

Treatment of chromium(VI) waste by the non-living biomass of water hyacinth roots

ABSTRACT

The potential of the biomass of non-living water hyacinth roots *Eichhornia crassipes*, as a biosorbent for Cr(VI) from synthetic solution and electroplating waste was investigated under batch conditions. Various factors affecting sorption of chromium were studied. They include effect of pH, initial concentration, dosage, agitation rate, temperature and the presence of other anions. The optimum pH for the sorption was found to be 2.0 and sorption decreased rapidly as the pH of the solution was increased. Data obtained from sorption isotherms conformed to Langmuir sorption model which implied a monolayer coverage and the maximum sorption capacities of Cr(VI) were 8.93 and 8.92 mg/g for synthetic solution and electroplating waste respectively. A continuous flow study showed that water hyacinth root was effective in removing Cr(VI) from electroplating waste.

Keyword: Water hyacinth roots; *Eichhornia crassipes*; Biosorption; Chromium (VI); Electroplating waste