?Refining Hydrocarbons ?Today, many hydrocarbons are obtained from a fossil fuel called petroleum.In addition to breaking heavier hydrocarbons into molecules of the size range needed for gasoline, cracking also produces starting materials for the synthesis of many different products, including plastic products, films, and synthetic fabrics.Therefore, as the vapors travel up through the column, the hydrocarbons condense and are drawn off, ?This diagram of a fractional tower shows that fractions with lower boiling points, such as gasoline and gaseous products, are drawn off in the cooler regions near the top of the tower.Separation is carried out in a process called fractional distillation, also called fractionation, which involves boiling the petroleum and collecting components or fractions as they condense at different temperatures.Natural gas is composed primarily of methane, but it also contains small amounts of other hydrocarbons that have from two to five carbon atoms.In certain kinds of geological formations, the petroleum ran out of the shale and collected in pools deep in Earth's crust.Heat from Earth's interior and the tremendous pressure of overlying sediments transformed this mud into oil–rich shale and natural gas.?Fractional distillation ?Unlike natural gas, petroleum is a complex mixture containing more than a thousand different compounds.The condensation temperatures (boiling points) generally decrease as molecular mass decreases.Unfortunately, fractional distillation towers, shown in Figure 7, do not yield fractions in the same proportions that they are needed.For example, distillation seldom yields the amount of gasoline desired.

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