

Removal of chromium (III) from aqueous solutions by the Organic Ion Exchangers

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Soil and water contamination by heavy metals like Cr, Cu, Pb, Mn, Hg, and Cd in soil as well as in water arising from the discharge of industrial effluents is one of the important environmental problems. Due to the greater stability these heavy metals cannot be degraded and removed from the environment. Their presence in aquatic life causes harmful effects to living organism. Chromium, one of the above-named heavy metals has two stable oxidation states, Cr (III) and (VI). The presence of strong oxidants in soil and water can change Cr (III) to harmful Cr (VI). Therefore Chromium (III) removal on three cation exchangers Amberlite.IRC-50(Na⁺), Amberlite.IR-120(Na⁺) and Amberlyst.15(H⁺) is studied as a function of time and concentration at different temperatures(293K-333K). The kinetic and equilibrium studies proved that affinity of these cation exchangers towards Cr(III) removal followed the order as Amberlyst.15(H⁺) > Amberlite.IR-120(Na⁺) > Amberlite.IRC-50(Na⁺). The pH is observed to increase during exchange on Amberlite.IR-120(Na⁺) and Amberlite.IRC-50(Na⁺) and decrease during exchange on Amberlyst.15(H⁺).