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Removal of heavy metals from drinking water using coconut husk

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Heavy metal contamination in groundwater and surface water used for drinking purposes has been envisaged as a problem of global concern as millions of human beings have been exposed to excessive heavy metal concentrations. Various remediation technologies have been developed to treat the heavy metals contaminated groundwater and surface water. But conventional treatment technologies further generate huge amount of toxic chemical by-products. So, a feasible technology for rural application is required that generates less or no toxic by-products. For this reason bio-adsorption using low cost waste products as adsorbents emerged as potential alternatives to existing conventional technologies. The bio-adsorbents have affinity for heavy metal ions to form metal complexes or chelates due to the presence of functional groups including carboxyl, hydroxyl, imidazole, sulphhydryl, amino, phosphate, sulfate, thioether, phenol, carbonyl and amide etc. Coconut husk (CH) is one of the low cost bio-adsorbent which has been used intensively for the removal of various heavy metals and metalloids (such as Pb, Cd, Zn, Ni and As) from both groundwater and surface water. The present study is focused on critical review of the previous and current available information on potential of natural and modified coconut husk for the removal of heavy metals and metalloids (arsenic). Various studies on adsorption efficiency of coconut husk considering the parameters such as contact time, adsorbent dose (coconut husk), initial concentration of heavy metals, pH, and temperature which have been studied by many researchers. This paper critically analyzed the available studies and commented on the applicability of coconut husk as a potential adsorbent for the removal of heavy metals.

Biography

Sneh Lata is pursuing PhD on "Study of feasible arsenic removal techniques from ground water for rural areas" in Department of Environmental Science and Engineering, ISM Dhanbad, under the guidance of Dr. S R Samadder. She has qualified UGC-NET/JRF in June 2012. She has one paper in International Journal of Environmental Research and Development.

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