Sorption of chromium (VI) by spent grain under batch conditions

ABSTRACT

Batch experiments were performed to evaluate the ability of spent grain to remove chromium (VI) from aqueous solution. Parameters investigated include pH, contact time, sorbent dosage, agitation rate, and the presence of other anions. Application of the Langmuir isotherm to the Cr(VI)ï spent grain system provided a maximum sorption capacity of 18.94 mg/g. This value compares favorably with other reported values for low-cost materials. Anions such as phosphate, arsenate, nitrate, and sulfate were antagonistic toward the uptake of Cr(VI) by spent grain. It was successful in removing Cr(VI) from a sample of electroplating waste.

Keyword: Low-cost material; Spent grain; Sorption; Chromium