

Nitrogen mass balance in waste stabilization ponds
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This study was carried out to determine nitrogen mass balance in waste stabilization pond system at the University of Dar es Salaam by using a mathematical model. The study was aimed to elucidate the biological nitrogen transformation mechanisms, which are effective for removal of nitrogen in the ponds. It was found that the major removal mechanism of nitrogen in primary facultative pond FI was through sedimentation, which was responsible for 73.7% of the total nitrogen removed. Denitrification and volatilisation were responsible for 25.8% and 0.5% of the total nitrogen removed from the primary pond, respectively. It was also found that denitrification was the major nitrogen removal mechanism in secondary facultative ponds (F2 and F3) and maturation pond, M, which contributed about 95.0%, 89.4%, and 89.1% of the total nitrogen removed from these ponds, respectively. Sedimentation was responsible for removal of about 1.2%, 2.8%, and 3.4% of the total nitrogen removed from the pond, respectively. Volatilisation was responsible for removal of about 3.8%, 7.8%, and 7.5% of the total nitrogen removed from the pond, respectively. The results obtained in this work may be used as a management tool in assessing the levels of nitrogen compounds in waste stabilization ponds and thus protect the water bodies downstream.