

# Transportation and Transportation Fuels

## STUDENT INFORMATIONAL TEXT



## Modes of Transportation

All around you, people are on the move. They are driving in cars, riding in buses, and walking on the street. Goods are on the move, too. Trucks loaded with boxes of merchandise are driving on the highway, and barges full of coal float down our rivers.

Transportation is simply people and goods traveling from one place to another. How you move from one place to another is called a mode of transportation. To get to school you ride on a school bus. Your parent drives a car to get to work. Food at the grocery store arrives from a warehouse on a large truck. Grandma comes to visit by flying on an airplane. You ride your bike to a friend's house for a sleepover. The school bus, car, truck, airplane, and bicycle are all modes of transportation.



Trucks are just modes of transportation

## Fuel

In order for any mode of transportation to move, it must consume, or use, energy. The energy source it uses is called a fuel. Fuel is the source of energy that enables a mode of transportation to have motion. A car consumes gasoline. A truck consumes diesel. An airplane consumes jet fuel. An elevator consumes electricity. Fork lifts consume propane. Race cars consume ethanol. Each of these modes of transportation rely on a specific fuel source in order to generate motion.



Modes of transportation use fuel to move.

## Fueling Your Body

You would never drink gasoline to have energy to run across a soccer field. So where does your energy come from? Your body absorbs in energy from the foods you eat and drink by changing the food into chemical energy during digestion. Your body uses this energy as fuel so you can run, breathe, think, talk, and grow.

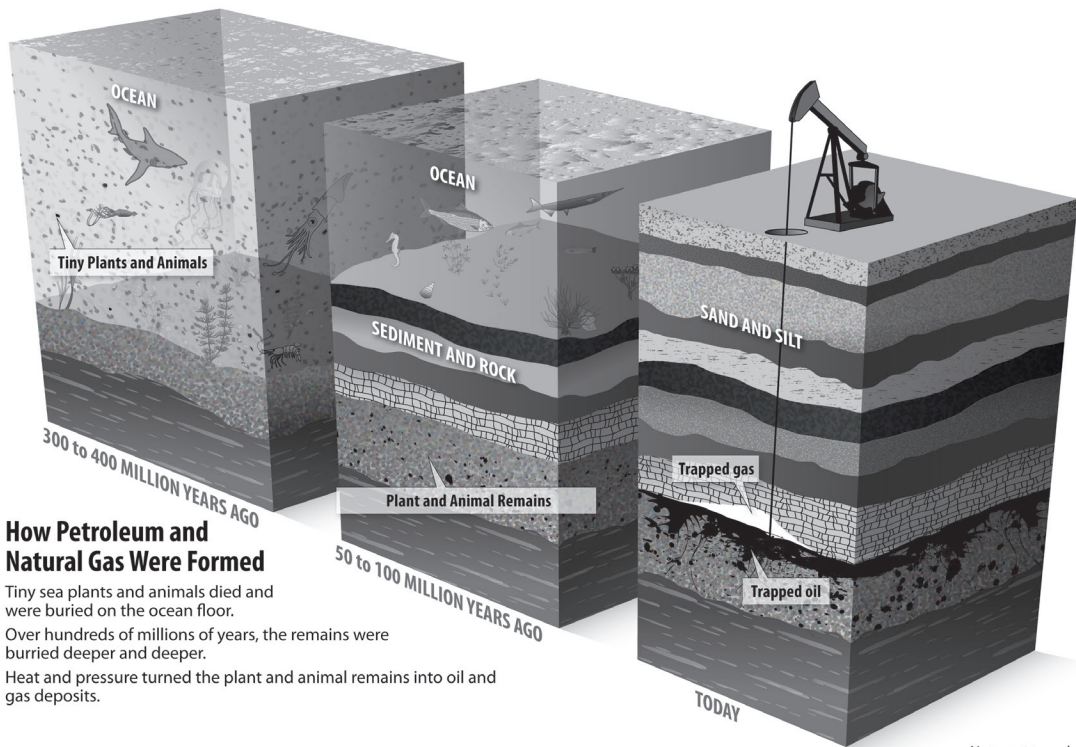


## Fossil Fuels

Long before the dinosaurs roamed, oceans covered most of the Earth. They were filled with tiny sea animals and plants. As the plants and animals died, they sank to the ocean floor. Sand and sediment covered them and turned into sedimentary rock. Hundreds of millions of years passed and the weight of the rock and heat from the Earth turned the tiny plant fossils into petroleum and natural gas. The energy in these fossil fuels came from the energy once inside the plants and animals. This energy came from the sun.

It took millions to hundreds of millions of years to form the fossil fuels we use today. We can't make more in a short time. That's why we call fossil fuels nonrenewable.

## Fossil Fuels



### How Petroleum and Natural Gas Were Formed

Tiny sea plants and animals died and were buried on the ocean floor. Over hundreds of millions of years, the remains were buried deeper and deeper. Heat and pressure turned the plant and animal remains into oil and gas deposits.

## Conventional Fuels

In the U.S., most transportation fuels are made from petroleum. The most common are gasoline and diesel. They are also known as conventional fuels. Almost all of our cars, trucks, buses, trains, and ships are powered by conventional fuels. Conventional fuels are an important part of our economy because they keep our goods and materials moving around the country.

Conventional fuels are made from petroleum and are nonrenewable. If we run out, we cannot make more quickly. Someday, our supply of conventional fuels may be completely gone.

The United States doesn't produce enough petroleum to make as much gasoline and diesel as we use. So each year, we import between 40 and 50 percent of the petroleum we use from other countries. Some citizens do not want to rely on other countries to meet our petroleum needs.



Machines called pumpjacks are used to pump oil out of the ground.

## Alternative Fuels

Scientists and engineers have been working and developing additional transportation fuels to help meet our needs called alternative fuels. These fuels provide a different option than using gasoline and diesel. There are a wide variety of alternative fuels available.

Biodiesel and ethanol are two alternative fuels made with renewable sources of energy. Biodiesel is made from animal fats or soy bean oil. Ethanol is made from corn or plant materials. Biodiesel and ethanol are renewable fuels because they are made using resources that will not run out.

Propane and natural gas are alternative fuels, too. They are the cleanest burning fossil fuels. Propane and natural gas are nonrenewable.

Electricity and hydrogen are two more alternative fuels. They are secondary sources of energy, which means they must be manufactured from other sources of energy before we can use them. Electricity can be generated using nonrenewable or renewable resources. Most electricity in the U.S. is generated by burning either coal or natural gas. Electricity is used as an alternative fuel to charge a car's battery.



Corn can be used to make ethanol.

Hydrogen is found naturally as part of water and methane gas. To use it as an alternative fuel source, it must be extracted as pure hydrogen gas. It can be expensive to make hydrogen gas, and it requires a lot of energy during the manufacturing process. Scientists and researchers are working to make hydrogen a more affordable alternative fuel for the future.

Some people do not want to use alternative fuels in their vehicles today. As supplies of conventional fuels shrink, alternative fuels may become more accepted in our country. It is important to educate consumers about the benefits and the concerns of using alternative fuels to meet our transportation needs, so each person can wisely make their own choices.



Forklifts often use propane to move goods.



**These MINI Coopers use electricity to get around.**  
Photo courtesy of the University of Delaware