

Effects of acid rain

Science



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Many may ask how acid can just fall from the sky. However, it falls in the form of rain. Acid rain can be described as rain that is more acidic than regular rain. In scientific terms, acid rain has a pH lower than 5.6, the pH of clean rain. As shown, clean rain has a pH less than neutral; carbon dioxide in the air interacts with rain causing the drop of pH. Acid rain has a couple different causes. However, pollution plays the biggest role in the creation of acid rain. The burning of fossil fuels from factories, cars, and power plants create fumes, which rise in the air and create acid rain.

The two main chemicals in the making of acid rain are sulfur oxide and nitrogen oxides. Specifically in the United States, sulfur in coal creates most of the solutions being released by smoke houses. The production of acid rain all starts with reaction with water producing H^+ ions. Regular rain, with CO_2 as described above, produces one H^+ ion and HCO_3^- . When the production of acid rain occurs, the Sulfur dioxide is oxidized and is made sulfur trioxide. The equation of this is: $2SO_2 + O_2 \rightarrow 2SO_3$. After oxidation, the sulfur trioxide combines with water to create sulfuric acid that then falls to the ground as acid rain.

The equation of this is: $SO_3 + H_2O \rightarrow H_2SO_4$. If these reactions just occurred, created acid rain, and didn't hurt anything when it fell, it would go unnoticed. Too bad it isn't all that easy. Acid rain doesn't hurt humans too much, but hurts the environment around us as well as many buildings made of marble. For humans, acid rain's only impact is that it may irritate our lungs. Also, the acid rain causes poor visibility in certain areas. Acid rain plays a much larger impact on the environment. For example, the effect it has on lakes and rivers. Most lakes have pH's ranging from six to eight.

However, the acid rain that gets absorbed in the soil around the water causes the pH to go lower. In a pond in Franklin, New York the pH got as low as 4. 2. The effect of acid rain is less evident in forests because in some cases acid doesn't affect the growth of trees. The responsibility we have, is to stop or lessen the amount of acid rain that falls. There are a number of ways this is possible. First is to repair the damage it has already done, second is to clean the smokestacks and our exhaust pipes, and thirdly is to find new efficient and less pollutant fuel sources. The destruction that acid rain has made on marble can always be fixed. There are also techniques to fix lakes by a process called liming, where limestone is added to the water. However, liming is expensive and temporary. Because coal is such an efficient fuel source, it would be hard to change. A different fuel source is the best long-term way of stopping acid rain. Nuclear power is one of the best energy sources but can be extremely dangerous if any accidents occur. If an automobile industry were to publish an article about acid rain it would differ greatly from the ones written by environmentalists.

The auto industry would steer away from the way cars produce very pollutant gas, and of course would mention how their car is made more environmentally friendly and that the cars they make produce less pollutant gasses. They would do this in order for customers to buy their car, and not feel guilty about hurting the environment. For example, many car companies are making hybrid and electric cars in order for people to know they are buying a more environmentally friendly car.