

## pH of Papers

### Materials:

Item	Amount per student	Amount for 24 students
White copy paper	1 cm <sup>2</sup>	1 sheet
Orange copy paper	1 cm <sup>2</sup>	1 sheet
Science Division letterhead	1 cm <sup>2</sup>	1 sheet
Paper towel	1 cm <sup>2</sup>	1 paper towel
Steno paper	1 cm <sup>2</sup>	1 sheet
Oaktag folder	1 cm <sup>2</sup>	1 folder
Issue of C&EN*	1 cm <sup>2</sup>	1 issue
Issue of J. Chem. Ed.*	1 cm <sup>2</sup>	1 issue

\* To be provided by instructor: use current or old issues

### Equipment:

Item	Amount per student	Amount for 24 students
Abbey pH pen	1	6
Scissors	1	12
Tape	1 dispenser	6 dispensers

Staff Notes: The small pieces of the various paper types can be cut using the paper cutter in the mailroom.

### Safety Issues:

- Warning: Some Science Division memos can be highly caustic!
- Don't run with the scissors.

### Procedure:

1. Collect some sample papers from around your house and campus. You may want to test the Monitor, the Index, poster-stock (for past events!), toilet paper, carbon paper, magazine pages, drawing paper... the possibilities are endless! Bring a small piece of each these test papers to lab with you.
2. Using the Science Division letterhead, cut a 1 cm x 2 cm piece, and then tear it so you have a 1 cm<sup>2</sup> piece with a torn edge. Using the Abbey pH pen, mark your initials (or other readily identifiable symbol) on the paper and color along the ragged torn edge. This paper is your alkaline standard, and the indicator ink should show up purple. Tape the paper sample into your notebook and label it with:

- a. Source / kind of paper (in this case, Science Division letterhead)
  - b. Color of the ink on the paper (some marks fade quickly)
  - c. Your decision (alkaline, acidic, or intermediate)
3. Test the other provided papers and your own test samples the same way as the Science division letterhead. Acidic papers will turn the indicator in the pen to a yellow color, which may sometimes be very difficult to see. Intermediate acidity papers will show a muddy color that has both yellow and purple tints in it. Some papers may be coated with a substance of different pH than the paper inside. If the surface and torn edges give different results, be sure to note this in your LNJ.

**Reflections:**

- Do you notice any trends in which papers are acidic and which are alkaline? If so, what? Propose a reason.
- Describe what chemistry is being illustrated by the pH pen.