Nitrification Encyclopedia Article

Nitrification

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Nitrification

Nitrification is one process within the important nitrogen cycle. It is a biological process involving the breakdown of ammonia or organic nitrogen into nitrates and nitrites. This breakdown process is via oxidation, a chemical process that requires oxygen in this case. It is accomplished by two groups of chemosynthetic bacteria that utilize the energy yield in these conversion processes. The first step involves the oxidation of ammonia to nitrate, and is accomplished by *Nitrosomas* in the soil and *Nitrosococcus* in the marine environment. The second step involves the oxidation of the nitrate produced above into nitrites, releasing 18 kcal of energy. It is accomplished by *Nitrobacter* in the soil and *Nitrococcus* in salt water. Nitrification is usually considered a beneficial process. However, in certain situations it may have detrimental effects through production of excess nitrates, polluting streams and lakes. The reverse process of nitrification, occurring in anoxic (oxygen-deprived) environments, is called denitrification and is accomplished by other species of bacteria.