

# Fossil fuels and Environmental Impact



Big Bend Power Station is a major coal-fired power plant near Apollo Beach, Florida.

Fossil fuels are used as a source of energy. This energy fuels our cars, heats our homes and lights our schools.

Fossil fuels are natural substances that formed over millions of years. Examples of fossil fuels are oil, gas, and coal.

People have used fossil more and more since the Industrial Revolution, which started in the mid-1700s. This is when new manufacturing processes came about.

By the early 2000s, almost all the world's energy supplies were from fossil fuels. But fossil fuels are nonrenewable resources, which means once we use them, they are gone forever. It takes millions of years for more fossil fuels to be made.

## Coal

Coal is one of the most-used fossil fuels. Almost one-third of all the electricity in the U.S. comes from coal.

Most coal formed from plants that grew in or near swamps, which happened about 359 to 299 million years ago.

Dead plant matter fell into the swamps and settled at the bottom. Over millions of years, sediment covered it. The weight of the sediment compressed

the decaying plant matter. This formed peat. Over time, more layers of sediment covered the peat.

With pressure and heat, peat turns into coal.

There are two types of coal: soft coal and hard coal. Hard coal requires more pressure, more heat, and more time to form.

Hard coals are considered the best kind of coal.

They burn the hottest and do not release as many pollutants into the air as other types of coal.

## Petroleum and Natural Gas

Petroleum, or oil, and natural gas formed through a similar process, often in the same swampy location. They were made from the buried remains of tiny water organisms. The organisms died and sank to the muddy swamp bottom. Then, their buried remains changed into a substance called kerogen.

Over millions of years, heat and pressure from more sediment layers changed the kerogen into petroleum. Some of the petroleum was liquid and some was gas. Natural gas is formed at deeper, hotter locations.

The main liquid fossil fuels used today are made from oil. These include gasoline, diesel and jet fuel and oils used for heat.

Kerosene was used a long time ago to provide light. It is still used in many places for cooking and is also the main fuel for jet engines.

Natural gas is used for heating, cooking and to generate electricity.

### **Other Fossil Fuels**

Peat and coke are solid fossil fuels.

Peat is used for heating where other fuels are not available. But it burns slowly and produces a lot of smoke and not much heat.

Coke is what is left over after gases and tar are taken from some types of coal. Coke is used to make iron and in other processes.

As fossil fuel reserves are used, the search for other fuel sources has increased. Two such resources are oil shale and tar sands, which contain fuel sources. But, taking out the useful substances is difficult and expensive. So, these resources are not a good fuel option.

### **Where Fossil Fuels Are Found**

Fossil fuels are not found equally around the world. For example, the United States, Russia, and China have the largest coal deposits. Australia, India, and South Africa also have large amounts. More than half of the world's known oil and natural gas reserves are in the Middle East. This means that the Middle East contains more oil than the rest of the countries combined.

### **Disadvantages of Fossil Fuels**

There are two major downsides of fossil fuels. The supplies are limited, and they cause environmental harm.

Burning petroleum and coal releases harmful gases into the air such as carbon dioxide and sulfur dioxide. These gases pollute the air and create acid rain.

Burning fossil fuels emits carbon dioxide. Over the years, this has increased the percentage of carbon dioxide in the atmosphere. Scientific evidence shows this increases global temperatures. This warming of Earth's atmosphere is called the greenhouse effect. It contributes to climate change, which is a serious environmental concern.

These problems have led to new technologies.

Scientists and engineers are developing new ways to generate power without using fossil fuels.

For example, some cars use electricity instead of gasoline to drive. Homes can be heated using energy from the sun. And, some electric power plants use power from wind or water.

These alternative energy sources are forms of renewable resources. This means—unlike fossil fuels—they cannot be depleted. Also, they do not emit carbon dioxide, which can help fight climate change.

### **Health Risks**

The burning of fossil fuels by vehicles, power plants, factories and even homes spews particles and gases into the air. The people most vulnerable from breathing them tend to be the youngest children, argues Frederica Perera — leading expert on health at Columbia University, in New York City, where she runs the Columbia Center for Children's Environmental Health.

Here's why. The immune system helps defend the body against infections and poisons, such as toxic chemicals. But in infants and children, the immune system has not yet finished developing. This means that the body is not fully protected from impacts such as breathing irritating or toxic pollutants, Perera explains.

### Finding Text Evidence:

For questions 1-4 you will be citing evidence to support what the text says explicitly.

1. Find the sentence when fossil fuels became most popular. Highlight it in blue.
2. Find the sentence where it explains what the greenhouse affect is and highlight it green.
3. Find the sentence where it explains why a child's immune system is more vulnerable than an adults. Highlight it purple.
4. Find the sentence that explains why we will run out of fossil fuels, and highlight it gray.

For questions 5- 7 you will be citing one piece or multiple pieces of evidence to support information drawn from the text.

5. Find a piece of evidence that supports that our modern world was designed to run on fossil fuels. Highlight in orange.
6. Cite three pieces of evidence that support that fossil fuels are harmful to the environment. Highlight in red.
7. Find two pieces of evidence that support the idea that there are viable options for replacement of fossil fuels. Highlight in yellow.

Adapted from:  
<https://www.sciencenewsforstudents.org/article/how-fossil-fuel-use-threatens-kids-health>  
[www.Newsela.com](http://www.Newsela.com)