

Name _____
Date _____

Class: _____
pH Lab (40 minutes)

Purpose: to become familiar with the purpose and use of various pH indicators.

Safety Notes:

- Goggles must be worn today until the last person is done working. .
- Wash your hands thoroughly during the lab if a chemical should come in contact with your skin
- Wash your hand thoroughly before class ends.
- Listen to my instructions, and follow proper clean up procedures



Materials

- Red litmus paper
- Blue litmus paper
- Phenolphthalein soln
- Bromothymol blue
- pH paper
- Water
- Reaction well plates
- Hydrochloric acid (HCl)
- Sodium Hydroxide (NaOH)
- Various household product samples

Procedure:

Part 1: Paper Indicators

1. Holding blue litmus paper by the edges, cut paper into three equal pieces using scissors.
2. Place a small piece of litmus paper into each of three wells of the ceramic plate.
3. Repeat steps 1 & 2 for red litmus paper.
4. Touch one small drop of distilled water onto one piece of each type of paper and record color changes in **Data Table I** below. Note: if no color change occurs, simply write “none”
5. Repeat step 4 with HCl.
6. Repeat step 4 with NaOH.
7. Repeat steps 1-6 using pH paper but this time determine the actual pH value using the color scale included with the pH paper. Record in **Data Table I**.
8. Throw out the wet strips using paper towels (do not let any paper fall down the drain). Thoroughly rinse the well plate and dry (will be used for Part 2).

Note: use new indicator papers if the original ones get contaminated.

Part 2: Liquid Indicators

1. Place three drops of phenolphthalein indicator into three separate wells.
2. Add one drop of distilled water to one well. Record color change in **Data Table II**.
3. Add one drop of HCl to the second well. Record color change in **Data Table II**.
4. Add one drop of NaOH to the third well. Record color change in **Data Table II**.
5. Repeat steps 1-4 using bromothymol blue as the new indicator.

Part 3: Determination of the pH in Various Chemicals

1. You can find the various chemicals at the teacher’s station in the front of the classroom. Be ready with a CLEAN well plate (six wells should have pH paper in them—be resourceful, use a third of a strip in each well, as in Part 1/Step 1) before approaching the station.
2. Place a drop of each chemical sample onto the pH paper and determine the pH value. Record your results in **Data Table III**.
3. Clean up the well plate thoroughly to prevent cross contamination.

Make sure your lab station is clean and ready to go.

Discussion Questions

1. Provide the definition of a pH indicator.

2. Based on your results in **Data Tables I & II**, indicate the fxn of each indicator in the chart below.

Indicator	Fxn of the Indicator
Red Litmus Paper	
Blue Litmus Paper	
pH Paper	
Phenolphthalein	
Bromothymol Blue	

3. Litmus paper is considered to be a “rough” indicator (when compared to pH paper). Explain why?

4. Based upon your results in **Data Table III**, answer the following questions.

a) _____ is _____ times more acidic than tap water.

b) Why is _____ used to calm heartburn (acid reflux)?

5. Provide one practical use of your knowledge of pH indicators.

6. The fluids of organisms are very sensitive to pH changes. How is the pH of these fluids maintained within homeostatic parameters?

Tap Water
Vinegar
Milk of Magnesia
Aspirin
Coca Cola
Household Cleaning Product

Labels