APPLICATION OF BIOFILMS IN REMOVAL OF HEAVY METALS FROM WASTEWATER IN STATIC CONDITION

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The aim of the research was to utilize biofilms as a model in ecotoxicology to remove selected heavy metals (Cd, Cu, Cr, Zn and Pb) from wastewater in a static condition. Biofilms were grown in three graded concentrations of the metal leachates (0.625, 0.417 and 0.250 %), harvested after 1, 2 and 3 weeks and analyzed for heavy metals. Mean accumulations peaked on Day 21, and of Cd ranged from 0.000 to 0.040 (mean = 0.00837 ± 0.002), Cu from 0.000 to 0.212 (mean = 0.03929 ± 0.012), Cr from 0.000 to 0.500 (mean = 0.05821 ± 0.021), Zn from 0.000 to 1.456 (mean = 0.31833 ± 0.109) and Pb from 0.000 to 0.099 (mean = 0.02129 ± 0.006) mg/g in resultant biofilm formations. Accumulation of the metals increased significantly with time \[F(205.59) > F_{crit}(3.95)\] at the 95% confidence interval. Those of Pb was significantly higher in the 0.625% leachate mixture than control (Sig F = 0.034) at P < 0.05, even as those of Cd and Cu were slightly higher in the concentrations than control. Biofilm model removed small amounts of metals from wastewater stream in static condition.

**Key words:** heavy metals, biofilms, bioaccumulation, wastewater, static condition.

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