Name of Student

Name of Professor

Name of Class

Day Month Year

Effects of acid rain on plants, animals and marine life

**Summary**

This paper is aimed at exploring and explaining the underlying mechanisms behind acid rain and its potential effects on terrestrial and marine life. Acid rain, as the name indicates, is the mixture of acids and rain water that put adverse effects on the animal, plant and aquatic life existing in the ponds, lakes and marines. In the end, conclusion section will attempt to deduce meaningful inferences from the textual activity after contemplated analysis.

**Main body**

**Acid rain, what is it?**

Acid deposition or acid rain is referred to as a broader term that encapsulates any form of contamination or precipitation of water with the acidic components i.e., sulfuric acid or nitric acid that fall on the land in form of snow, hail, fog and rain (EPA, 2018).

As far as acidity of any substance is concerned, it is the tendency of a chemical substance to accept hydrogen ions and form H3O+ ions in the water. More a substance possesses this tendency, more it will be acidic in nature (Lefohn and Brocksen 2003). Acidity of any substance is measured using pH scale in which neutral substance fall at the 7th reading of pH scale. Substances possessing pH values lower than 7 are termed as acids whereas basic substances have greater pH values than 7. Normal rain water has about 5.7 pH value which indicates that it is slightly acidic in nature however pH of acidic rain falls between 4.3 and 4.5.

The Long Term Monitoring Network (LTM) of United States Environmental Protection Agency (USEPA) is aimed at measuring the chemistry in terms of acidity and alkalinity of surface water at over 280 sites. After careful experimentation, this department provides valuable and authentic information about how water bodies respond and cope with the altered pH of pond, lake, river or marine water (EPA, 2018).

**How does acidic rain form?**

 Some industries e.g., coal power generation industries eject nitrogen and sulfur oxide as the waste products. These gases are mixed with atmospheric oxygen forming sulfur dioxide (SO2) and nitrogen dioxide (NO2) that are then taken to the clouds through wind pressure and air currents. After mixing with water droplets of the clouds, sulfur dioxide and nitrogen dioxide produce their prospective acids i.e., sulfuric acid (H2SO4) and nitric acid (HNO3) (Abrahamsen, 1987). This water then falls on the ground in form of acid rain and alters the pH of soil and water.

 The major sources of nitrogen and sulfur dioxide are fossil fuels, their burning for power generation, vehicle smoke, refineries and other manufacturing industries. It is interesting to note that acid rain not only affects the areas from where its precipitating components are generated but to the distant populations as well i.e., animals, plants and water resources far from the industrial areas (EPA, 2018).

**How does acid rain affect ecosystem?**

Ecosystem is referred to as a community of animals, plants and other biotic and a-biotic factors of the environment including soil, air and water (EPA, 2018). In other words, all the living and non-living entities are dependent on each other and imbalance in one factor directly affects the other ones (Abrahamsen, 1987). Hence, acidic rain affects ecosystem in many ways i.e., fish and wildlife, plants and trees and human health. These factors will be discussed one by one as follows:

**1. Effects of Acid Rain on Fish and Wildlife**

The most evident effect of acid rain in ecosystem can be seen in aquatic environment i.e., lakes, ponds, marshes and streams where it might have devastating effects on the fish and other aquatic life (EPA, 2018). Aluminum is a metal present in the soil which is mixed with the acidic water when it rains. Their mixing results in more aluminum deposition in the water which then affects the survival of aquatic life gravely because they cannot survive in the presence of aluminum (Lefohn and Brocksen 2003).

It is important to note that adult aquatic life is comparatively immune to pH change as compared to the miniature and larval life. For example, fishes can survive in the pH of 5 but their eggs cannot be hatched at this level. Some adult fish might also die when pH level gets alleviated than 5 (Abrahamsen, 1987). Even fish and other species might tolerate the fluctuated pH levels but the plants necessary for their survival cannot endure it and threaten the survival of aquatic life.

**2. Effects of Acidic Rain on Plants and Trees**

An area—where frequent acidic rains are expected—is more prone to have dead or decayed trees as compared to the other ones. The most common disruption produced by the acidic rain is the leaching of aluminum from the soil—the key element responsible for plant growth and development (EPA, 2018). Acid rain contains chemical compounds that are more welcoming for minerals and nutrients and extracts them readily from the soil. The end result is obvious—impotent land with decaying plants and trees (Lefohn and Brocksen 2003).

**3. Effects of Acidic Rain on Human Life**

A bulk of literature is evident that swimming or walking in the ponds or lakes affected by acidic rain do not bring much danger for human health however when sulfur and nitrogenous compounds precipitate in the air after evaporation—it can be harmful for humans (Abrahamsen, 1987). These particles when inhaled in the lungs, affect lung and heart functioning adversely, elevating the risks of acquiring cardiovascular diseases, asthma and other breathing disorders. Moreover, acidic rain may also affect the skin if its pH level is altered to a considerable degree (Lefohn and Brocksen 2003).

**Conclusion**

 Based on the above presented activity, it can be concluded that there are no pros of acidic rain but only cons. The most common disadvantages of acidic rain are visible in human, plant and aquatic life; need of the hour is to manage the industrial wastes and reduce the acidic agents to the simpler and productive compounds because prevention is always better than cure.

**Works Cites**

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