

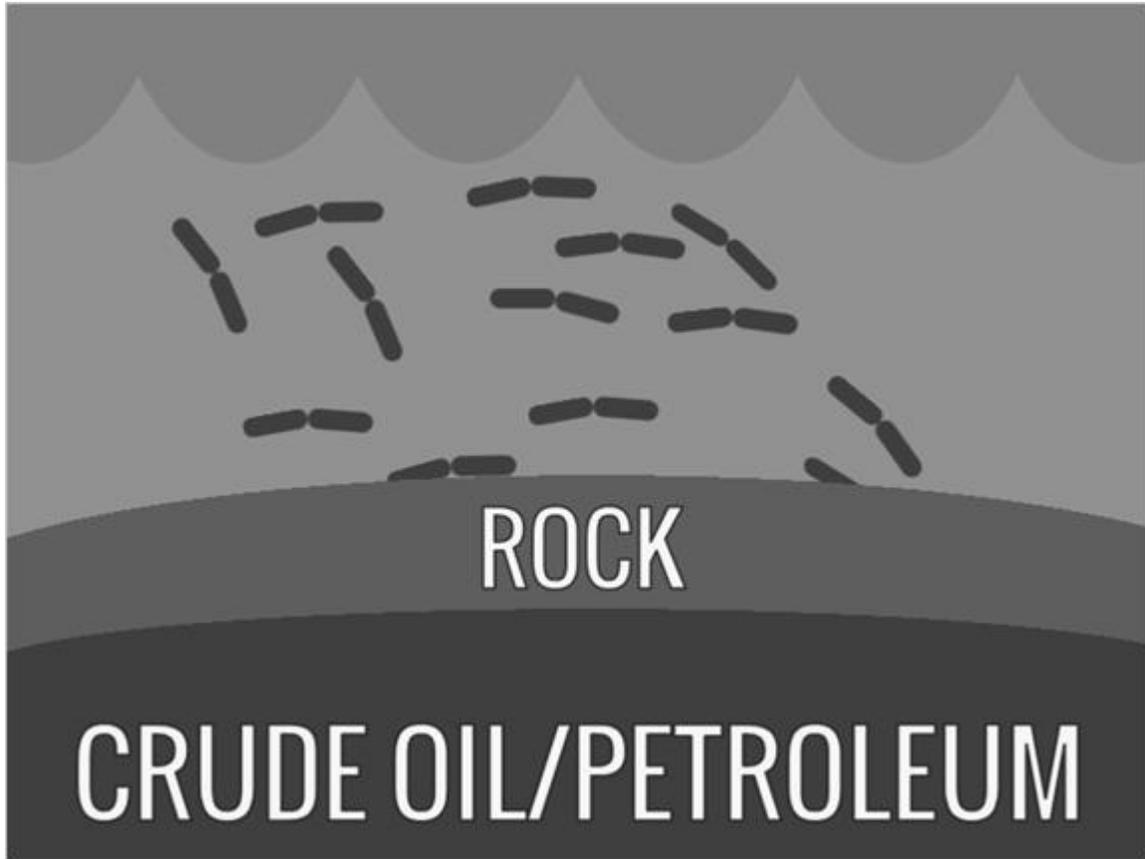
**Module 10: Resources and Virginia Geology**  
**Topic 2 Content: Oil Notes**



Fossil Fuels: Oil

## Module 10: Resources and Virginia Geology

### Topic 2 Content: Oil Notes



The oil used today as gasoline and petroleum products formed over millions of years. Between 300 and 400 million years ago in the Earth's oceans, single-celled algae and plankton died, and their remains collected on the ocean floor. Over time, these organic remains built up, layer by layer, and were covered with layers of sand and silt. As these layers of sediment were deposited, they created a large amount of heat and pressure on top of the organic remains. As time went on and the pressure built, bacteria broke down the organic remains into thick, dark liquid. Then, the sediment formed a layer of rock above it. The viscous liquid eventually became what is known as crude oil, or petroleum. The gaseous byproduct created by the bacteria, natural gas, is found alongside petroleum deposits.

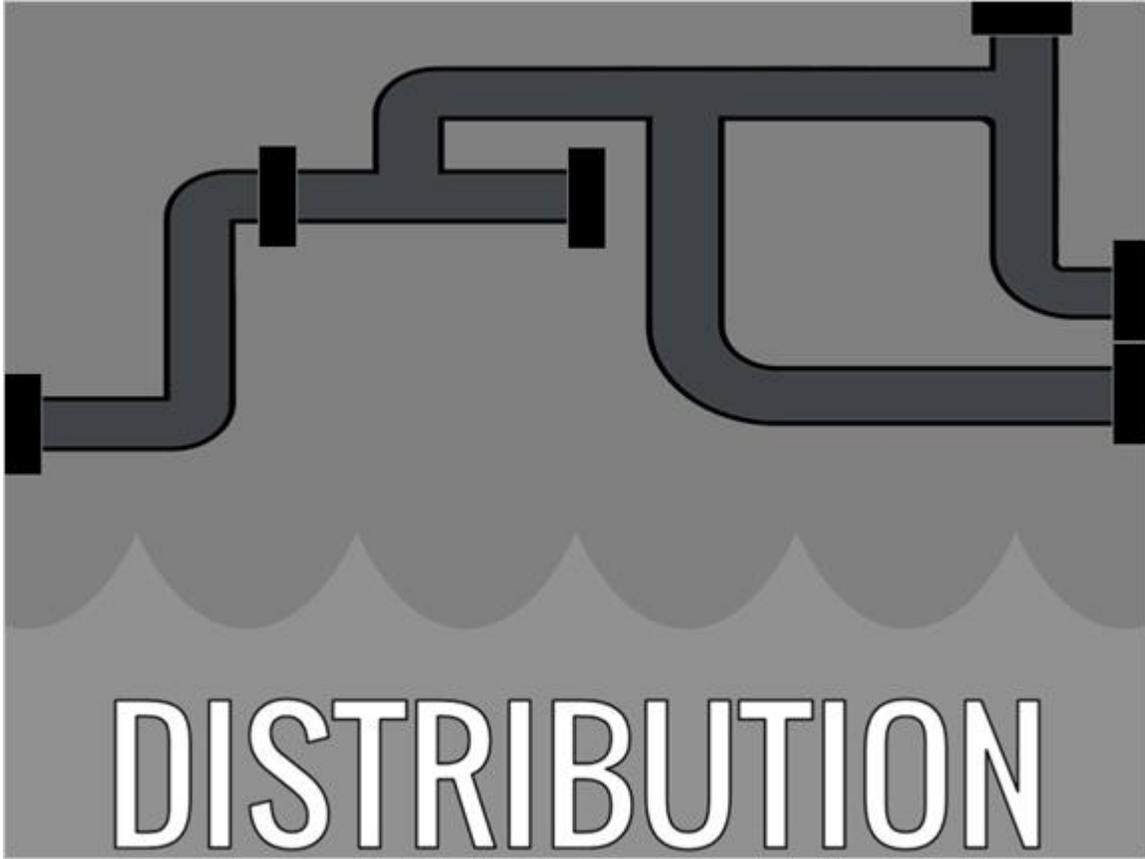
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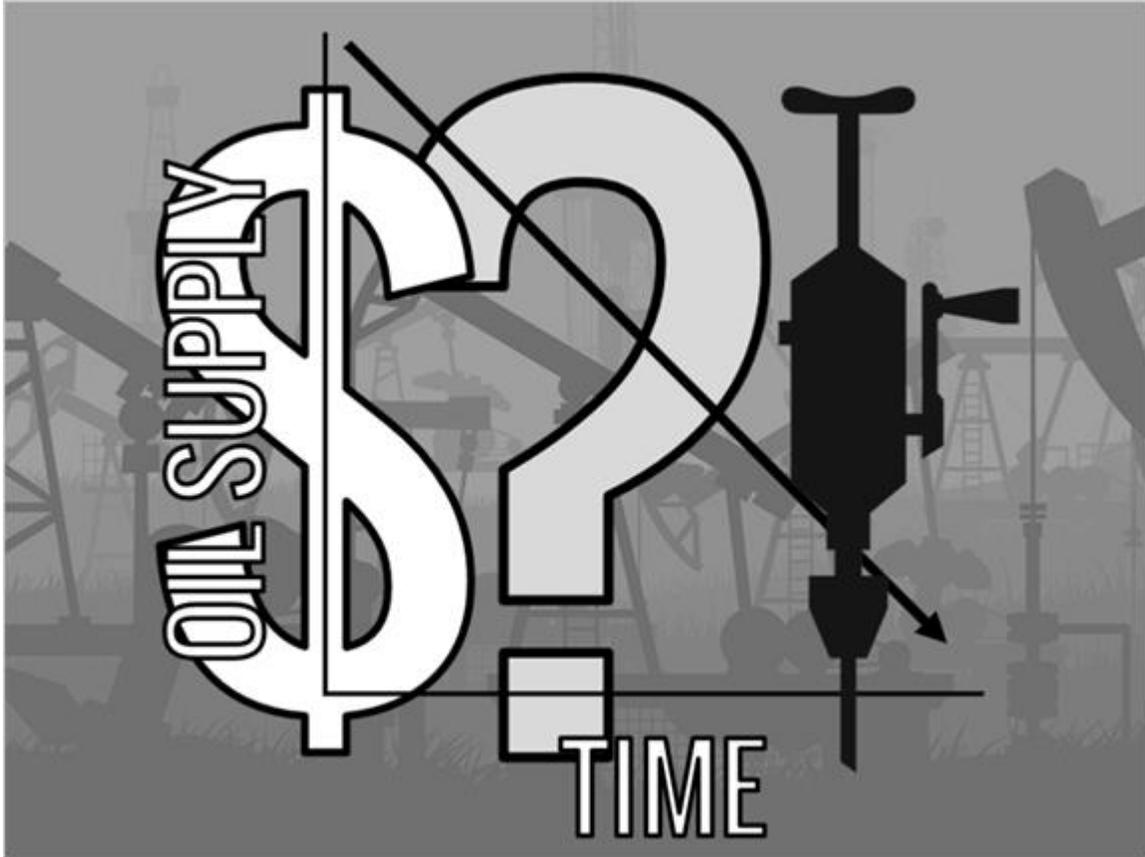
Today, crude oil is extracted from underground and under the ocean. Some oil deposits are only a few meters deep, but others are several kilometers deep. To harvest the oil from underneath the Earth's crust, oil-producing companies run extensive geological tests in order to predict where they might find oil deposits. Once they locate a likely source of oil, they build the needed infrastructure, drill many deep holes through layers of rock, and use large pumps to retrieve the crude oil. This can be a very expensive and dangerous process depending on the location of the oil deposits.

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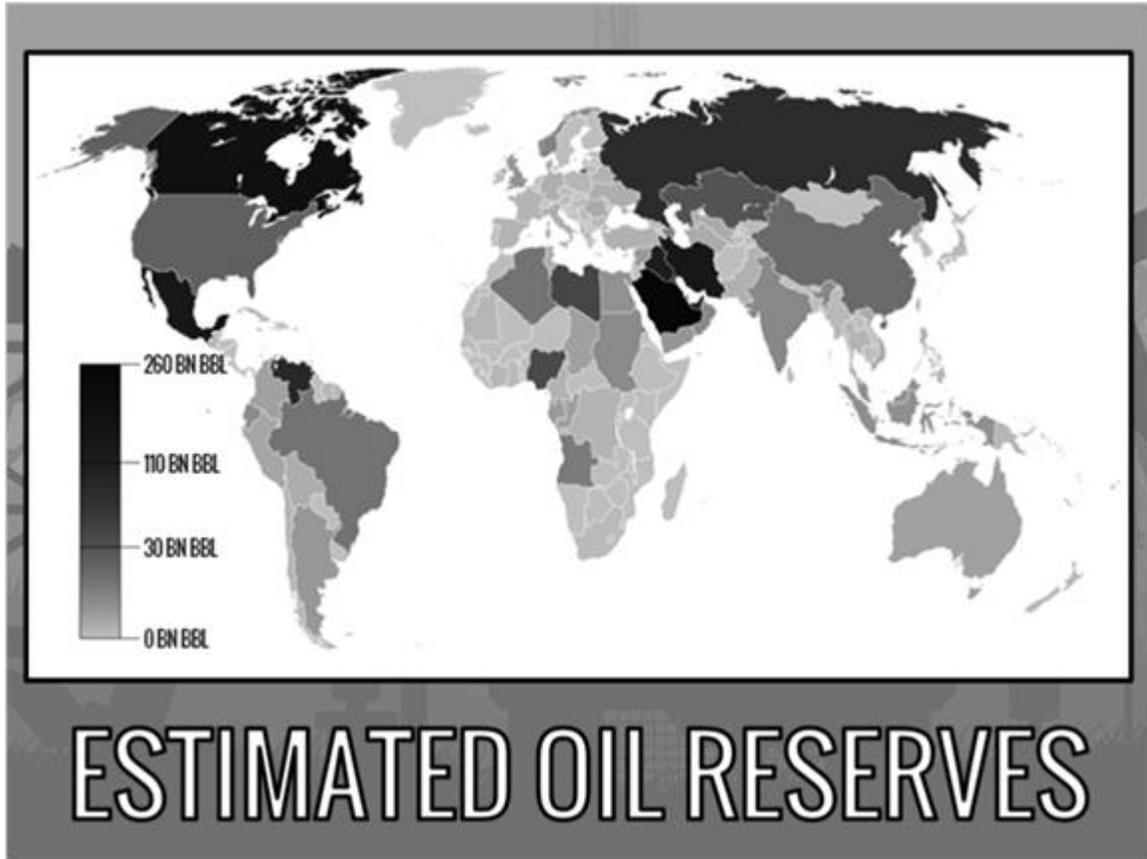
After the oil is pumped out of the Earth's crust, it is shipped in oil tankers or sent through pipelines to a processing plant where it is refined. Refined crude oil is then manufactured into gasoline or sold for use in other products.

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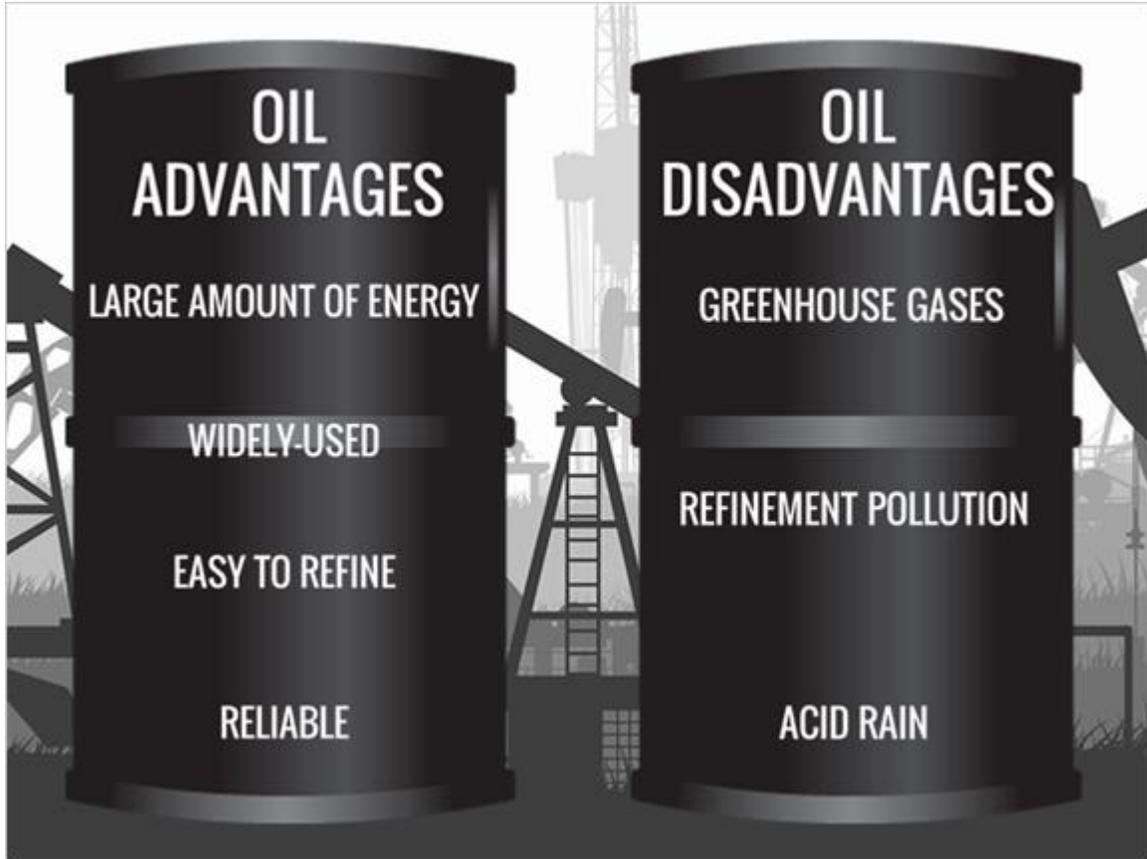
There is no way to know for sure how much oil there is in the world. There are many areas, especially under the ocean, that have not yet been explored for oil. The price of oil determines how much effort is put into searching for new oil deposits. As the price of oil increases, so does oil exploration. The formation of oil is so slow and use worldwide is so high that eventually the oil supply will run out. There are many different estimates of when this will happen, ranging from sometime this century to several generations from now.

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Take a look at the Estimated Oil Reserves map shown here. Make note of the darkest areas on the map; they represent the countries with the largest oil reserves. The United States uses more than 20% of the world oil supply, but makes up less than 5% of the world population.

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Oil has several advantages and disadvantages. A small amount of oil can produce a large quantity of energy. Oil is easily available and easy to transport. Oil is widely used and easy to produce and refine. Most importantly, oil is a very reliable source of energy.

Oil does have several drawbacks. The largest disadvantage is that oil releases greenhouse gases. This creates dangerous pollution. Oil refineries also emit dangerous substances like sulfur dioxide into the atmosphere. This can lead to acid rain.