Column study on the sorption of Cr(VI) using quaternized rice hulls

ABSTRACT

The potential of quaternized rice hulls in removing Cr(VI) from synthetic solution, chrome electroplating waste and wood preservative waste was investigated in column experiments. Increase in column bed depth resulted in a longer service time at C(t)/C0 = 0.5 breakthrough. The presence of SO_4^{2-}, which is commonly present in the wastes, interfered with the sorption process and resulted in earlier breakthrough. The sorption process was flow-rate independent within the scope of this study. In the regeneration study, Cr(VI) could be recovered almost quantitatively by eluting with a 0.5 M NaOH solution and the column could be used repeatedly for at least five cycles.

Keyword: Sorption; Desorption; Cr(VI); Quaternized rice hulls; Column study