



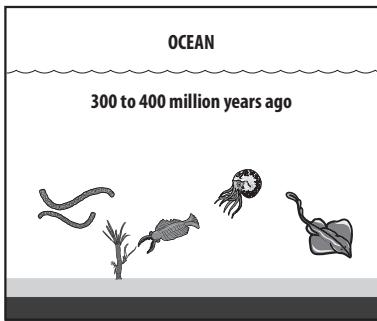
# Petroleum

## What is Petroleum?

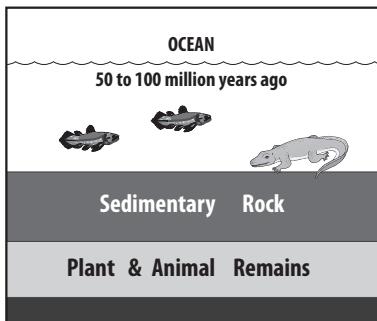
Petroleum is a **fossil fuel**. Petroleum is often called crude oil, or oil. It is called a fossil fuel because it was formed from the remains of tiny sea plants and animals that died millions of years ago. When the plants and animals died, they sank to the bottom of the oceans.

Here, they were buried by thousands of feet of sand and sediment, which turned into **sedimentary rock**. As the layers increased, they

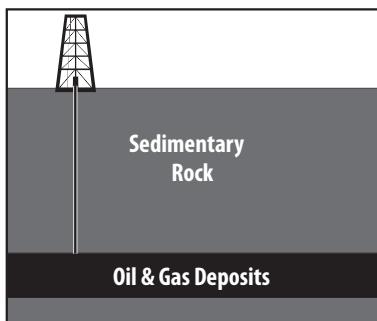
### OIL AND NATURAL GAS FORMATION



Tiny sea plants and animals died and were buried on the ocean floor. Over time, they were covered by layers of sedimentary rock.



Over millions of years, the remains were buried deeper and deeper. The enormous heat and pressure turned them into oil and gas.



Today, we drill down through layers of sedimentary rock to reach the rock formations that contain oil and gas deposits.

pressed harder and harder on the decayed remains at the bottom. The heat and pressure changed the remains, and eventually, petroleum was formed.

Petroleum deposits are locked in porous rocks almost like water is trapped in a wet sponge. When **crude oil** comes out of the ground, it can be as thin as water or as thick as tar. Petroleum is called a **nonrenewable** energy source because it takes millions of years to form. We cannot make new petroleum reserves.

## History of Oil

People have used petroleum since ancient times. The ancient Chinese and Egyptians burned oil to light their homes. Before the 1850s, Americans used whale oil to light their homes. When whale oil became scarce, people skimmed the oil that seeped to the surface of ponds and streams. The demand for oil grew, and in 1859, Edwin Drake drilled the first oil well near Titusville, Pennsylvania.

At first, the crude oil was refined or made into kerosene for lighting. Gasoline and other products made during refining were thrown away because people had no use for them. This all changed when Henry Ford began mass producing automobiles in 1913. Everyone wanted an automobile and they all ran on gasoline. Gasoline was the fuel of choice because it provided the greatest amount of energy in relation to cost and ease of use.

Today, Americans use more petroleum than any other energy source, mostly for transportation. Petroleum provides almost 37 percent of the energy we use.

## Producing Oil

Geologists look at the types of rocks and the way they are arranged deep within the earth to determine whether oil is likely to be found at a specific location. Even with new technology, oil exploration is expensive and often unsuccessful. Of every 100 new wells drilled, only about 44 produce oil. When scientists think there may be oil in a certain place, a petroleum company brings in a **drilling rig** and raises an **oil derrick** that houses the tools and pipes they need to drill a well. The typical oil well is about one mile deep. If oil is found, a pump moves the oil through a pipe to the surface.

More than one-third of the oil the U.S. produces comes from offshore wells. Some wells are a mile under the ocean. Some of the rigs used to drill these wells float on top of the water. It takes a lot of money and technology to drill and find oil in the ocean.

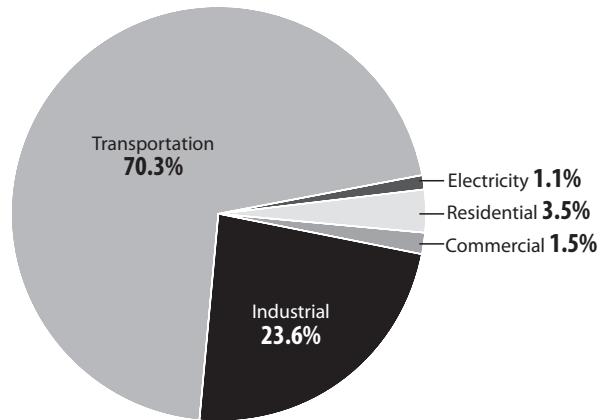
Texas produces more oil than any other state, followed by Alaska, California, Louisiana, and Oklahoma. Thirty percent of the oil produced in the United States is from offshore wells. Americans use much more oil than we produce. Today, the U.S. imports about two-thirds of the oil it consumes from other countries.

## PETROLEUM PRODUCING STATES, 2008



Source: Energy Information Administration

## 2008 PETROLEUM USE BY SECTOR OF THE ECONOMY

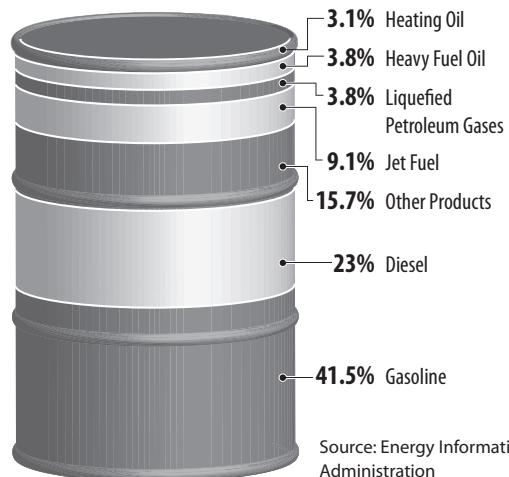


Source: Energy Information Administration

## OTHER PETROLEUM PRODUCTS

|                 |                  |                |
|-----------------|------------------|----------------|
| Ink             | Hand lotion      | Nail polish    |
| Heart valves    | Toothbrushes     | Dashboards     |
| Crayons         | Toothpaste       | Luggage        |
| Parachutes      | Guitar strings   | DVDs           |
| Enamel          | Movie film       | Balloons       |
| Antiseptics     | Aspirin          | Paint brushes  |
| Purses          | Sunglasses       | Footballs      |
| Deodorant       | Glue             | Dyes           |
| Pantyhose       | Artificial limbs | Antihistamines |
| Oil filters     | Ballpoint pens   | Skis           |
| Pajamas         | Golf balls       | Perfumes       |
| Cassettes       | Contact lenses   | Shoe polish    |
| Fishing rods    | Dice             | Fertilizers    |
| Electrical tape | Trash bags       | Insecticides   |
| Floor wax       | Shampoo          | Cold cream     |
| Tires           | Cameras          | Detergents     |

## PRODUCTS MADE FROM A BARREL (42 GALLONS) OF CRUDE OIL



Source: Energy Information Administration

## From Well to Market

We can't use **crude oil** as it comes out of the ground. We must change it into fuels that we can use. The first stop for crude oil is at an **oil refinery**. A refinery is a factory that processes oil.

The refinery cleans and separates the crude oil into many fuels and products. The most important one is **gasoline**. Other petroleum products are diesel fuel, heating oil, and jet fuel. Industry uses petroleum to make plastics and many other products.

## Shipping Petroleum

After the refinery, most petroleum products are shipped out through pipelines. There are about 95,000 miles of underground pipelines in the United States transporting refined petroleum products. Pipelines are the safest and cheapest way to move big shipments of petroleum. It takes about 15 days to move a shipment of gasoline from Houston, Texas to New York City.

Special companies called **jobbers** buy petroleum products from oil companies and sell them to gasoline stations and to other big users such as industries, power companies, and farmers.

## Oil and the Environment

**Petroleum products**—gasoline, medicines, fertilizers, and others—have helped people all over the world. But there is a trade-off. Petroleum production and petroleum products may cause air and water pollution and the exploration of oil and gas.

Drilling for and transporting oil can endanger wildlife and the environment if it spills into rivers or oceans. Leaking underground storage tanks can pollute groundwater and create noxious fumes. Processing oil at the refinery can contribute to air and water pollution. Burning gasoline to fuel our cars contributes to air pollution. Even the careless disposal of waste oil drained from the family car can pollute rivers and lakes.

The petroleum industry works hard to protect the environment. Gasoline and diesel fuel have been changed to burn cleaner. And oil companies work to make sure that they drill and transport oil as safely as possible.