

Physics paper; acid rain



**ASSIGN
BUSTER**

Danielle Forrest2345692411-17-09Acid RainAcid rain, or acid deposition is a form of precipitation that has elevated hydrogen levels, or a low pH. It is very dangerous to plants and forests as well as bodies of water and the sea creatures that reside there, and the infrastructures of buildings. This is because of the acidity of the rain. Rainwater has a pH of around 5.

2. Acidic rain falls under a pH of 5. ??? As of 2000, the most acidic rain falling in the U. S. has a pH of about 4. 3.??? (1) and it has only risen since then.

It can seriously alter a large body of water by raising the acidity making the pH dangerously low for the inhabitants of the body of water to reside. It is also dangerous to infrastructures as it can dissolve and corrode outdoor structures. Acid rain is a serious environmental problem and a dangerous form of destruction.??? Acid Rain is caused by pollution containing sulfur dioxide, nitrogen oxide, and ozone (SO_x , NO_x , and O_3) being released into the air.??? (2) Sulfur dioxide, nitrogen oxide, and ozone are absorbed into clouds which, after a chemical change, gives life to acid rain. The two most important acids in acid rain are sulfuric acid (H_2SO_4) and nitric acid (HNO_3). One of the causes of acid rain is the burning of fossil fuels. Fossil fuels are used for many things including transportation and power generation.

Fossil fuels create Sulphur Dioxide and Nitrogen Oxide which are both dangerous and harmful gases. Because of the production of these gases, they are absorbed into the air and through chemical processes released as acid rain. In the U. S.

specifically, ??? 2/3 of all SO_2 and 1/4 of all NO_x come from electric power generation that relies on burning fossil fuels, like coal.??? (2) Acid rain can

<https://assignbuster.com/physics-paper-acid-rain/>

also develop from natural sources such as volcanoes or decaying vegetation but is not a huge addition to the SO₂ and NO_x levels that are already produced by man-made sources. Sulphur Dioxides or SO₂ which is derived from fossil fuels, reacts with the moisture in the atmosphere to create a different element (SO₃) which uses the chemical process: $SO_3(g) + H_2O(l) \rightarrow H_2SO_4(aq)$ to form Sulphuric Acid. This is just one of the ways the pollution can form sulphuric acid and develop into acid rain.

Acid rain causes many problems as its acidity level can effect forests because of the plant life, buildings because of the dissolving structure of infrastructures, as well as lakes and other bodies of water. Soil is greatly effected by the acidity because it washes away the nutrients that plants need to grow and thrive. It poisons plant life and can slow down the process of growth. ??? Over the years, scientists, foresters, and others have noted a slowed growth of some forests. Leaves and needles turn brown and fall off when they should be green and healthy.

???(2) It does not directly kill the forests but weakens them and poisons their foundations. The infrastructures of buildings are also weakened by acid rain. Across the world, many of the historic buildings and monuments have been weathered by acid rain, being in locations with high acidity. Such as ??? In Europe, where buildings are much older and pollution levels have been ten times greater than in the United States???(3) Our monuments and outdoor statues have begun to rust and our cars can lose their finish. Because of these things, the awareness of the pollution and how it is contributing to the destruction of our buildings is growing. When acid rain with a low pH falls into a body of water, it changes the chemistry of the water. The pH levels are <https://assignbuster.com/physics-paper-acid-rain/>

lowered endangering the inhabitants of the water, creating a deficit in the life of the water and making it uninhabitable for things to grow and thrive. The Environmental Protection Agency (EPA) has already made strides in their efforts to reduce pollution.

By decreasing pollution, the amount of acid rain will decrease. ??? Since 1995, EPA's Acid Rain Program has reduced SO₂ emissions by over 5.5 million tons from 1990 levels, or about 35 percent of total emissions from the power sector.??? (1) The SO₂ emissions have dropped considerably since the 1980 tests by about 41% (7 million tons). The EPA's acid rain program is also working to cut NO_x emissions. In 1990, NO_x emissions were cut by about 3 million tons.

In 2005, emissions were less than half predicted level. In New England specifically through the National Atmospheric Deposition Program we have a 40% decrease of sulfate left by rain. There are also other efforts to combat acid rain.

Personal steps can be taken to reduce the production of pollution through alternative energy sources. There is also a method called ??? Liming??? which is where limestone can be added to an acidic lake to cancel out the acidity. This is very expensive however, and needs to be done repeatedly in order to be effective.

There are also other efforts to reduce acid rain such as the NO_x Budget Trading Program in the U. S. which has also contributed to the lower percentage of acid deposition.??? Acid Rain is one of many environmental

problems which can be eased if we reduce emission of pollutants into the atmosphere.

???(1) Acid rain is damaging to the environment through the forests, buildings, and lakes. It comes from the pollution of fossil fuels and other sources which is then absorbed into rainclouds to produce an acidic fall of rain. Through serious thought and care, we can eliminate acid rain or at least decrease the quantity of it by decreasing pollution. Sources: 1. <http://www.epa.gov/acidrain/what/index.html>.

html 2. <http://pubs.usgs.gov/gip/acidrain/2.html>.

html 3. http://library.thinkquest.org/26026/Environmental_Problems/acid_rain_-_effects.html.