

Quantifying Household Wastewater Pollutants in Kuching

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Abstract

Household wastewater in Kuching is typically channelled into watercourses. Not much is known about the contribution of household wastewater from Kuching City towards water quality degradation. In this study, key pollutants concentrations and loadings were investigated over a two months period of dry season at two housing areas. Results indicated that mean water consumption and wastewater flow were 222.1 l/c/d and 82.5 l/c/d respectively. 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. Recommendations of control and management of household waste to reduce pollution were proposed.

Introduction

Improper discharge of household 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.

Household wastewater in Kuching was identified one of the key sources of pollution in a pilot study done by 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, only grey water from household was studied. Water quality parameters such as dissolved oxygen, nitrate, and phosphate were not included in the investigation. Furthermore, the result of the study was based on limited number of samples that may not be representative of the actual scenario. 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).