



Zinc sorption onto different particle sizes of compost from aqueous solution

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ABSTRACT

The zinc adsorption capacity and kinetics of different compost particle sizes were investigated using batch and column experiments. The results indicated that the particle size influenced the sorption process. The surface area per unit weight of the sorbent increased as the particle size decreased. The adsorption equilibrium data fitted very well both the Langmuir and Freundlich isotherms. The estimated sorption capacities of different compost particle size in the column experiment were 22.9 mg/g (0.60 mm), 17.3 mg/g (1.18 mm) and 12.7 mg/g (4.75 mm) compared with Langmuir isotherm predictions of 26.6 mg/g (0.60 mm), 18.7 mg/g (1.18 mm) and 15.6 mg/g (4.75 mm). It is evident that compost has a high affinity for zinc which reflects the physicochemical properties of the compost particles. These properties indicate that weak physical sorption and strong chemical sorption is likely to occur between zinc and the compost particles.

Keywords: Compost; Particle size; Sorption capacity; Zinc; Sorption kinetics; Equilibrium isotherms

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