

stored through their burial in the sedimentary rocks of the Earth. The oxygen that would otherwise have oxidized these carbonaceous products was free to accumulate in the atmosphere. When these fossil fuels are converted back into carbon dioxide by burning them to obtain heat and power, they again require oxygen for combustion. They are oxidized and carbon dioxide is produced.

Chemical Processes. Much of the original carbon dioxide was removed from the primordial atmosphere and locked up in fossil fuels and deep sea sediments present in the rocks deep beneath the Earth's surface. However, there were other chemical processes that had been operating since the world's oceans came into existence more than 3.5 billion years ago that have had an even greater influence on the reduction of carbon dioxide in the atmosphere and oceans.

To remove carbon dioxide from the atmosphere by chemical means requires, as a first step, that it be dissolved in the oceans and lakes. In the presence of large bodies of water much carbon dioxide in the atmosphere simply dissolves into the water. Here it enters into chemical combination with calcium to form calcium carbonate. This compound is precipitated and forms deposits on the ocean floor. As these deposits thicken, they harden into rocks of limestone and dolomite due to the pressure of overlying sediments. In more recent geologic time limestone and dolomite have been produced biologically. They are formed from the microscopic shells and external coverings of marine animals. It is estimated that the majority of the carbon dioxide produced from the Earth's original volcanic outgassing has been locked up in sedimentary rocks.

To put the amount of carbon dioxide in perspective, we should bear in mind that some quantity of CO₂ is very necessary for the ecologic balance on our planet. Carbon dioxide is one of the basic components used by plants in their photosynthetic process. Further, the element of carbon comprises about 18% of the mass of all living things. The primary source of this carbon is carbon dioxide. Essentially all organic matter, including our bodies, is carbon-based.

The original source of carbon was from volcanoes which outgassed carbon dioxide along with water vapor into the atmosphere. Today, considerably less than 1% of the carbon present at or near the Earth's surface is in the atmosphere and oceans. Almost 100% is contained in the sedimentary rocks of the Earth's veneer. Of this amount about 77% is found in the carbonate rocks of limestone and dolomite. The remaining 23% is carbon-rich material from ancient animals and