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Blue is for Base

Recommended grades level(s) 9-12

Time Duration: - 30 minutes lessons

Objective(s):
Students will determine if a number of substances are acids, bases, or neutral solutions.

Materials and/or Resources:
Red litmus paper
Blue litmus paper
Water
Vinegar
Sodium bicarbonate in water (1 tablespoon in 500 ml of water)
Labels
Test tubes
Milk (litmus paper must be removed from liquid to see change)
Milk of magnesia (litmus paper must be removed from liquid to see change)
Lemon juice
Tweezers
Hand soap in water
Club soda
Sauerkraut juice

Background Information:
Scientists need ways to tell one thing from another. Sometimes just looking is good enough, but most of the time it isn't. It is often very hard to tell what differences exist. One difference that is easy to determine is the acid-base difference. Some substances form an acidic solution when they are dissolved in water. Other substances form a basic solution. You can tell the differences using litmus paper. (Litmus paper is paper containing the dye litmus.) Red litmus paper turns blue in basic solution. NOTE: blue – base. Blue litmus paper turns red in an acidic solution. If the blue and red litmus paper does not change color, then the solution is called a neutral solution.

Procedures:
1. Add a small amount of each liquid listed above to ten properly labeled test tubes.

2. Add a very small piece of red litmus paper and blue litmus paper to each liquid.

3. Observe any color changes that occur in the litmus paper.

4. Use tweezers to remove the litmus paper from the milk and milk of magnesia to observe if color changes have occurred.

5. Record your results in the Observation columns of the following table. Write, "no change," or "turned blue," or "turned red."

Reproducible Materials:
Handout 1
Handout 2

Development Resources:
Bunkelmann, A., Browdy, M., Kaskel, A., Mittlemann, F. (1977) Life Science: A Learning Strategy of the Laboratory. Ohio: Charles E. Merrill Publishing Co.

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LIQUID TESTED	RED LITMUS	BLUE LITMUS

Blue for Base

List the liquids that you found to be acids.

_____
_____

How do you know they were acids?

_____
_____

List the liquids that you found to be bases.

_____
_____

How did you know they were bases?

_____
_____

List the liquids that you found to be neutral.

_____
_____

How did you know they were neutral?

_____
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