

Spanning the Gap

Acid Rain



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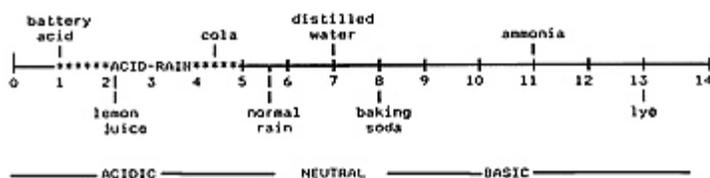
Acid rain is rain or any form of precipitation (snow, hail, fog, etc.) which mixes with pollutants to give it a more acidic nature than water. Acid rain is caused by pollutants in the air that mix with the water molecules to form acids, rather than water droplets. The pollutants come from many different sources; however, emissions from power plants and automobile exhaust are the main offenders.

We need to be concerned about acid rain because of the low pH value of the rain today. On average, the pH of the rain in the Delaware Water Gap National Recreation Area is 4.5, which is ten times more acidic than "normal".



Trout in a pond on the Pennsylvania side of the park.

pH Scale



Once you know how acidity is measured (*See explanation at right*), and you learn that "normal" even "normal" rain is acidic, you might think: *what are we worried about?*

The effect of acid rain on humans has not yet been discovered but many of the effects on natural features are known. For example, when a body of water becomes more acidic, it dissolves more aluminum and other metals, which are toxic to fish (and humans!) One of the most noticeable effect acid rain has had on the environment is in the lakes in New York's Adirondack Mountains, which have been acidified to a point where fish life often cannot survive. Acid rain also affects the built environment by eroding paint and metals on buildings and

pH Scale

Acid rain is measured on a pH scale. The scale tells us whether a substance is acidic or *basic*.

The scale ranges from 1 to 14; 1 being the most acidic, 7 is neutral and 14 is the most basic or alkaline. **A one step move in any direction is multiplied by ten.**

For example, coca-cola has a pH of 4.5 and "normal" rainfall has a pH of 5.5. The cola is **10 times** more acidic that the water. Another example: lemon juice has a pH of 2.2 and tomatoes have a pH of 4.2 a **two** step difference.

monuments.

The recreation area is very aware of the effects acid rain could have on both natural and cultural resources within the park. Currently several research projects in the park are devoted to acid rain. Some effects of acid rain have already been detected, especially in some of the lakes on the New Jersey side of the park. One research project has concluded that acid rain was responsible for the nearly complete failure of rainbow trout reproduction in 1984 in **Van Campens Brook** in New Jersey.

Solutions are available to help stop acid rain. Industries can invest in scrubbers, which breakdown the emissions so acid rain won't form. People, too, can have an impact by reducing automobile travel through walking, riding a bike, or carpooling to work.

This means that the lemon juice is **100 times** more acidic than the tomatoes.



Van Campens Brook NJ.