Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period\_\_\_\_\_\_\_\_\_\_

Acids and bases in the environment

Substances which have Hydrogen ions (H+) are acids. Substances which have Hydroxide ions (OH-) are bases. Substances which either have a balance of hydrogen and hydroxide ions or do not have either are neutral. pH is the measure of how acidic or basic a substance is and is a number value between and 14. A value of 0 is assigned the strongest acid. A value of 14 is assigned the strongest base. A value of 7 is assigned a neutral substance. The pH scale from 1 to 14 is illustrated below.

I-------I-------I-------I-------I-------I-------I-------I-------I-------I-------I-------I-------I-------I-------I

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Analysis Questions

1. Label the neutral point on the pH scale.
2. Using brackets indicate the acidic and basic ranges on the pH scale.
3. What pH would be the strongest acid to have? The strongest base to have?
4. Define:

Acid:

Neutral:

Base:

Indicators can be used to measure pH by color changes. pH paper is saturated in such a solution and will change to a color which corresponds to a particular pH value. A pH pencil is made of the same solution and it’s markings also change color when exposed to acids and bases. Examine a pH color chart.

Procedure

Obtain a piece of transparent film from your teacher. It will have two stripes drawn with the pH pencil. Place the transparency over a white paper background with a paper clip. Start at an open station and work around the room clockwise. At each station use the stirring rod to put one small drop of the substance on your pH pencil stripe. Immediately compare the color of the pH paper to the nearest color chart and determine the pH value for each of the substances. Record the results on the following data table. When finished, completely rinse and dry your transparency film and return it.

Acids and Bases in the Environment.

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| --- | --- | --- |
| Material | pH | Acid, Base, or Neutral |
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1. What color is pH 1?

pH 2?

Neutral?

1. Which substances tested in the acid pH range?
2. Which substances tested in the basic pH range?
3. Which substances tested as neutral or nearly neutral?
4. What chemical ion causes a solution to be acidic?
5. Which of the substances tested contained hydroxide ions?
6. Why are some health care products concerned about the pH value of their product?
7. A doctor has told your father that he has a stomach ulcer. He must not eat or drink substances that are acidic. Why will these substances harm his ulcer?
8. Describe another thing that the doctor might prescribe as a remedy to the above situation.