2.6

**The Nitrogen Cycle**

View the animated cycle in action:

<http://www.mhhe.com/biosci/genbio/tlw3/eBridge/Chp29/animations/ch29/1_nitrogen_cycle.swf>

An excellent explanation of the cycle:

<http://www.enviroliteracy.org/article.php/479.html>

Nitrogen is required for:

1. cells to make proteins
2. The synthesis of DNA

Nitrogen makes up nearly 79% of the earths atmosphere

Nitrogen gas is very stable and reacts only under limited conditions. A complicated process called nitrogen fixation which creates a useable form called nitrate NO3-.

Nitrogen fixation occurs by:

1. Lightning causes nitrogen to react with oxygen and form nitrate which dissolves in rain and snow and falls to the ground.
2. Bacteria in the soil – Nitrogen fixing bacteria found in the soil and on the roots of clover, soybeans and other plants ensure an ample supply of nitrate for the producer level of the food chain and trophic level.

Nitrogen and decomposers

All organisms die 🡪 decomposers break the organic matter into ammonia NH3 🡪 other bacteria convert NH3 into nitrites 🡪 other bacteria convert nitrites into nitrates 🡪 and the cycle continues as producers absorb the nitrates through their roots.

Denitrification

Completes the cycle and maintains the balance between soil and atmospheric nitrogen. Some Bacteria who do not need oxygen break Nitrate down into Nitrite AND THEN NITRITE INTO Nitrogen gas which is released into the atmosphere. This step keeps levels balanced.

Understanding Concepts page 69

1. Explain why the Nitrogen cycle is important to organisms.
2. How do animals obtain usable Nitrogen?
3. Nitrogen fixing bacteria are found in the roots of bean plants. Explain how the bacteria benefit the plant and how the plant benefits the bacteria.
4. Draw a diagram of the:
   1. Nitrogen cycle
   2. Carbon cycle

**The Phosphorous Cycle**

Animation

[http://highered.mcgraw-hill.com/sites/0072879351/student\_view0/chapter10/animations.html#](http://highered.mcgraw-hill.com/sites/0072879351/student_view0/chapter10/animations.html)

Explanation and details:

<http://www.enviroliteracy.org/article.php/480.html>

Phosphorous is a key element in:

1. Cell membranes
2. Molecules that help release energy
3. Making long molecules of DNA
4. Calcium phosphate in bones

Phosphorous is found in bed rock in the form of Phosphate ions.

Phosphates are soluble in water.

When dissolved they can be absorbed by photosynthetic organisms (producers)

Phosphates are used to make bones and shells

The decaying shells in the ocean fall to the ocean floor and become sediment which eventually turns to rock and continues the Phosphorous cycle. It can take millions of years.

Read section 2.6, pages 66-69

Understanding concepts page 69

Questions 1-12

Home Work assignment after completing these two lessons

Create a collage form cutting out pictures from magazines and other documents to create a diagram that represents one of the cycles. The diagram should be complete and include all parts discussed in the notes and web sites.