NAME DATE CLASS

Chapter 20

ENRICHMENT

Use with Section 2

• The Excretory System

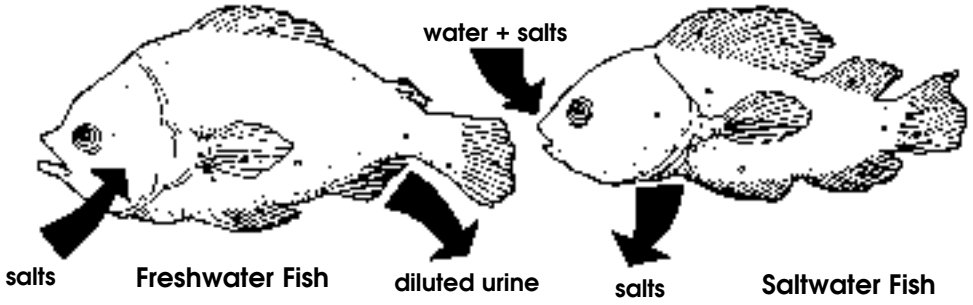
Water Balance

As you have learned, the kidneys maintain the water and salt balance essential for life. If we didn't have such an efficient system for maintaining this delicate balance, we would become dehydrated.

What about animals that live in the ocean or a river? Saltwater fish are always in danger of drying out because their blood has a lower salt concentration than seawater. As a result, saltwater fish constantly lose water because the water in their cells moves out of their bodies to the ocean. Water tends to move from areas of high concentration to areas of low concentration. Saltwater fish adjust to the water loss by continuously drinking sea water. Then, they must get rid of the extra salt. Their gills secrete this excess salt back into the ocean water by active transport, which requires energy.

Sharks and rays have different adaptations for maintaining water and salt balance. They retain a substance called urea, which in other animals is excreted by the kidney. The urea in their blood causes the salts and water to be very much like the concentration of these substances in sea water. These animals, therefore, are in osmotic equilibrium with the seawater.

Freshwater animals maintain an inside salt concentration that is higher than the outside environment. Water tends to flow into these animals. They get rid of excess water as urine. The kidney regulates salt loss. Any salt that is lost can be added back in the diet. Some invertebrates can actively absorb salt from fresh water. Freshwater fish absorb salts through their gills.



Library Research

Read more about excretion and water balance to understand some of the mechanisms and behaviors animals use to survive in a wide range of environments. Answer the following questions based on what you learn.

1. a. What compound do birds, insects, and reptiles living in dry habitats excrete? _____

b. How does this help them conserve water? _____

2. How can salmon maintain a salt and water balance when they migrate to water having a very different salt concentration? _____

_____

3. How do kangaroo rats survive on so little water? _____

_____

_____

_____

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.