Adsorption Characteristics of CuII on to Industrial Wastewater Sludges

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摘要.

Abstract

Primary, activated and aerobically digested sludges from an industrial wastewater treatment plant were collected to investigate their adsorption characteristics towards CuII through the use of batch experiments. Results show that the CuII adsorption rate was fast and could be described by a modified Freundlich equation. The rate of adsorption decreased with increasing surface loading. It was observed that the pH value of the solution was the key factor affecting the adsorption characteristics. The Langmuir adsorption model described the equilibrium adsorption well. The sludge adsorption capacities of CuII were in the range 17-59 mg/g and were affected by the ionic strength. Values of ΔG^0 ranging from -7.24 to -7.65 kcal/ mol suggested that the adsorption is a physical process which is simultaneously enhanced by the electrostatic effect. The binding strength for CuII adsorption was proposed as: digested sludge > secondary sludge > primary sludge.