

**IN SEWER PROCESSES: ESTABLISHING HALF SATURATION CONSTANT  
FOR NITRATE ( $K_{NO_3}$ )**

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I hereby declare that this report has not been submitted, either in the same or different form, to this or any other university for a degree and except where reference is made to the work of others, it is believed to be original.



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## ABSTRACT

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### IN-SEWER PROCESSES: ESTABLISHING HALF SATURATION CONSTANT FOR NITRATE ( $K_{NO_3}$ )

The flows of wastewater originating from water supply of a community and runoff from precipitation on urban surface are typically collected and conveyed to treatment and disposal. The system for this purpose is called a sewer network or a collection system that consists of individual pipes – sewer lines – and a number of installations like inlet structures and pumps to facilitate collection and transport (Hvitved-Jacobsen, 2001).

The main objective of this project is to study microbial transformations under anoxic condition particularly to establish the denitrification rates and half saturation constant in bulkwater phase of municipal wastewater. Since anoxic conditions do not normally exist in sewer, sodium nitrate is added to the sample to induce the anoxic condition. Test were conducted on 5 different wastewater samples taken from wastewater treatment plant (WWTP) at Section 23, Shah Alam and WWTP located at Jalan Ilmu, UiTM, Shah Alam. Test were performed using batch reactors to measure denitrification rate under conditions of excess electron donor and limited electron acceptor. Nitrate and nitrite concentration in the samples was determined by ion chromatography using 790-COM respectively. The average  $K_{NO_3}$  value determined from the 20 graphs is  $0.5 \text{ g NO}_3\text{-N/m}^3$ .

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