Chemistry 20 – lesson 1

pH of Water

Objective: To discover the pH scale and why it is used by scientists

Introduction: The quality of our drinking water is tested all over Canada. Each community has a water treatment plant where employers conduct a variety of tests to ensure that our drinking water is clear and safe to drink. Contaminated water can pose a number of risks to our health, and it is important we ensure the safety of drinking water and obtain water testing that meets all regulator requirements and quality standards in Canada. One of the tests that are done at local water treatment plant is the pH test. A simple pH test determines the acidity of the water, with the goal of it being as close to neutral as possible. A neutral pH ensures that the water is safe to travel through pipes (minimizes corrosion) and to drink.

Curriculum Connections:

- Students will conduct investigations into relationships among observable variables and use a broad range of tools and technique to gather and record data.
- Students will compare changes in pH with changes in concentration for acids and bases

Supplies / Materials:

- Water samples
- Sample bags
- Straws
- pH scale handout
- pH tablets
- Vinegar, baking soda, soap
- Computers

SCIENCE FOCUS

Lesson Subject

Chemistry 20

Topic

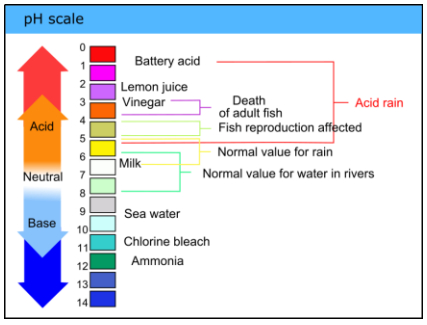
Acids and Bases

Location

Classroom

Length

50 mins



Hook: Students go online to watch the pH scale video and take the quiz to test their knowledge.

Link: http://study.com/academy/lesson/the-ph-scale-calculating-the-ph-or-poh-of-a-solution.html

Intro Activity: Teacher leads a discussion about water quality testing, why it is important that the city tests for the quality of our water. Water quality is defined by analyzing it in terms of its chemical content, physical content and biological content. Lead an example of testing water for pH using the testing kit.

-Add a sample of water to the yellow sampling bag, shake in a pH tablet and check the scale for the corresponding color. (Neutral distilled water)

Main Activity:

Students test a variety of samples of water using the PH scale to determine if they are neutral, an acid or a base. Students are encouraged to sample water from a variety of sources (bottled, tap, local bodies of water, etc.). Some samples can have ingredients added such as vinegar, baking soda and lemon juice.

Conclusion / Review: Collect results as a class and go over findings. Ask guided questions:

1) Did anything surprise you about your findings?

2) Why do we want drinking water to have a neutral pH level?

Homework: Have your students try the *Red Cabbage Chemistry* experiment at home. Red cabbage can be used as an indicator that will test the pH or the acidity or alkalinity of certain liquids. Get students to take pictures and record their method, observations and results. They can bring their findings to the next Chemistry 20 class for discussion. You can also try this experiment as a class. **Step by step instructions and a video can be found at SICK Science under resource 3.**

Resources:

1. Acids and Bases lesson plans**:** http://study.com/academy/course/high-school-chemistry-syllabus-resource-lesson-plans.html

2. Alberta Program of Studies: Chemistry

3. Sick Science: Red Cabbage Chemistry
http://www.stevespanglerscience.com/lab/experiments/red-cabbage-chemistry/