

Name: _____

Lab 24. Acids and Bases

Materials

- Vegetable broth indicators, e.g. red cabbage, radish, beet
- Other vegetable indicators, e.g. purple grape, turmeric
- Synthetic indicators
- Household acids and bases, e.g. soap, ammonia, baking soda, toilet bowl cleaner, lemon, vinegar, yogurt
- Acid and base solution
- pH paper
- test tubes
- wash bottle of water
- beral pipets
- test tube racks
- glass stir rod
- Lab wipes

Safety

Most of these materials are fairly safe. Some of the acids and bases used can be harmful to skin and eyes, and all can be assumed to be poisonous. As always, you must observe all chemical safety procedures during these activities. You must wear proper eye protection while at a table with any chemicals, and there must be no eating or drinking in the room while any chemical laboratory activities are going on.

Household Items

Introduction

In this activity you will measure the pH of a variety of familiar household items and classify each as a highly acidic, slightly acidic, neutral, slightly basic, or highly basic.

What to do

There will be several materials at this station. Some are liquids, so it is very easy to measure their pH: just dip the end of a clean glass rod into the liquid and touch it to a small piece of pH paper. Use the color scale to determine the pH of the material from the color of the pH paper.

The solids require a little more preparation. The easiest thing to do is wet a small quantity of the solid with water and touch a small piece of pH paper to it. Again, the color of the pH paper tells you the pH of the material.

Record your observations in the table below, classifying the substances based on their measured pH.

Substance	pH	Category

Wastes

Liquids can be collected into a beaker.

Indicators

Introduction

Indicators are weak acids or bases whose conjugate acid and base forms have dramatically different colors. When present in trace amounts, they can be used to detect a change in pH of a solution.

What to do

1. With a beral pipet, transfer a small amount of a vegetable indicator to each of two test tubes. Observe, describe, and record the color and appearance of the indicator.

2. Add a few drops of acid to one of the test tubes. Observe, describe, and record the color and appearance of the mixture.
3. Add a few drops of base to the other test tube. Observe, describe, and record the color and appearance of the mixture.
4. Rinse the test tubes with water into the waste beaker.

Indicator	Appearance		
	Neutral	In Acid	In Base

Clean-up

Throw away your used pH paper. Clean the table where you worked by wiping with a sponge. Pour the contents of the liquid waste beaker down the drain.

Scoring

Lab conduct and safety	10
Cleanliness	5
Recorded observations	15