Respiration

By Lennart Kiil



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The process by which cells of living organisms gain energy by breaking down different nutrients.

Most organisms above ground, including plants, use oxygen for respiration:

Simplified reaction: $C_6H_{12}O_6 + 6\ O_2 \rightarrow 6\ CO_2 + 6\ H_2O$ + energy

Organisms can use carbohydrates, fats, and proteins as the carbon source in respiration.

Some organisms are able to live without oxygen, and use for example sulfate, carbonate, or nitrate instead of oxygen.

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Theoretically there is no net addition of CO_2 to the atmosphere from respiration. The CO_2 produced in respiration was originally removed from the atmosphere by the photosynthesis of plants. So it is a closed system, and no matter how much of this carbon that is put back into the air by respiration, it will not change the content of CO_2 in the atmosphere.

A change in land use, for example, by removal of forests, could potentially upset the balance.

Burning oil is another matter, this increases the amount of CO_2 in the atmosphere. This is because the time scale is so much longer than the life of an organism. CO_2 that was removed millions of years ago by photosynthesis is put back into the atmosphere of today.

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