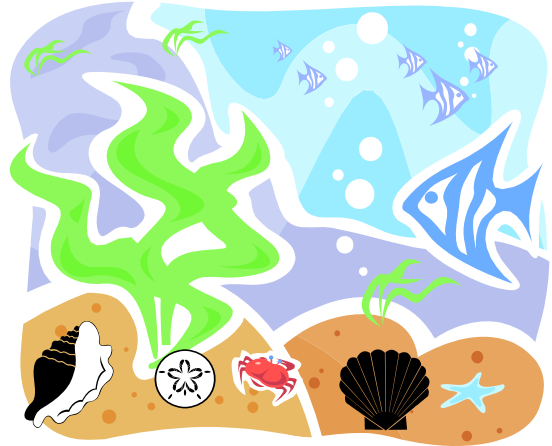


Ocean Acidification

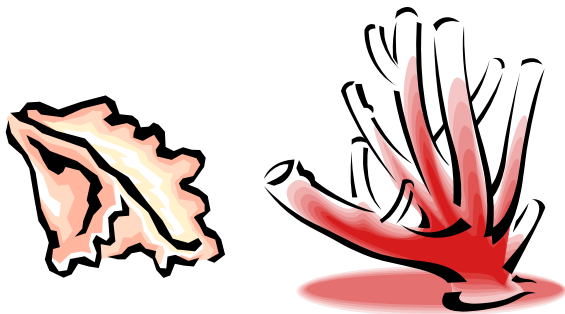
What Do I Need?

- 1 clear cup/jar $\frac{1}{4}$ full of white vinegar
- 1 clear cup/jar $\frac{1}{4}$ full of tap water
- pH test strips
- 2 pieces of white chalkboard chalk or shells
- spoon
- paper towels



What Do I Do?

1. Label the vinegar and water jars. Compare the pH of the water and vinegar using the test strips. Which one is more acidic?
2. Explore the properties of the chalk or shell (hardness, size, etc.) before using the spoon to drop one piece into both the vinegar and water jars. Observe.
3. After five minutes, remove the chalk or shell from each container and place them on the paper towel. Explore the properties again (hardness, size, etc.).
4. How did the acidic solution affect the chalk or shell?



What's Going On?

The pH scale is a measure of acidity that runs from 0 to 14. The value of 7 indicates a neutral substance like water, while lower values indicate acidic substances like vinegar. The pH of seawater is typically an 8, which is slightly basic. However, sea water is becoming more acidic due to an increase of carbon dioxide in the oceans.

Seashells are made up of calcium carbonate, which breaks down in acids. In our experiment, the calcium carbonate reacted with the acidic vinegar, causing the calcium to dissolve and the carbonate to become carbon dioxide gas, which is why you saw bubbles in the vinegar jar. Species that may be affected by ocean acidification include planktonic organisms, as well as corals and mollusks. Measurements show that ocean surface waters have increased in acidity by 30% in only twenty years.

Source: Birch Aquarium at Scripps Institution of Oceanography