Decomposition Encyclopedia Article

Decomposition

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Decomposition

The chemical and biochemical breakdown of a complex substance into its constituent compounds and elements, releasing energy, and often with the formation of new, simpler substances. Organic decomposition takes place mostly in or on the **soil** under **aerobic** conditions. Dead plant and animal materials are consumed by a myriad of organisms, from mice and moles, to worms and beetles, to **fungi** and bacteria. Enzymes produced by these organisms attack the decaying material, releasing water, **carbon dioxide**, nutrients, **humus**, and heat. New microbial cells are created in the process.

Decomposition is a major process in **nutrient** cycling, including the **carbon** and **nitrogen** cycles. The liberated carbon dioxide can be absorbed by photosynthetic organisms, including green plants, and made into new tissue in the **photosynthesis** process, or it can be used as a carbon source by autotrophic organisms.

Decomposition also acts on inorganic substances in a process called **weathering**. Minerals broken free from rocks by physical disintegration can chemically decompose by reacting with water and other **chemicals** to release elements, including potassium, calcium, magnesium, and iron. These and other elements can be taken up by plants and **microorganisms**, or they can remain in the soil system to react with other constituents, forming clays.