

# 6.1 The carbon cycle

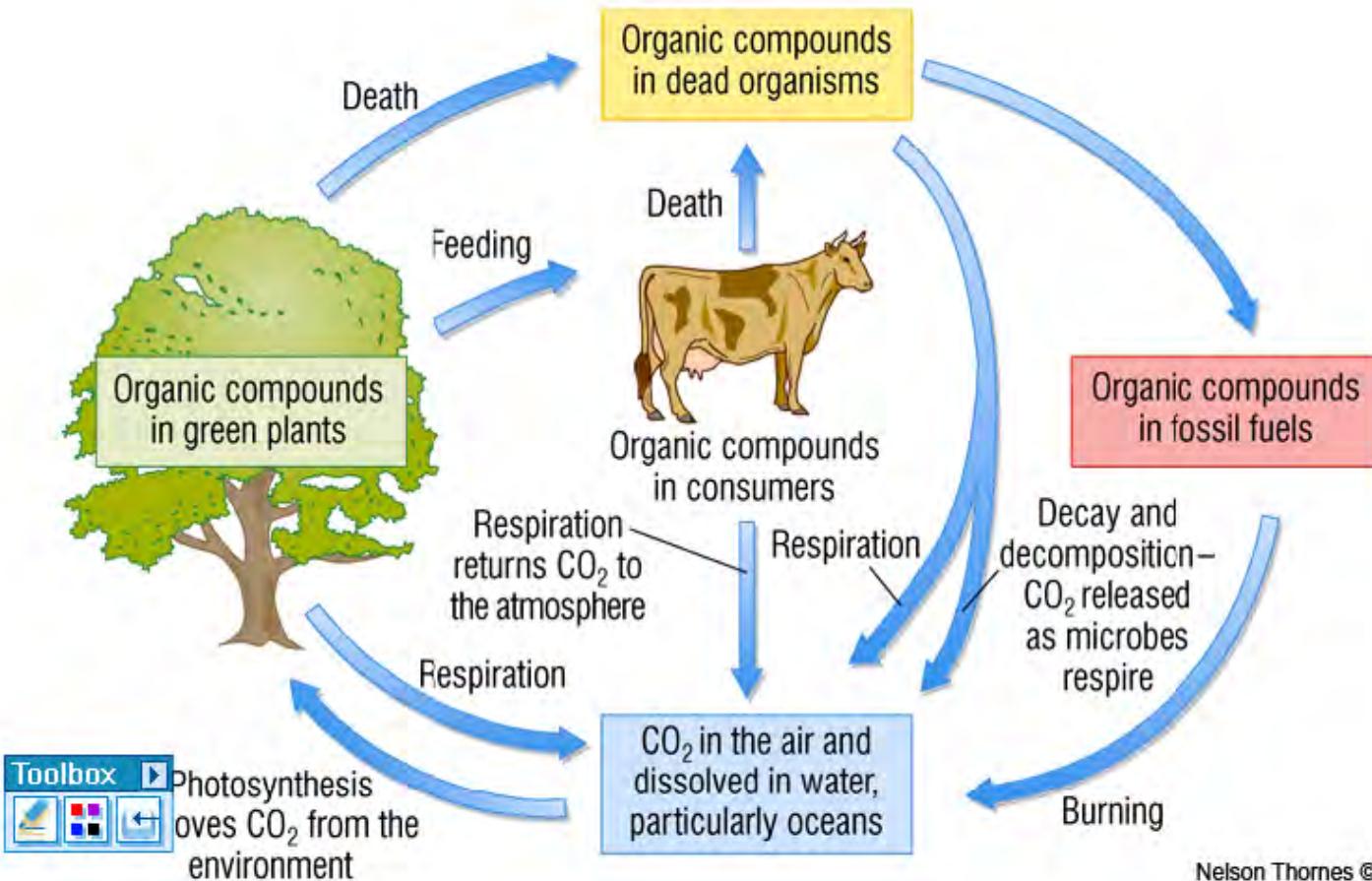
## Learning objectives:

- List the processes involved in the carbon cycle
- Explain the role of bacteria and other saprobiotic/ saprophytic organisms in the carbon cycle

# Recall of Carbon cycle

- 1 Describe the pathway of a carbon atom from air through you and back to the air.  
Include the names carbon compounds and processes
- 2 Explain how you can have a piece of dinosaur in you.

- Carbon dioxide
  - Glucose
  - Sucrose
  - Starch
  - Glucose
  - Carbon dioxide
  - Photosynthesis
  - Condensation reaction
  - Hydrolysis
  - Condensation reaction
  - Digestion
  - Respiration
-



# Mineral ions/nutrients

- There is a ..... quantity of each mineral on the Earth.
- At any one time a ..... of each element is in an inorganic form in the environment ( ....., ..... or substrate) and an organic form in living or dead/decaying organic material.
- To provide a constant supply of elements such as carbon and nitrogen they must be .....

# Nutrient cycles – the basic sequence

- Nutrient taken up by ..... (plants) as simple ..... molecules.
- The producer ..... the nutrient into complex ..... molecules.
- When the producer is ..... by a .....(animal), the nutrient is assimilated into its body.
- The nutrient passes along the ..... when these animals are eaten by other consumers.
- When producers and consumers die, the complex ..... molecules are broken down by saprobiotic micro-organisms into the original simple ..... form. The cycle is complete.

# Nutrient cycle framework

Link with arrows and name the processes

Physical  
environment:  
inorganic  
molecule/ion

Producer:  
organic molecule

Consumer:  
organic molecule

Decomposer/saprobioitic  
micro-organism: organic  
molecule

# Carbon cycle

## Key points

- Carbon is in all biological ..... It is the basic building block for .....
- Main source ..... , only 0.04% of atmosphere, hence turnover is .....
- Removed from air by ..... organisms.
- Returned to air by all organisms .....
- Rate of return carbon dioxide greater at night because all organisms ..... and no ..... for .....
- Oxygen levels higher and carbon dioxide levels lowest on a summer's day because .....

- Global increase in carbon dioxide levels due to two main human activities:
  - Combustion of fossil fuels (*explain*)
- 

- Deforestation  
(*explain*)
- 
- 
- 
- 
-

# The role of the decomposers.

- These are saprobiotic organisms e.g. .... and .... They feed on ..... bodies and organic waste. They digest the complex ..... carbohydrates, proteins and lipids with extracellular ..... , absorbing the smaller soluble molecules by ..... The carbon in the dead organic matter is released as carbon dioxide as the decomposers ..... .
- If decay is prevented, conditions are not suitable for the saprobionts e.g. cold, oxygen free, or acidic, the organisms may become ..... into coal, peat or oil.
- Calcareous (*containing calcium carbonate*) shells, bones and teeth do not ..... and over millions of years become sedimentary rocks such as ..... and ..... The carbon returns to the atmosphere as the rocks are weathered.

## The role of the oceans

- The oceans contain 50 times more carbon dioxide than the atmosphere. It acts as a buffer. Explain how the oceans moderate the atmospheric carbon dioxide content.
- .....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

# Carbon cycle

Fill in the boxes/circles

