International Journal of ChemTech Research
CODEN (USA): IJCRGG ISSN: 0974-4290
Vol.9, No.03 pp 506-516, 2016

Removal of Chromium (VI) from Polluted waters using Adsorbents derived from Chenopodium album and Eclipta prostrate Plant Materials

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Abstract: The adsorption abilities of adsorbents pertaining to leaves and stems of Chenopodium album and Eclipta prostrate plants towards Chromium (VI) from polluted waters have been investigated with respect to various parameters such as equilibration time, pH and adsorbent concentration and optimized. At low pHs, the extraction is found to be more. With the sorbents derived from Chenopodium album plant, the % removal of Chromium (VI) is found to be 89.0% with powder of leaves (at pH:2, Eq. Time: 2.5 hrs and sorbent conc. 2.5 g/L) and 93.0% with stems powder (at pH:2, eq. time: 2.0 hrs and sorbent conc. 2.0 g/l). The maximum extraction of 92.0% is observed for leaves powder of Eclipta prostrate plant at pH: 2, eq. time: 3.0 hrs and sorbent conc. 3.0 g/l. With the stems powder of Eclipta prostrate plant, the % removal is found to be 95.0% at pH: 2, eq. time: 2.5 hrs and sorbent conc. 2.5 g/l. The extractions are not affected by co-cations generally present in the waters even when they are in 5-fold excess. Monovalent anions and carbonate have also not interfered the extraction but sulphate and phosphate ions have shown interference to some extent. The adoptability of the procedures developed in this work have been tested with respect to some industrial effluents and polluted waters and found to be remarkably successful.

Key Words: Chromium (VI) Pollution, Control, Bio-adsorbents, Chenopodium album and Eclipta prostrate plants, Applications.

K. Ravindhranath *et al* /International Journal of ChemTech Research, 2016,9(3),pp 506-516.

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