Toxicology: Open Access

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Water contamination of Heavy Metal and Its Toxicity

Kevin Jacobs*

Department of Pharmacy, UCL College of Pharmacy, London, United Kingdom

Abstract

Water is a source of life but contamination of water is the major threat in today's India. The multiplicity of heavy metals, some of them are potentially toxic and are relocated to the surrounding Water environment through different pathways. Water quality has become a major issue due to growing industrial development, urban development, E-Waste, wastewater irrigation, and Sewage [1]. The concentrations determined were more than the maximum admissible and desirable limit when compared with the National and International organizations like WHO, USEPA. Exposure to heavy metals has been linked to chronic & acute toxicity developing retardation, neurotoxicity, kidney damage, various cancers, liver damage, lung damage, fragile bones, and even death in instances of very high exposure. This article covers the effects of polluted water on human health and heavy metals exposure in the environment.

Introduction

Environmental pollution refers to any change in the environment, although it is most commonly used to refer to any deterioration in the environment's physical, chemical, or biological quality. The mobility and influence of toxicants and their metabolites in the environment, in food chains, and on the structure and function of biological systems are the primary concerns of environmental toxicology [2]. Toxicology encompasses a wide range of topics. Environmental Toxicology is one of them. The fact that the interaction between man and the environment is worsening as a result of the fast exploitation of natural resources, technical growth, and industrial expansion is the most noticeable reason for environmental degradation. Environmental toxicity causes health problems, environmental degradation, and ecological imbalance all around the world. Pollution of any kind has an impact on human health, whether directly or indirectly. Toxic Environmental is caused by a variety of factors.

Heavy Metals Contamination and Toxicity in Soil Ecosystem

Heavy metal accumulation in the soil is hazardous to the environment and human health, and well-known harmful contaminants have devastating effects on the biological circulation of terrestrial species with variations in the structural composition of nucleic acids, proteins and osmotic balance. Although several remediation techniques such as hardening/stabilization (S/S), soil leaching, electro kinetic remediation, and chemical oxidation/reduction are used to fix, remove, or detoxify HMs in the soil, these traditional approaches do not result in overall sustainability .Metal toxicity not only affects aquatic organisms, [3] but also harmful to soil flora, plants, animals, and humans as well. Oxidative stress results in damage to cell morphology and inhibits cytoplasmic enzymes. Usually, these metals exist in nature individually or in grouping with other elements, but anthropogenic activity increases their concentrations in the environment. Since HMs is water-soluble, they are mainly soluble in solutions. This makes it difficult to remove by physical and chemical separation processes in the soil. Solubility of HMs is determined by their chemical morphology in the environment. So, for improving the remediation efficiency of microbial fuel cell (MFC), appropriate methods for converting HMs into easy-to-move forms (such as acid-soluble fractions) are needed. Some research has used auxiliary reagents like small-molecule organic acids (citric acid, CA; and acetic acid, Hack), inorganic acids (Hall, HNO), and synthetic chelating agents (ethylenediaminetetraacetic acid, EDTA) .These chemicals help in desorbing and dissolving HMs in the soil, allowing them to move around more freely[4]. Synthetic chelating chemicals pose a risk since polymer chelatesmigrate slowly in electric fields and secondary ecological settings. This study used two small-molecule organic acids (CA, HAc) that are commonly available, reasonablyinexpensive, and ecologically benign, as well as a mineral acid (HCl). The rate of fasterimprovement of the industrial sector has raised the HM contamination problem, like a hike in manufacturing purposes for other metals. Heavy metals like Cd, Pb, As, Cr, Cu, and Znare mainly used in industry and agriculture. Small amounts of these metals are lethal.Although these metals are present naturally in the environment, tampering occurswhen there are large amounts of these metals on land due to continuous mining as well assmelting . As industrialization progresses and the natural biogeochemical cycle aredisrupted, the issue of HM contamination becomes more and more serious. Heavy metals, unlike biological compounds, seldom biodegrade and hence gather in the environment. Accumulation of HMs takes place in the tissues of an organism (bioaccumulation), and theirconcentrations increase as they transition from low to high trophic levels (biomagnification) [5]. Heavy metals in the soil have toxicological consequences on soil microorganisms, which lead to reduced numbers and activity.

References

1. Rehman K, Fatima F, Waheed I, Akash MSH (2018) Prevalence of exposure of heavy metals and their impact on health consequences. J Cell Biochem 157-184.
2. Lu Y, Song S, Wang R, Liu Z, Meng J, et al. (2018) Impacts of soil and water pollution on food safety and health risks in China. Environ Int 5-15.
3. Ding Q, Li C , Wang H , Xu C , Kuang H (2021) Electrochemical detection of heavy metal ions in water. Chem Commun (Camb) 7215-7231.
4. Eom H, Kang W, Kim S, Chon K, Lee YG, et al. (2020) Improved toxicity analysis of heavy metal-contaminated water via a novel fermentative bacteria-based test kit. Chemosphere 127-412.

***Corresponding author:** Kevin Jacobs, Department of Pharmacy, UCL College of Pharmacy, London, United Kingdom, E-mail: kevinjacobsers@yandex.com

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