



Cycles

As these producers, consumers and decomposers grow and die, they are using life's essential chemicals or nutrients, taking these nutrients from and returning them to their reservoirs in the earth's air, soil, and waters over and over again . . .

Hydrogen, carbon, oxygen, nitrogen, phosphorous, and sulfur are the basic building materials of all life. Because there is a limited amount of these materials available on the earth, they must be used over and over again by all living things. They are taken from their reservoirs in the air, soil, and waters of the earth to move through the food chains and webs of life, before returning to their reservoirs in the wastes and decay of all plants and animals. Only through this cycling of building materials is life able to continue on the earth.

This intermixing of parts of the earth's air, water, and soil produces the substances of which all living things are composed. The fundamental process is the same for a hand or a leaf. In fact, the only essential difference between a molecule of the hemoglobin in your blood and a molecule of the chlorophyll in a green leaf is that the first has a bit of iron for its center and the second a bit of magnesium. This means that in the basic structure of the substance which plays such a vital role in capturing sunlight differs by only a single atom from that substance which carries the oxygen needed by your cells for releasing that sunlight energy in you.

Plants and animals grow by drawing directly or indirectly upon these great reservoirs of building materials and using the sun's energy to combine the materials to form the tissues of their bodies. When they die, those tissues are broken down and the materials are released for other living things to use. In this way the basic building materials of life pass through complex cycles, all powered by energy from the sun.

NOTE: Excerpt from *Sunship Earth*, American Camping Association 1979.