

Biokinetic parameters as an indicator to ammonia toxicity in leachate treatment using membrane bioreactors

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Key words: ammonia toxicity, bacterial inhibition, biokinetic coefficients, leachate treatment, membrane bioreactor

Abstract

The impact of ammonia toxicity in the biological leachate treatment was evaluated using biokinetic and pilot-scale membrane bioreactor. The biokinetic parameters were measured using respirometer by varying the substrate and ammonia concentration. A maximum specific growth rate of 0.42 d^{-1} was obtained and was found to be lower than that of the domestic wastewater (6 d^{-1}) indicating the difficulty in biodegradability. A bacterial inhibition of 28% occurred at ammonium concentration of $1,000\text{-}2,000 \text{ mg l}^{-1}$, when toxicity was evaluated using respirometer. Further, when leachate was treated in membrane bioreactor, similar pattern of bacterial inhibition was observed.