

QUANTITY AND QUALITY OF HOUSEHOLD WASTEWATER IN KUCHING, SARAWAK

Ling T. Y., Nyanti L., and Siew T. F.
Faculty of Resource Science and Technology
University of Malaysia Sarawak
94300 Kota Samarahan
Sarawak

ABSTRACT

In Kuching City, individual septic tank is the most common form of sewerage system for most of the residential areas whereby effluents are discharged into municipal storm drains. However, little is known about the contribution of household wastewater towards river water quality degradation. In this study, key pollutant concentrations and loadings were investigated during the dry season at two housing areas. Results indicated that mean per capita wastewater flowrate (82.5 l/c/d) was about one third of the water consumption rate (222.1 l/c/d). Dissolved oxygen concentration ranged from 1.38 to 4.22 mg/l. Mean pollutant loadings of BOD₅, phosphate, and nitrate were found to be 1,825 mg/c/d, 519 mg/c/d, and 3.3 mg/c/d respectively. With the population of 35,750 from the two housing areas, it is estimated that the mean daily contribution of BOD₅, phosphate, and nitrate are 62.9 kg, 18.8 kg and 115 g respectively. In order to minimize pollution, it is recommended that pollution control at source be implemented.

Keywords: wastewater, household, domestic, water quality

INTRODUCTION

Improper discharge of domestic wastewater into freshwater and eventually to the coastal environments may present a variety of concerns such as high biochemical oxygen demand (BOD), significant nutrient inputs, high suspended solids, and ecosystem disturbance. At present, the Sarawak River and its tributaries are significantly polluted with organic matter resulting in low level of dissolved oxygen.

Domestic wastewater in Kuching was identified as one of the key sources of pollution in a pilot study of DANCED in corporation with NREB Sarawak through Sustainable Urban Development Project (NREB, 2001). It was the first attempt to identify the most significant sources of pollution. However, water quality parameters such as dissolved oxygen, nitrate, and phosphate were not included in the investigation. It was recommended that more detail studies be carried out.

In Kuching, individual septic tank is the most common form of sewerage system for most of the residential areas. The septic tank typically discharges effluent into municipal storm drains without monitoring their effectiveness in the treatment of effluents (Memon and Murtedza, 1999). Therefore, the objectives of this study were to determine the quantity and quality of household wastewater and to quantify the contribution of phosphate, nitrate, and organic matter in terms of BOD₅ from major housing areas in Kuching.