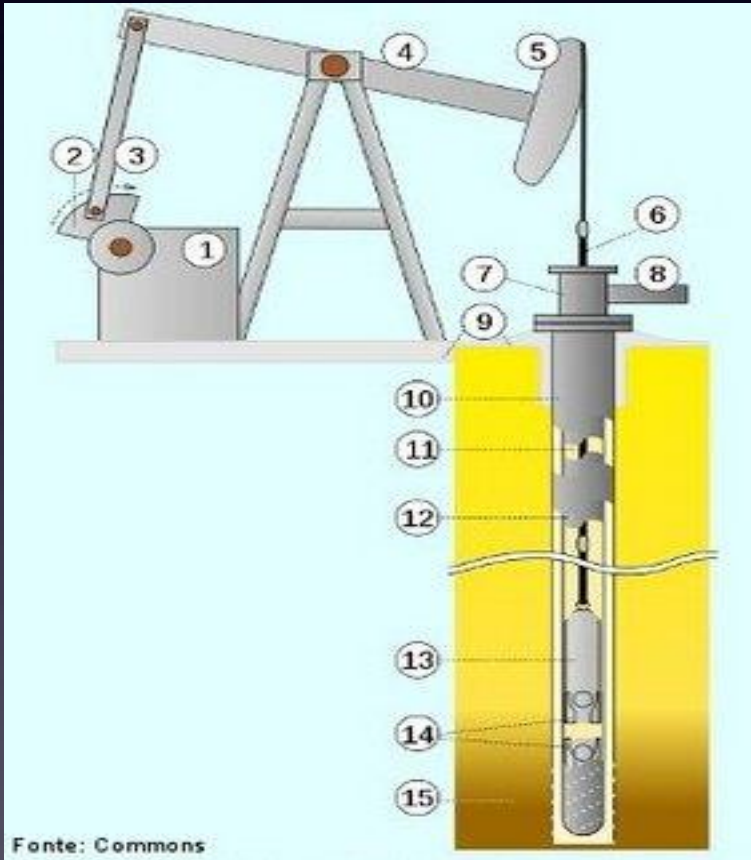
# *How is petroleum formed?*



Petroleum was produced when sea creatures died and got covered with sand and clay. Under high pressure and temperature, these dead organisms changed into petroleum and natural gases.

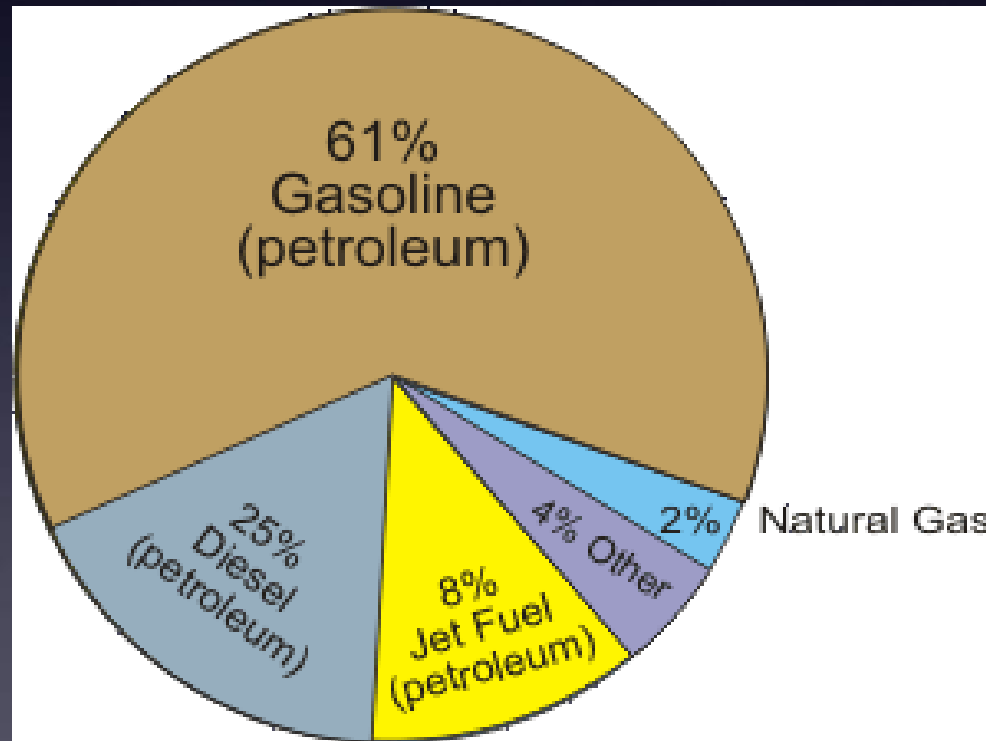
# *What is an oil well?*

An **oil well** is a general term for any boring through the earth's surface that is designed to find and acquire petroleum oil. It is used to pump out petroleum oil.

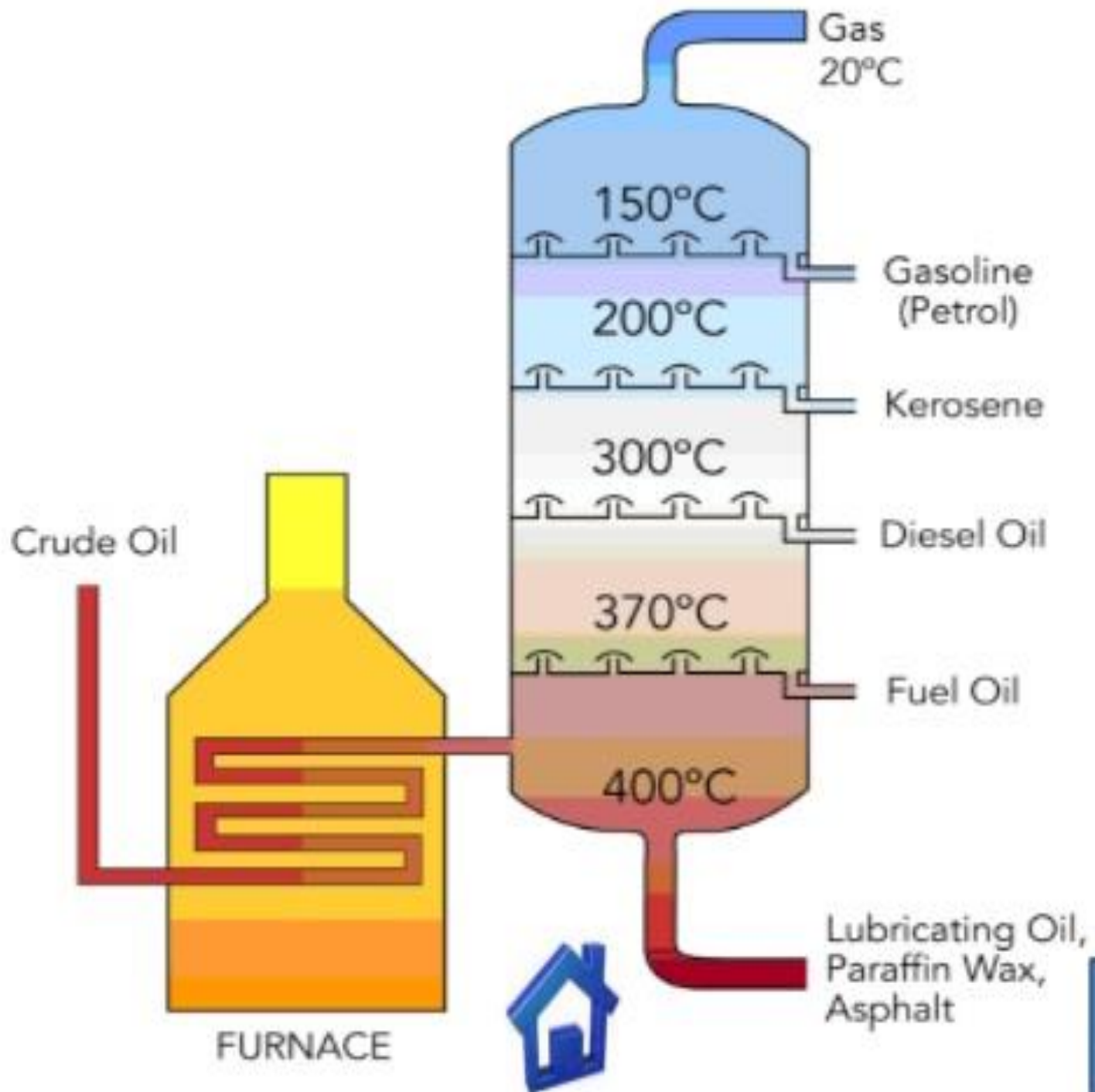


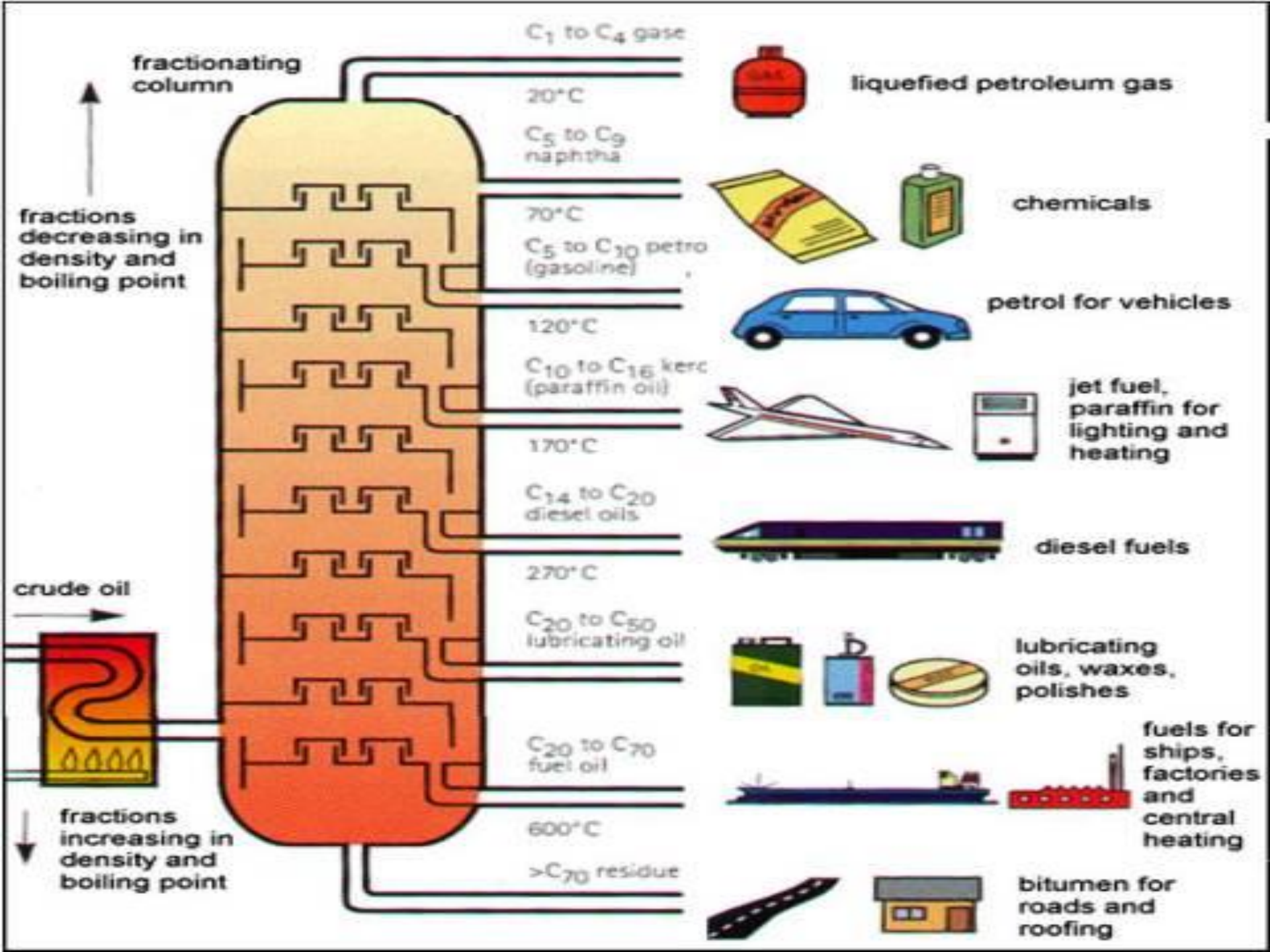
# *Petroleum products*

Petroleum oil is processed to obtain various fractions in oil refineries which separated by fractional distillation and treated by other chemical processes, to be used for a variety of purposes.









## ***List of various organic fuels (fossil fuels)***

- Ethane and other short-chain alkenes
- Diesel
- Fuel oils
- Gasoline (Petrol & Jet fuel)
- Kerosene
- Liquefied petroleum gas (LPG)
- Bulk tar.
- Petroleum coke, used in specialty carbon products or as solid fuel.

## ***Excess of Petroleum products usage leads to...***

- Generation of hundreds of millions of tons of waste products is product during processing of petroleum oil.
- Acid rain from high sulfur coal
- Interference with groundwater and water table levels
- Contamination of land and waterways and destruction of homes from fly ash spills
- Impact of water use on flows of rivers and consequential impact on other land-uses
- Dust nuisance.



## *Excess of Petroleum products usage leads to...*

- Subsidence above tunnels, sometimes damaging infrastructure
- Coal-fired power plants shorten many lives by causing lung cancer.
- Coal-fired power plants emit mercury, selenium, and arsenic which are harmful to human health and the environment
- Release of carbon dioxide, a greenhouse gas, which causes climate change and global warming.
- Coal is the largest contributor to the human-made increase of CO<sub>2</sub> in the air

A black and white photograph of water splashing, with droplets and ripples visible against a light background. The text is overlaid on this image.

**THANK  
YOU**