Name: _____ **Group:** _____

Effects on Vegetation

pH measures the relative acidity of the water on a scale of 0-14. A pH level of 7.0 is considered neutral. Pure water has a pH of 7.0. Water with a pH level less than 7.0 is considered to be acidic. Normal rain is slightly acidic, with a pH of about 5.5. Water with a pH greater than 7.0 is considered to be basic or alkaline. As of the year 2000, the most acidic rain falling in the U.S. had a pH of about 4.3.

PART 1 – SOIL

1. Fill a graduated cylinder with 100 ml of vinegar (or another solution with a pH of 4.0)

2. Pour the 100 ml of vinegar into a spray bottle.

3. Place 1500 ml of soil (6 cups) into a 2 quart mixing bowl.

4. Measure the pH of the soil and record: _____
   (test kits vary; this test may take up to 10 minutes to get results)

5. Spray the solution on the bowl of ***soil*** for 10 seconds. Let stand for 30 seconds.

6. Measure the amount of vinegar/solution used and record: _____ml

7. Measure the pH of the soil again and record: _____
   (test kits vary; this test may take up to 10 minutes to get results)

8. Answer the following questions:
   - Was there a difference in the pH level? If so, what was it?

   - What do you think would happen to the pH level of the soil if you sprayed for 30 seconds? 1 minute?

   - How do you think acid rain affects the pH of soil in fields and forests?

NOTE: The soil test can take up to 10 minutes for the results. You might want to complete both soil tests, then complete Part 2 while you are waiting for the results.

Name: _____ **Group:** _____

Effects on Vegetation

PART 2 – WATER

1. Fill a graduated cylinder with 100 ml of vinegar (or another solution with a pH of 4.0)
2. Pour the 100 ml of vinegar into a spray bottle.
3. Place 1500 ml of water (6 cups) into a 2 quart mixing bowl.
4. Measure the pH of the ***water*** and record: _____
5. Spray the solution on the bowl of water for 10 seconds. Let stand for 30 seconds.
6. Measure the amount of vinegar/solution used and record: _____ml
7. Measure the pH of the water again and record: _____
8. Answer the following questions:
   - Was there a difference in the pH level? If so, what was it?
   - What do you think would happen to the pH level of the water if you sprayed for 30 seconds? 1 minute?
   - How do you think acid rain affects the pH in lakes, rivers and streams?

Name: _____ Group: _____

Effects on Vegetation

PART 3 – VEGETATION

1. Obtain 3 fresh, green leaves from the same tree or plant.

2. Tape one leaf (control leaf) to a piece of white paper, label, and place in a dry, safe location.

3. Spray one leaf all over with the vinegar/solution. Tape it next to the control leaf on the white piece of paper and label.
    - Are there any immediate effects to the leaf?

4. Place the leaf next to your control leaf overnight in the classroom.
    - What does the leaf look like the next day?

5. Spray a third leaf all over with the vinegar/solution 6 times in a day, place it next to the other leaves and leave overnight.

6. Answer the following questions:
    - What does the leaf look like the next day?

    - How do you think acid rain affects trees and other plants?