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## SPHAGNUM MOSS PEAT: A GREEN AND ECONOMICAL SORBENT FOR REMOVAL OF HEAVY METALS (Cd and Cr) FROM WASTEWATERS

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### Abstract

Sphagnum moss peat, an inexpensive natural material, was used to remove cadmium and chromium from aqueous solutions. The sorption experiments in batch systems show that the removal performances of the peat were greatly dependent upon the pH solution and metal ion concentration. The removal of Cd (II), Cr (III) and Cr (VI) species occurs by different mechanisms. The Cd (II) and Cr (III) ions were sorbed onto the peat in solutions with pH 4.5-5, which suggest that the carboxyl groups play a main role in binding of metal ions (ion exchange mechanism). The Cr (VI) as hydrochromate anion was removed using peat in solutions with pH=1-2 via reduction to Cr (III) and sorption. These processes were investigated in terms of equilibrium and kinetics. In addition, FTIR spectra for peat samples before and after sorption were used to show conclusive evidence of metal ions binding. The results of this investigation reveal the capability of sphagnum moss peat to remove highly toxic heavy metals from aqueous media.

*Key words:* cadmium, chromium, sphagnum moss peat, sorption mechanism

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