Coal

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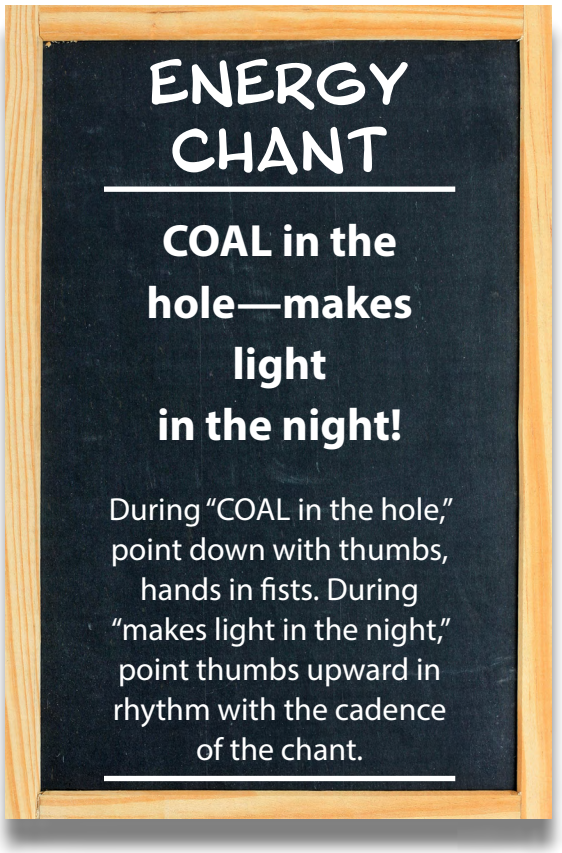
Coal is black rock that has energy.

Coal

TEACHER

Coal looks like a black rock. Coal has lots of energy in it. When it is burned, it makes heat and light energy. One thousand years ago, Chinese people used coal to produce copper, and the Romans burned coal for heat. Early American settlers did not use much coal–they burned wood.



In the United States, people began using coal in the 1800s to heat their homes. Trains and ships began using coal for fuel. Factories used coal to make iron and steel. Today, most coal is used to make electricity.

Coal was formed millions to hundreds of millions of years ago. Back then, much of the Earth was covered by huge swamps, which were filled with giant ferns and plants. As the plants died, they sank to the bottom of the swamps.

Over the years, thick layers of plants were covered by dirt and water. They were packed down by the weight. After a long time, the heat and pressure changed the plants into coal. Coal is called a **fossil fuel** because it was made from plants that were once alive. The energy in coal came from the sun.

The coal we use today took a very long time to form. We cannot make more in a short time. That is why it is called **nonrenewable**. There is a lot of coal in the U.S. There is enough to last over 420 years at the rate we use it now.

Most coal is buried under the ground. We must dig it out, or **mine** it. If coal is near the surface, miners dig it up with huge machines. First, they scrape off the dirt and rock, then dig out the coal. This is called **surface mining**.

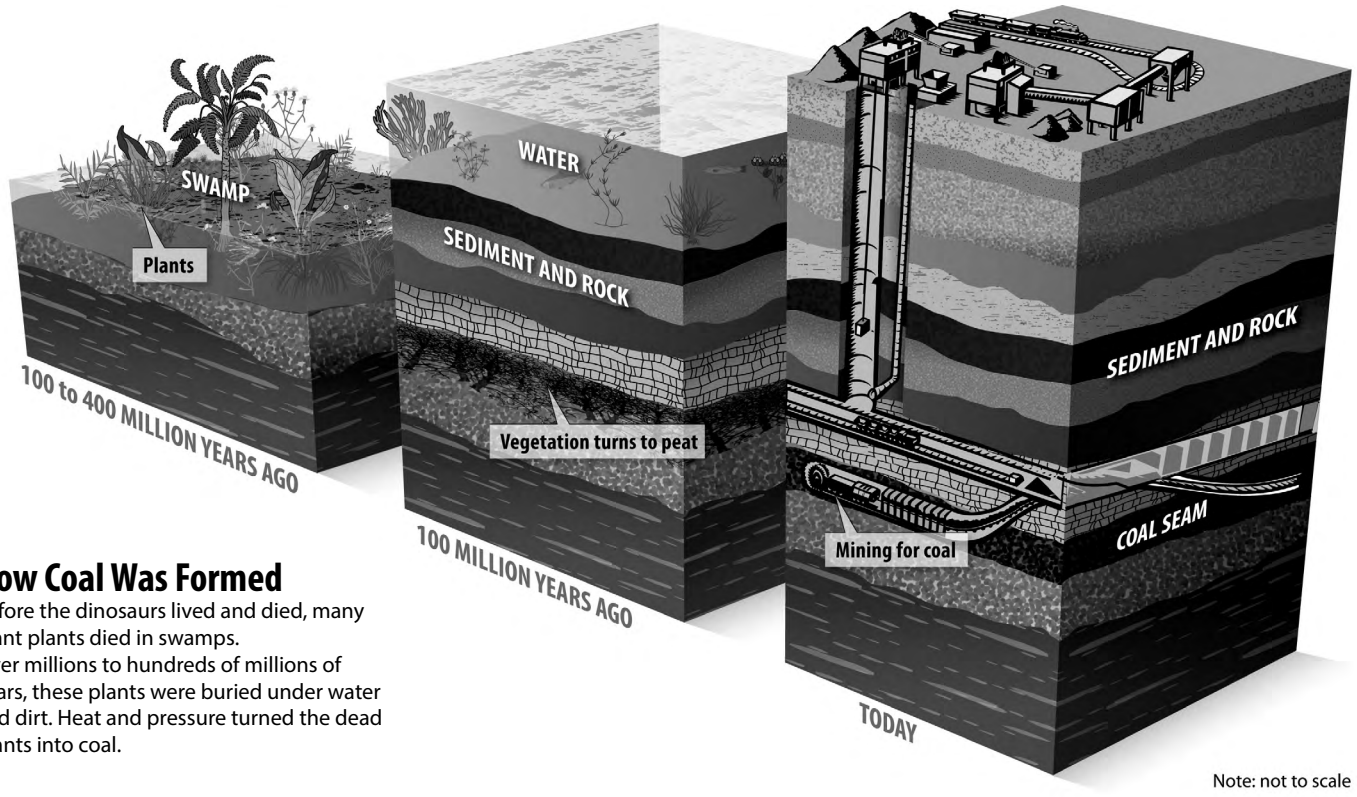
After the coal is mined, they put back the dirt and rock. They plant trees and grass. The land can be used again. This is called **reclamation.**

If the coal is deep in the ground, tunnels called **mine shafts** are dug down to reach the coal. Machines dig the coal and carry it to the surface. Some mine shafts are 1,000 feet deep. This is called underground or **deep mining**.

After the coal is mined, it is cleaned and shipped to market. Most coal is moved by trains to power plants and factories. Sometimes it is moved on barges along rivers.

Power plants burn the coal to make electricity. Coal is one of our most important energy sources. It gives us 20 percent of the electricity we use and 10 percent of our total energy.

When coal is burned, it **pollutes** the air. Power plants and factories have to try to keep the pollution from getting into the air, so they clean the coal before they burn it. They use **scrubbers** to clean the smoke before it goes into the air. Coal will also release carbon dioxide when it is burned.



How Coal Was Formed

Before the dinosaurs lived and died, many giant plants died in swamps.
Over millions to hundreds of millions of years, these plants were buried under water and dirt. Heat and pressure turned the dead plants into coal.

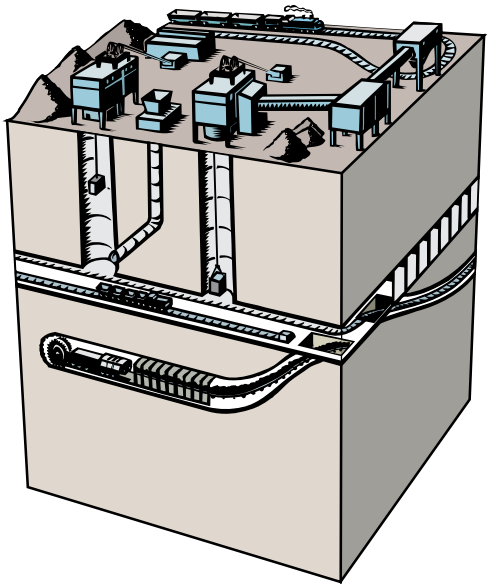
Note: not to scale

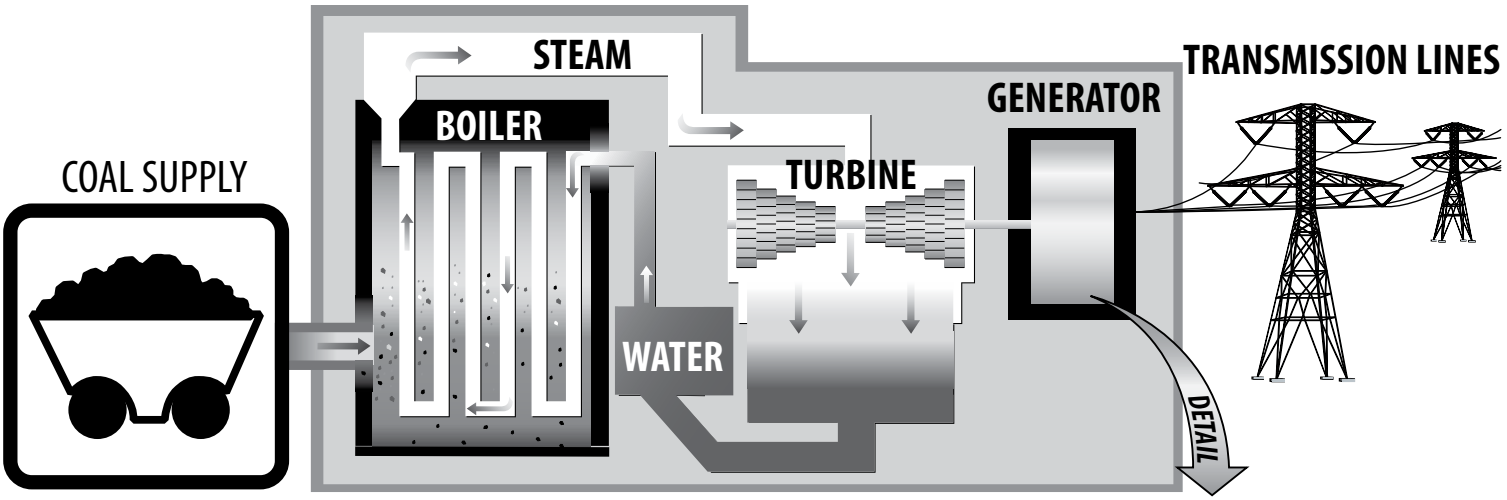
Coal is nonrenewable.
We cannot make more coal quickly.

This machine is called a dragline. A bucket is dragged along the ground to collect coal.

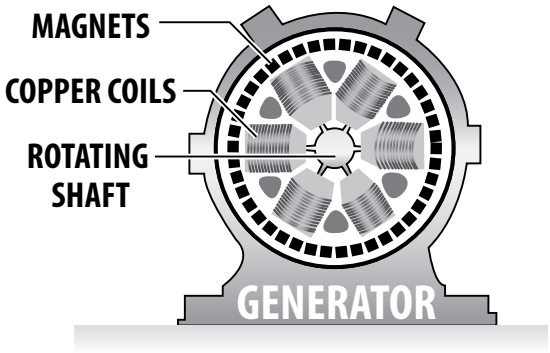
We mine coal with big machines.

We dig tunnels under the ground to get coal.





1. **In a power plant, coal is burned to create heat.**
2. **The heat changes water into steam.**
3. **The steam travels through pipes and spins a turbine.**
4. **The turbine spins coiled wire inside magnets, creating electricity.**
5. **Electricity travels through wires from the power plant to your house.**



We burn coal to make electricity.