

The Carbon Cycle

Featuring Cellular Respiration and Photosynthesis



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Photosynthesis

* Plants use carbon dioxide (CO_2) and water (H_2O) to make sugar ($\text{C}_6\text{H}_{12}\text{O}_6$) and oxygen (O_2)

* Word equation:

* Water + Carbon Dioxide + sunlight \longrightarrow
Sugar + Oxygen

* Chemical Equation

* $\text{H}_2\text{O} + \text{CO}_2 + \text{E} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$

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Cellular Respiration

* The oxygen produced by photosynthesis is used up by humans and animals in a process called cellular respiration

* Word equation:

* Oxygen + Sugar \longrightarrow Carbon Dioxide +
Water + Energy

* Chemical Equation

* $C_6H_{12}O_6 + O_2 \longrightarrow H_2O + CO_2 + E$

Biogeochemical Cycles

- * The particles that make up matter cannot be created or destroyed.
- * This means that all nutrients must be obtained from chemicals that already existed in the environment.
- * This cycling of nutrients is called biogeochemical cycles.



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The Carbon Cycle



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- * While large quantities of carbon cycle through cellular respiration and photosynthesis, much of it is stored in reservoirs.

6 Steps in the Carbon Cycle

- * 1) Fossilization
- * 2) Decay
- * 3) Respiration
- * 4) Photosynthesis
- * 5) Burning
- * 6) Feeding



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Inorganic Carbon Storage



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- * Carbon in INORGANIC forms is stored in three places
 - * Gas: as CO_2 , will be used by plants
 - * Liquid: as dissolved CO_2 , will be used by phytoplankton and aquatic plants
 - * Solid: as carbonate

Organic Carbon Storage

- * Carbon in organic matter is stored in organisms.
- * Organic carbon must be added back into the cycle by decomposers.
- * Organic carbon may also become fossil fuels.



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Human Activity and the Carbon Cycle

- * Human factors can have dramatic effects on the carbon cycle
- * Burning fossil fuels release stored carbon into the atmosphere.
- * This causes organic carbon to be released much quicker than it normally would have.



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