

EFFECT OF CHROMIUM (VI) ON HETEROTROPHIC MAXIMUM SPECIFIC GROWTH RATE (μ_m) IN ACTIVATED SLUDGE SYSTEMS

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ABSTRACT

The effect of hexavalent chromium, Cr(VI), on the maximum specific growth rate, μ_m of heterotrophic biomass was studied in batch tests conducting under high ($=10$) and low (<2) substrate to biomass ratios (S_0/X_0). The effect of sludge age and acclimatization of biomass to Cr(VI) on the bacterial kinetics was also studied. The μ_m values were determined by measuring oxygen uptake rate (OUR) and volatile suspended solids (VSS) simultaneously. Concentrations of Cr(VI) equal or higher to 10 mg l^{-1} inhibited severely μ_m values. The acclimatization of biomass and the selection of high operating sludge age reduced the inhibitory effect of Cr (VI). Concentrations of Cr(VI) up to 10 mg l^{-1} stimulated the μ_m values of the microorganisms for sludge ages of 20 days.