SCI – ENERGY CHANGE IN ORGANISMS

All organic molecules, which make up the tissues of living organisms, contain high potential energy. When these molecules are burned, the heat and light of the flame are the potential energy being released as kinetic energy. In contrast, most inorganic compounds, such as carbon dioxide, water or rock based minerals, are non-inflammable, because they have very low potential energy. Thus, the production of organic material from inorganic material represents a gain in potential energy. Conversely, the breakdown of organic matter releases energy.

This relationship between the formation and breakdown of organic matter, where energy is gained and released, forms the basis of the energy dynamics of ecosystems. Producers (green plants) make high-potential-energy organic molecules for their needs from low-potential-energy raw materials in the environment—namely carbon dioxide, water, and a few dissolved compounds of nitrogen, phosphorus, and other elements. This "up-hill" conversion is possible because producers use chlorophyll to absorb light energy. On the other hand, all consumers, detritus feeders, and decomposers obtain energy for movement and growth from feeding on and breaking down organic matter made by producers.