Removal of Chromium (VI) from Water onto Activated Carbon by Adsorption in Dynamic Mode

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Abstract Hexavalent chromium pollution from industrial waste water is a serious problem as it can cause adverse effects on the environment. Several methods are used to reduce the harmful effects of this pollutant, especially physico-chemical methods, such as adsorption technology. The present study aims to remove Cr (VI) from industrial sources in a fixed-bed column of activated carbon. The experiments were carried out at natural pH and temperature with a flow rate (5, 10, and 20 mL/min) and bed height (3.5 cm). Breakthrough curves for feed concentrations (0.01, 0.03, and 0.05 mol/L) were investigated. The results indicated a marked decrease up to 99%. The value of the flow constant for the Thomas model decreased with the increase in the concentration of the incoming substance, but increased with the increase in the flow rate.

Keywords Hexavalent chromium · Activated carbon · Adsorption · Breakthrough curve · Fixed-bed column

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