

Challenges of Wastewater Discharge and Techniques for Treatment: A Review

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Abstract

The aim of this study was to assess the efficiency and the practical applicability of locally abundant low-cost adsorbents for the adsorptive removal of heavy metals from industrial wastewater. Most industries, such as electroplating, textile, fertilizer, batteries, leather, and others in less developed countries discharge huge volumes of untreated wastewater into water bodies. The industrial wastewater may contain toxic chemicals in excess of the threshold level which when released into the environment, particularly to the aqueous environment; significantly degrade the quality of the water thereby river health sustainability and subsequently affecting human health. There are several techniques for removing toxic chemicals such as ion exchange, membrane filtration, adsorption, irradiation, chemical and biological treatments. However, the adsorption method is believed to be the best option because it is cost-effective, simple and easy to operate, and is efficient and environmentally friendly. Accordingly, this method is a preferable option for developing countries like Ethiopia, where advanced treatment technologies for high volumes of toxic industrial wastewater are unaffordable. This review of literature deals with wastewater composition and the applicability of low-cost adsorption techniques for the removal of heavy metals. The current status of the challenges surrounding wastewater generation and discharge are also discussed.