

# Fossil fuels power the modern world, but they also pollute and warm it

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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 of 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 all of 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. Pressure and heat changed the peat into a soft coal. Then, more heat and pressure changed it into even harder forms of coal.

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 formed at the 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 leftover 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. 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 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 technology. 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.

**Quiz**

- 1 Read the sentence from the section "Where Fossil Fuels Are Found."

*More than half of the world's known oil and natural gas reserves are in the Middle East.*

Which sentence uses "reserves" in the SAME way as the sentence above?

- (A) On Saturday nights, the waiter reserves the best table at the restaurant for special guests.
- (B) The chef had to make a trip to the grocery store, since her reserves of ingredients were running low.
- (C) The owner of the restaurant reserves the right to refuse service to any unpleasant customers.
- (D) After paying the bill, the diner reserves some money to leave a tip for the waitress.

- 2 Read the paragraph from the section "Disadvantages Of Fossil Fuels."

*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.*

Which sentence from the article BEST explains what "depleted" means?

- (A) Fossil fuels are natural substances that formed over millions of years.
- (B) People have used fossil more and more since the Industrial Revolution, which started in the mid-1700s.
- (C) But, fossil fuels are nonrenewable resources, which means once we use them, they are gone forever.
- (D) They burn the hottest and do not release as many pollutants into the air as other types of coal.

- 3 Read the introduction [paragraphs 1-4] and the final section, "Disadvantages Of Fossil Fuels." What is the connection between these two sections?
- (A) The introduction gives an overview of how fossil fuels are used and a problem associated with them; the final section also describes problems with using fossil fuels, and offers a solution.
  - (B) The introduction provides a brief history of how various fossil fuels are used; the final section explains why the earth will eventually run out of fossil fuels and suggests ways to conserve them.
  - (C) The introduction makes connections between specific fossil fuels and the energy they provide; the final section explains how each type of fossil fuel affects the environment when it is used.
  - (D) The introduction explains why fossil fuels are more valuable to modern society than they were in the past; the final section describes how society will have to change when alternative energy sources are introduced.
- 4 If this article were organized in chronological order, which of the following paragraphs would come FIRST?
- (A) Fossil fuels are natural substances that formed over millions of years. Examples of fossil fuels are oil, gas and coal.
  - (B) 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.
  - (C) By the early 2000s, almost all of 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.
  - (D) Most coal formed from plants that grew in or near swamps, which happened about 359 to 299 million years ago.