



# PETROLEUM

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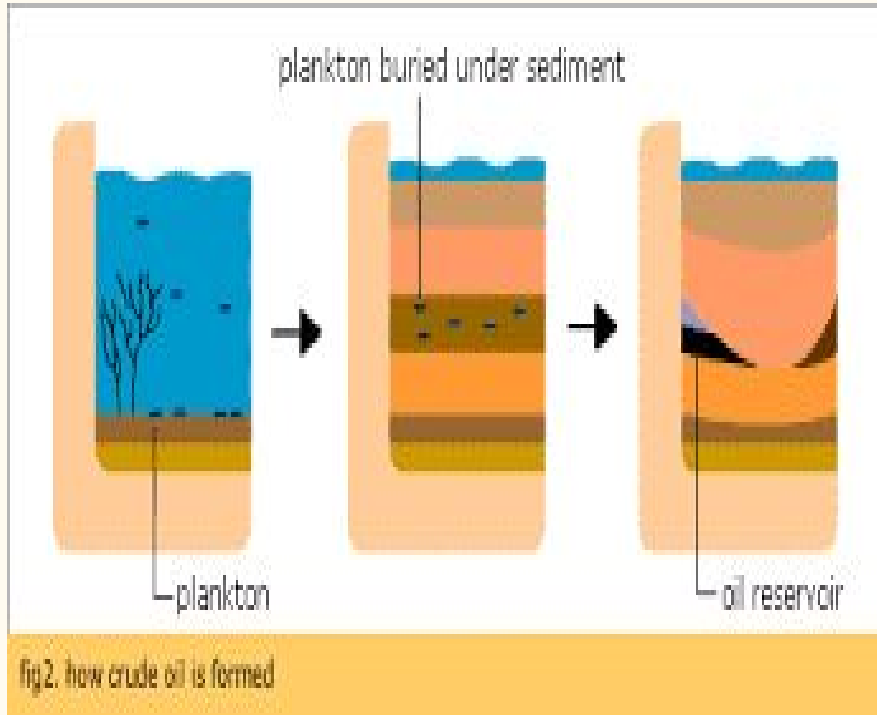
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# What is Petroleum?

Petroleum is a liquid mixture of hydrocarbon that is present in certain rock strata and can be extracted and refined to produce fuels including gasoline, kerosene, diesel oil, or regular oil. It comes from the latin word *petra* (rock), and *oleum* (oil). It literally translates to *rock oil*. Petroleum is also one of the three main fossil fuels used for fuel production.



# Formation of Petroleum...



Petroleum is formed from the remains of ancient marine organisms. These organisms lived in shallow seas, and once they die, they began to decompose causing the organic matter to mix with sediments, burying the organism.

# The Main Goal of Petroleum Technology...

## Petroleum Mining Process

A drilling rig is used to extract petroleum from the ground. A drill bit connected to the rig itself, drills a circular hole into the ground that easily cuts through the ground. Once the drill reaches the oil, in some cases, the oil flows upwards naturally to the surface. An immediate release of oil results in a huge spurt of oil gushing high into the air. Multiple pumps are used to actually extract the oil from the surface or through man-made wells. Successful drilling site can produce enough oil to last for 30 or more years.

## Conversion to Energy Process

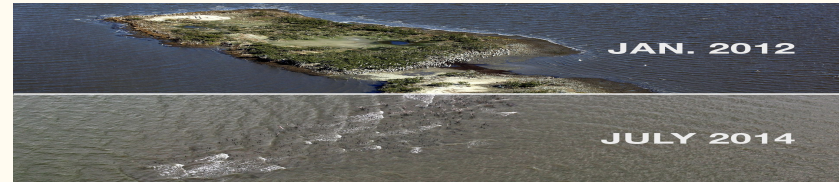
There are three steps to convert petroleum into usable energy for everyday life. The first step is *separation*. The oil is put through a hot furnace and the remaining liquids and vapors are then put through distillation units. The next step is *conversion*. After being distilled, the oil can be processed into lighter, higher-value products such as gasoline and other fuels. The third step is *treatment*. In order to create fuel such as gasoline, the oil undergoes various octane levels, vapor pressure ratings, etc. in order to determine what type of fuel will be created.

# The Consequences of Petroleum...

**Social Impact:** Drilling for petroleum can cause extreme conflict such as the war that we had with Afghanistan. It can also cause conflicts within our own country. Some companies may not want to drill for oil, but other companies still drill for the oil anyway, despite many protests against it.

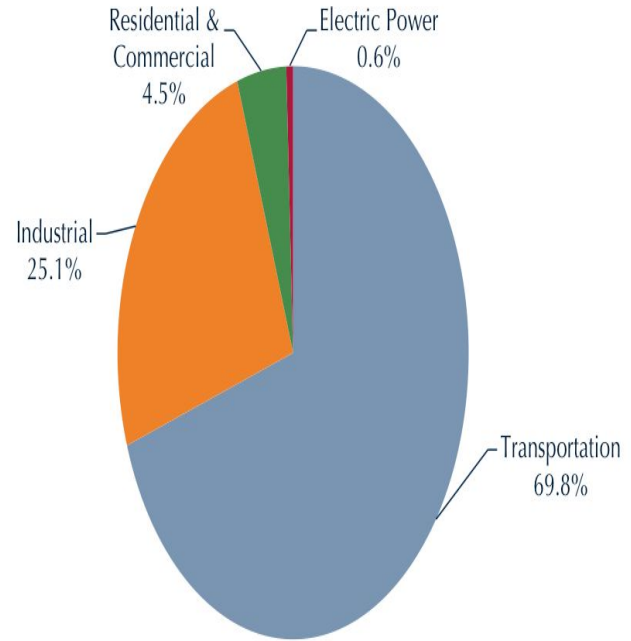
**Economic Impact:** The money that people spend on oil ranges depending on where you go. In the United States, it is \$36.00 per barrel; in Canada it is \$41.00 per barrel; in Brazil it is \$49.00 per barrel; and in the United Kingdom it is \$52.50 per barrel.

**Environmental Impact:** Using oil creates pollution, releases CO<sub>2</sub>, and has a very negative environmental impact on the Earth. Dumping the oil is illegal, especially when it is not disposed of properly. It can leak into the ocean and cause various deformities on the native wildlife that live in the surrounding areas of that oil spill. Oil spills can cause the wildlife in the region to become deformed and increase the possibility of wildlife being born with various birth defects. It can also cause birds that get stuck in the oil spill to be unable to fly due to the damage the oil brings to their flight and down feathers, due to how thick the oil is that coats their wings.



# How Petroleum Based Energy Functions...

The energy produced from petroleum is used towards four categories of everyday life. The majority of petroleum based energy is used for *transportation* (69.8%) and for *industry* (25.1%). A small percentage of this energy is used for *residential and commercial* purposes (4.5%), and less than one percent (0.6%) is used for *electric power*.



# Obstacles that could Interrupt Oil Based Energy Production...

Wildlife protection acts can cause a halt in oil production because a lot of oil reserves that have not be touched yet are protected by Wildlife agencies. Mining equipment is getting more and more expensive, it is also getting more expensive because of how far we are drilling into the ground. The deeper we drill the more expensive it gets. We are running out of oil, the demand for oil is increasing while the supplies is decreasing, it can take up to 1 million years for new oil deposits to form. Most of the oil deposits on American Soil is running dry so we are starting to drill out in the ocean, this is dangerous because of how easy it is for the oil to spill in the ocean



# Political & Economic Obstacles that could Halt Production...

## Political Obstacles:

- Mining for petroleum is often times very difficult and dangerous
- Petroleum is a non-renewable resource so when it runs out in various places, we will resort to more offshore drilling which could cause a lot of conflict



## Economic Obstacles:

- Mining for petroleum is *very* expensive
  - Mining equipment is extremely expensive
  - Costs to mine in an area increase the more times companies mine for petroleum
- The costs of oil depend on the location of purchase



# Positive and Negative Impacts...

*Positive:* Natural, rock oil, can withstand high heats without breaking making it good for motor oil, and grease, good for paint, without oil all whales would be extinct because they were used for oil lamps, cheap compared to other fossil fuels.



*Negative:* Only way to use it is to burn it which produces more CO<sub>2</sub>, we running out, consumption is increasing, while the production is decreasing, contains cancer causing compounds, it's getting more difficult and expensive to mine because we're drilling deeper in the ground as much as 20,000 feet, it is harmful to the surrounding environments, especially, birds and sea creatures. The effects of spilled petroleum can last up to 10 years, depending on which environment it is spilt in.

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\*\*\* No Water Off A Duck's Back Lab \*\*\*