General Biology-Ecology Chapter

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Overview

The ecology of biological systems is a complex series of chemical reactions necessary to help keep organisms in a balanced environment with the correct concentrations of chemicals, dissolved oxygen and pH.

The common method used to determine the oxygen concentration in the environment is the measurement of oxygen consumption by organisms or oxygen depletion in the environment. An oxygen sensor can measure the change in the concentration of oxygen in the environment inhabited by the organism, or the difference in the concentration of oxygen in the air that is inhaled and exhaled by the organism. The rate of oxygen consumption is used as an expression of the dissolved oxygen parameters for the environment in which the organism lives.

pH is also a measure of the health of an organism's environment. pH measure the concentration of hydrogen (H^+) and hydroxyl (OH^-) ions in solution, looking at the acidity or alkalinity of an ecosystem. Wide fluctuations in pH lead to degradation of the biological system which can eventually lead to the death of the organisms in that system.

Using both DO_2 and pH electrodes, students can determine the health of an aquatic enviroment by looking at the concentration of oxygen and pH ions in solution. Students can also can gain an understanding of the effects of acid rain and decreased O_2 levels on organisms in an enclosed system.