

Module 03: Energy & Climate Change

Urban EcoLab

April 2021

PowerPoint - The Carbon Cycle

Center for Urban Resilience

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The Carbon Cycle

Equilibrium within a System



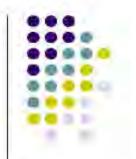
Forms of Carbon in the Environment



Two Forms

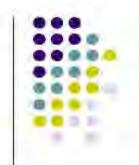
- Organic
 - Contain carbon and hydrogen with other elements sometimes present (for example, oxygen or phosphorous)
 - Building blocks that make up all organisms
- Inorganic
 - Carbon compounds that lack hydrogen
 - Most common forms: carbon dioxide and carbon monoxide





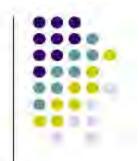
- Carbon compounds exist in many forms on Earth
 - Carbon Dioxide dissolved in the air and the ocean
 - Organic molecules that make up organisms
 - Carbohydrates
 - Lipids
 - Proteins
 - Nucleic Acids
 - Deposits in the ground such as coal, oil, limestone and dolomite

Movement of Carbon Among Reservoirs



- Carbon compounds can change from one form to another by
 - <u>Photosynthesis</u> carbon dioxide (inorganic) is taken in by plants to make sugars (organic)
 - <u>Cellular Respiration</u> sugars (organic) are broken down, releasing carbon dioxide (inorganic)
 - <u>Diffusion</u> of carbon dioxide between the ocean and the atmosphere
 - Combustion (Burning) of organic matter releases carbon dioxide into the air
 - <u>Decomposition</u> break down of dead organic material that is either released into the atmosphere or stored in the soil as humus





- The amount of carbon on Earth is constant (except for a small amount that radioactively decays to form Nitrogen)
- The movement of carbon from one reservoir to another is therefore very important.
 - Too much could build up in one location
 - Not enough could be present in another

