



# Acid Rain

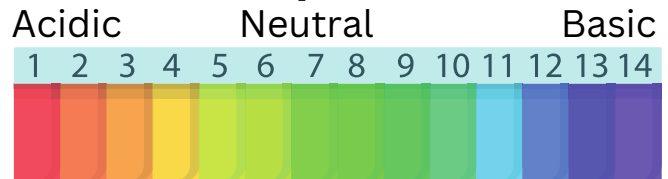


Raccoon Creek Explorers Activity #31

## Supplies:

- Water
- Vinegar
- 2 Large jars
- 2 Small glasses that fit inside the large glasses
- Plastic Wrap
- 2 Rubber bands
- Marbles or Pebbles
- 2 Flowers of equal type and size
- A sunny day

## The pH Scale



## Vocabulary:

**Acid:** Elevated level of hydrogen ions and a low pH

**Acid Deposition:** or Acid rain is any form of precipitation with acidic components that falls to the ground from the atmosphere in wet or dry form

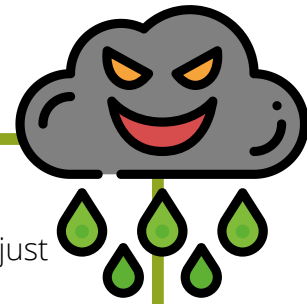
**Atmosphere:** a mixture of gases that surrounds the planet that helps make life possible

**Fossil Fuels:** A non-renewable energy source that originate from plants and animals that existed in the geological past

## Background:

Acid rain also known as acid deposition is a form of precipitation that is acidic on the pH scale which has a pH of 5 or less where 6.5-8.5 is more neutral. Acidic rain can have harmful effect on the plants, aquatic animals and infrastructure. Acid rain is typically caused by the burning of fossil fuels. We burn fossil fuels in our cars, and in the production of electricity and energy in power plants. This releases harmful emissions into the atmosphere such as sulfur dioxide and nitrogen oxides which are both natural contributors to acid rain. They mix with water in the atmosphere that then falls back to Earth as acidic precipitation. Acid rain weakens plants, depletes the soil of important nutrients and it contributes to the break down of surfaces exposed to air pollution and deteriorates limestone and marble buildings and monuments.





### Let's Get Started:

- Fill both small glasses with water and place a flower in each small glass.
- Place each glass with a flower into the 2 larger jars making sure the flower sits just below the top of the jar
- Pour about 1/2 cup of water into one jar so that the small glass is sitting in the water
- Repeat with vinegar instead in the second jar
- Cover the tops of each jar with plastic wrap and secure with a rubber band.
- place the marbles or pebble on top of the plastic wrap so that the plastic wrap drops just a tiny bit over the flower
- Place both jars in the sun
- After 24 hours observe the difference in the flowers



### Reflect:

What were the differences in the flowers after the 24 hours?

What do you think the pH of vinegar is?

Explain what happened in your enclosed jars that causes the flowers to be different?

### Apply:

How can we prevent acid rain from happening?

What impacts could acid rain have on humans?

### Wrap-Up:

As you learned above, the burning of fossil fuels can cause acid rain to form. While burning fossil fuels isn't the only thing that causes acid rain, switching to renewable energy sources for energy production would greatly reduce the chance of acid rain formation. Renewable energy sources like wind and solar power produce much less pollution. You can help to reduce emissions too by taking public transportation, biking or walking to places you need to go. Reducing harmful chemicals on land, water and in the atmosphere would not only reduce the chances of acid rain formation, but it would have other positive impacts on the environment, and would help keep plants and aquatic organisms happy and healthy.

