Performance of a small wastewater stabilisation pond system in tropical climate in Dar es Salaam, Tanzania.

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Abstract

Waste stabilisation ponds (WSP) are widely used in Tanzania. Their traditional design focuses on BOD and pathogen removal, but nutrient removal is equally important. WSP performance was evaluated to come up with information that would be used to evaluate pond performance. Samples were analysed twice a month for six months. Results showed total and faecal coliform removal by 4 log units (99.96 and 99.98% respectively). There was partial reduction of COD, BOD, (46% and 27% respectively), conductivity and total dissolved solids (32.6 and 32.4% respectively). Variation for the nutrients like inorganic phosphorus, ammonia nitrogen, nitrite nitrogen, and nitrate nitrogen was not consistent and there was practically no reduction, although there is some nitrification taking place. From this study it may be concluded that BOD and nutrients may not be useful to evaluate pond performance. Instead parameters such as conductivity, total dissolved solids, coliform bacteria, dissolved oxygen, pH and chlorophyll would be suitable for that purpose, due to their consistent variation within cells of the pond system. But BOD and nutrient removal are important and have to be improved to enhance treatment in the WSP.