World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:9, No:09, 2015

Removal of Heavy Metals from Aqueous Solutions by Low-Cost Materials: A Review

Authors : I. Nazari, B. Shaabani, P. Abaasifar

Abstract : In small quantities certain heavy metals are nutritionally essential for a healthy life. The heavy metals linked most often to human poisoning are lead, mercury, arsenic, and cadmium. Other heavy metals including copper, zinc and chromium are actually required by the body in small quantity but can also be toxic in large doses. Nowadays, we have contamination to this heavy metals in some untreated industrial waste waters and even in several populated cities drinking waters around the world. The contamination of ground and underground water sources to heavy metals can be concentrated and travel up to food chain by drinking water and agricultural products. In recent years, the need for safe and economical methods for removal of heavy metals from contaminated water has necessitated research interest towards the finding low-cost alternatives. Bio-adsorbents have emerged as low-cost and efficient materials for the removal of heavy metals from waste and ground waters. The bio-adsorbents have an affinity for heavy metals ions to form metal complexes or chelates due to having functional groups including carboxyl, hydroxyl, imidazole, and etc. The objective of this study is to review researches in less expensive adsorbents and their utilization possibilities for various low-cost bio-adsorbents such as coffee beans, rice husk, and saw dust for the removal of heavy metals from contaminated waters.

Keywords : heavy metals, water pollution, bio-adsorbents, low cost adsorbents
Conference Title : ICWREP 2015 : International Conference on Water Resource and Environmental Protection
Conference Location : Berlin, Germany
Conference Dates : September 14-15, 2015