

Chemical Reactions which can Increase or Decrease the Toxicity of the Contamination

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Received: January 31, 2022; **Manuscript No:** TSACPI-22-61768; **Editor Assigned:** February 02, 2021; **PreQC No:** TSACPI -22-61768 (PQ); **Reviewed:** February 16, 2022; **QC No:** TSACPI-22-61768; **Revised:** February 21, 2022; **Manuscript No:** TSACPI-22-61768 (R); **Published:** February 28, 2022.

Introduction

The study of the chemical properties of soil is referred to as soil chemistry. Mineral composition, organic matter, and environmental conditions all have an impact on the chemistry of the soil. J. Thomas Way, a consulting chemist for the Royal Agricultural Society in England, carried out numerous tests on how soils exchange ions in the early 1850s. He is known as the "Father of Soil Chemistry" as a result of his long and arduous efforts.

Description

Many other prominent scientists, like Edmund Ruffin, Linus Pauling, and others, contributed to this branch of ecology after him. To forecast the fate of pollutants and the processes by which they are initially released into the soil, a thorough understanding of environmental soil chemistry is required. When a chemical is exposed to the soil environment, it can undergo a variety of chemical reactions, which can increase or decrease the toxicity of the contamination. Adsorption/desorption, precipitation, polymerization, dissolution, complexation, and oxidation/reduction are only a few examples of these reactions. Scientists and engineers working on environmental rehabilitation sometimes neglect these reactions. Understanding these processes allows us to better forecast the fate and toxicity of contaminants, as well as build scientifically sound and cost-effective clean-up plans. Soil chemistry has historically been concerned with the chemical processes that occur in soils and influence plant growth and nourishment.

Concerns about metalloids, nutrients, and organic pollutants in soil, as well as their impact on water quality and plant, animal, and human health, began to grow in the 1970s and continued into the 1990s. Environmental soil chemistry is presently defined as the study of chemical reactions/processes between soils and environmentally important plant nutrients, radionuclides, metalloids, and organic molecules. A complete understanding of ambient soil chemistry is required to predict the fate of contaminants in both surface and subsurface environments. Understanding the chemistry and mineralogy of inorganic and organic soil components is essential to know the wide range of chemical interactions that contaminants may experience in the soil environment.

Conclusion

These reactions, which include equilibrium and kinetic processes such as dissolution, precipitation, polymerization, adsorption/desorption, and oxidation-reduction, have an impact on the solubility, mobility, speciation toxicity, and bioavailability of contaminants in soils, surface waters, and groundwater. Understanding the chemistry of the soils in your environment can also assist you in making more informed judgments. The percentage of total soil volume occupied by pore space is referred to as soil porosity. Pore gaps are primarily used to improve the availability and mobility of air and water in the soil environment.

Acknowledgment

The authors are grateful to the journal editor and the anonymous reviewers for their helpful comments and suggestions.

Declaration for Conflicts of Interests

The authors declared no potential conflicts of interest for the research, authorship, and/or publication of this article.

