

Procedure

- 1) One person in the lab group must make sure his or her hands are clean and dry. That person should obtain a piece of red litmus paper, blue litmus paper, and wide-range pH paper.
- 2) The papers should be gently torn into three pieces each.
- 3) Obtain a spot plate. If it is clear, place it on top of a clean white sheet of paper. The spot plate should be clean and dry.
- 4) Add one drop of solution and one drop of indicator to a spot plate depression.
- 5) Observe color changes, if any, and write the colors in the data table.
- 6) If you run out of spaces on the spot plate, clean the spot plate thoroughly and rinse with distilled water before re-using. *Do not dump the pieces of indicator paper in the sink. Fish them out of the depression with forceps and deposit them in the trash.*

Questions

- 1) What is the purpose of this lab?
 - 2) What is pH? How does it apply to this lab?
 - 3) Which of the test solutions used were acids? Name them and give the formulas.
 - 4) Which of the test solutions used were bases? Name them and give the formulas.
- For #5-7, use this format for acid and base dissociation: $HA \rightarrow H^+ + A^-$ $BOH \rightarrow B^+ + OH^-$
- 5) Write the equation for the dissociation of NaOH in water.
 - 6) Write the equation for the dissociation of HCl in water.
 - 7) Write the equation for the dissociation of $HC_2H_3O_2$ in water.
 - 8) How can you tell if a chemical formula could be an acid just by looking at it?
 - 9) How can you tell if a chemical formula could be a base just by looking at it?
 - 10) What advantage does “wide-range” pH paper have over blue or red litmus paper?
 - 11) Using your data from the wide-range pH paper, what are the approximate pHs of the test solutions?
 - 12) Now that you have completed the lab activity, explain WHEN (not WHY) red litmus paper changes color.
 - 13) Distilled water is neutral. Considering the formula of water is H_2O or HOH , why does this make sense?
 - 14) Why does “acid rain” cause problems for the environment?
 - 15) Were there any results that surprised you or any member of your lab group? Explain.

DATA TABLE: COLORS OF SOLUTIONS WITH INDICATORS

	NaOH	HCl	HC₂H₃O₂	NH₄OH	C₆H₈O₇	NaHCO₃	H₂O
Blue litmus paper							
Red litmus paper							
Wide-range pH paper		Color: pH #:	Color: pH #:	Color: pH #:	Color: pH #:	Color: pH #:	Color: pH #:
Alizarin Yellow							
Bromo-thymol Blue							
Bromo-crescol Green							
Congo Red							
Methyl Red							
Orange IV							
PHTH (phenolphthalein)							