

West Side Science Club – Event # 11– “Acid and the Ocean ”

Original Presentation

Date: April 29, 2013
Time: 10 am to 1 pm
Site: West Side Science Club and Santa Monica Aquarium

Big Questions

- These questions are meant to frame the day’s event and might be written on the chalkboard
 - (1) What is Acid? What is pH?
 - (2) If CO₂ is an acid, what will happen when more CO₂ is added to the ocean?

Concepts

- Concepts to cover from the “Work of CCI Solar” Mind Map: Reactions: types- acid/base, observations- color change; Social Aspects- climate change, greenhouse gases, CO₂

Lesson Plan

Student Objectives

- Relate concepts of acidity to pollution and environment
- Understand how CO₂ changes the oceans

Schedule/Agenda

- Warm-up Discussion (20 min.)
- Activity: Bromthylol Blue (45 min.)
- Lunch (35 min.)
- Activity: Aquarium Worksheet (60 min.)
- Wrap-up Discussion (20 min)

Materials

Activity: Bromthymol Blue

- Bromthymol Blue
- Water
- Cups
- Drinking Straws
- Soda water
- Shells
- HCl

Activity: Aquarium worksheet

- worksheet

Safety

- DO NOT DRINK the Bromothymol Blue solution
- Lab goggles and gloves on for the Bromothymol activity

Activity:

Procedure

1. Add Bromothymol blue to a cup of water.
2. Blow into the cup through a drinking straw and observe the color change
3. What does the color change mean? Acid or base?
4. Add bromothymol to soda water.
5. What color does this change to?
6. What color does it change when you blow into it?
7. Add some sea shells to a concentrated solution of HCl
8. Observe what happens to the shells (bubbles)

Facilitation/Concept Questions

- The solution says it's acidic when you blow in it. What are you adding to the solution when you blow that is acidic?
- How are shells in the HCl acid similar to our teeth in soda which is acidic?
- How do you think the acidification in the ocean affects animals with shells?

Activity: Aquarium Worksheet

Procedure

1. Have the students fill out the worksheet as best they can by wandering the aquarium and looking for answers
2. Discuss the answers together

Check for Understanding

- How are CO₂, acid and the ocean related?
- What is another concern we have about pollution besides global warming that can affect animal and plant life?