Effect of cadmium and chromium adsorption on the zeta potential of clays

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\textbf{ABSTRACT}

The aim of this study was to evaluate the efficiency of two Tunisian mineral clays to capture chromium(III) and cadmium(II) present in landfills leachate and to understand the corresponding mechanisms of sorption. Kinetic studies, adsorption isotherms, particle size distributions as well as zeta potential evolution with adsorbed amount, and pH were studied. The kinetic study revealed that a pseudo-second-order model agrees with the heavy metals adsorption experimental values for both clays. Negative zeta potential was obtained over the entire studied pH range (3–8) and no isoelectric point was found. Adsorption of Cr(III) had a significant effect on the zeta potential which goes from negative values to positive ones, indicating specific adsorption. Upon the addition of Cd(II), the clay surfaces stayed negatively charged whatever the cadmium concentration.

\textbf{Keywords}: Zeta potential; Smectite; Illite; Chromium; Cadmium; Sorption

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