



Investigating Acid Rain

Acid rain is formed from the burning of fossil fuels (oil and coal), especially from high-sulfur coal. The burning of fossil fuels releases sulfur dioxide and nitric oxide into the atmosphere.

These two pollutants react with water in the atmosphere to form sulfuric acid and nitric acid. The sulfuric acid and nitric acid are transported back down to the earth by rain and snow.

Effects of Acid Rain

- Leaches nutrients (calcium, potassium, and magnesium) from the soil and trees
- Frees toxic metals from the soil and carries them into surface water bodies including public water supplies
- Makes lakes acidic, which inhibits the survival of young fish and larvae and amphibian production is reduced
- May harm crop production
- May contribute to respiratory diseases in children
- Erodes statues and monuments

Materials

3 potted plants of equal size

- Labeled *Regular Rain*
- Labeled *Acid Rain*
- Labeled *Extreme Acid Rain*

3 spray bottles (spray bottle to stimulate rain)

- 1 bottle with tap water labeled *Regular Rain*
- 1 bottle with 1/3 vinegar and 2/3 water labeled *Acid Rain*
- 1 bottle with 2/3 vinegar and 1/3 water labeled *Extreme Acid Rain*

Tape, water, vinegar, ruler

Procedure

1. Measure the height of each plant and place the plants together in a window. Make sure they receive equal amounts of light.
2. Water each plant with the spray bottle of the same label by giving each plant the same number of sprays of water.
3. After a few weeks, measure the plants again and record descriptions of their conditions.



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Plant Label: *Regular Rain*

Height

Description

Starting Height: _____

Height ____ after ____ weeks

Height ____ after ____ weeks

Height ____ after ____ weeks

Plant Label: *Acid Rain*

Height

Description

Starting Height: _____

Height ____ after ____ weeks

Height ____ after ____ weeks

Height ____ after ____ weeks

Plant Label: *Extreme Acid Rain*

Height

Description

Starting Height: _____

Height ____ after ____ weeks

Height ____ after ____ weeks

Height ____ after ____ weeks

Questions:

Which plant grew the most? _____

Which plant grew the least? _____

Did the acid rain effect the plant growth? _____

Test a sample of rainwater with litmus paper. What is the pH? _____

Is the rain that falls near your home acidic? _____

If the rain that falls near your home is acidic can you find any effects of the rain in the environment?