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Heavy metals and adsorbents effects on activated sludge microorganisms

Abstract

The sorption of Cu(II) and Cd(II) from synthetic solution by powdered activated carbon (PAC), biomass, rice husk (RH) and activated rice husk (ARH) were investigate under batch conditions. After activated by concentrated nitric acid for 15 hours at 60-65°C, the adsorption capacity for RH was increased. The adsorbents arranged in the increasing order of adsorption capacities to the Langmuir Q° parameter were biomass > PAC > ARH > RH. The addition of adsorbents in base mix solution had increased the specific oxygen uptake rate (SOUR) activated sludge microorganisms with and without the presence of metals. The increased of SOUR were due to the ability of PAC and RH in reducing the inhibitory effect of metals on microorganisms and provide a reaction site between activated sludge microorganisms and substrates.

Keywords

Adsorption; Bacteria; Biodegradation, Environmental; Biomass; Carbon; Metals, Heavy; Oryza sativa; Oxygen; Sewage; Water Pollutants; Water Pollution