

# FOSSIL ENERGY STUDY GUIDE: FOSSIL FUELS



*Oil*



*Natural Gas*



*Coal*

**C**ontrary to what many people believe, fossil fuels are not the remains of dead dinosaurs. In fact, most of the fossil fuels found today were formed millions of years before the first dinosaurs. Fossil fuels, however, were once alive. They were formed from prehistoric plants and animals that lived hundreds of millions of years ago.

Think about what the Earth must have looked like 300 million years or so ago. The land masses we live on today were just forming. There were swamps and bogs everywhere. The climate was warmer. Trees and plants grew everywhere. Strange looking animals walked on the land, and just as weird looking fish swam in the rivers and seas. Tiny one-celled organisms called **protoplankton** floated in the ocean.

When these living things died, they decomposed and became buried under layers and layers of mud, rock, and sand. Eventually, hundreds and sometimes thousands of feet of earth covered them. In some areas, the decomposing materials were covered by seas, and then the seas dried up and receded.

During the millions of years that passed, the dead plants and animals slowly decomposed into organic materials and formed fossil fuels. Different types of fossil fuels were formed depending on what combination of animal and plant debris was present, how long the material was buried, and what conditions of temperature and pressure existed when they were decomposing.

For example, oil and natural gas were created from organisms that lived in the water and were buried under ocean or river sediments. Long after the great prehistoric

seas and rivers vanished, heat, pressure, and bacteria combined to compress and “**cook**” the organic material under layers of silt. In most areas, a thick liquid called oil formed first, but in deeper, hot regions underground, the cooking process continued until natural gas was formed. Over time, some of this oil and natural gas began working its way upward through the earth’s crust until they ran into rock formations called “**caprocks**” that are dense enough to prevent them from seeping to the surface. It is from under these caprocks that most oil and natural gas is produced today.

The same types of forces also created coal, but there are a few differences. Coal formed from the remains of trees, ferns, and other plants that lived 300 to 400 million years ago. In some areas, such as portions of what is now the eastern United States, coal was formed from swamps covered by sea water. The sea water contained a large amount of sulfur, and as the seas dried up, the sulfur was left behind in the coal. Today, scientists are working on ways to take the sulfur out of coal because when coal burns, the sulfur can become an air pollutant.

Some coal deposits, however, were formed from freshwater swamps which had very little sulfur in them. These coal deposits, located largely in the western part of the United States, have much less sulfur in them.

All of these fossil fuels have played important roles in providing the energy that every man, woman, and child in the United States uses. With better technology for finding and using fossil fuels, each can play an equally important role in the future.