Formation of the Activated Sludge Biocenosis During Landfill Leachate Pre-Treatment in SBR

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Abstract: It has been proved that at the established SBR technological regime, 74–71% effectiveness of the removal of impurities expressed as COD (in the influent 955–1059 mg O₂·dm⁻³, respectively) can be obtained at $B_x$ 0.40–0.45 mg COD·mg⁻¹·d⁻¹. Ammonium nitrogen, in the concentration of up to 292 mg NH₄-N·dm⁻³ was removed in 93% at $B_x$ 0.40–0.96 mg COD·mg⁻¹·d⁻¹. The simultaneous denitrification described by 93% effectiveness of total nitrogen removal occurred, too. Activated sludge had the attributes of an inengaged sludge in leachates pretreatment at $B_x$ between 0.40–0.45 mg COD·mg⁻¹·d⁻¹. Its biocenosis consisted of zoogaeal and filamentous bacteria, protozoa Mastigota nd., Difflugia nd., Aspidisca sp., Lionotus sp., Oxytricha sp., Opercularia sp., Tokophrya sp. and rotifera. At the critical values of $B_x$ (0.96–1.64 mg COD·mg⁻¹·d⁻¹), when leachates pretreatment effectiveness sharply dropped, biocenosis of activated sludge consisted only of zoogaeal and filamentous bacteria, hyphae fungi, Mastigota nd. and Opercularia sp.