EFFECT OF MUNICIPAL EFFLUENT ON THE WATER QUALITY OF MASAKA TOWNSHIP, CENTRAL UGANDA

A THESIS

PRESENTED TO THE COLLEGE

OF HIGHER DEGREES AND RESEARCH

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ABSTRACT

This study was carried out to determine the water quality of Masaka channelized stream based on the physicochemical parameters. Selected heavy metals (zinc, copper, lead and cadmium) were also determined using Atomic Absorption Spectrophotometry. The sampling was conducted during dry and rainy seasons of 2015. Water samples were collected from five stations along the channelized stream and analyzed using standard methods. The following results were obtained; the values of EC (ranged from 302.88±1.41μScm^{-1} to 240.45±0.95 μScm^{-1}.), temperature (24.60 ± 0.083 °C to 23.90 ±0.086 °C), pH (7.32±0.0076 to 6.68±0.0076), TSS (0.046±0.0008 mgl^{-1} to 0.103±0.0009 mgl^{-1}), hardness (110.40±0.77 mgl^{-1} to 114.33±0.88 mgl^{-1}) , COD (100.0±6.36 to 360.48±0.00 mgl^{-1}), ammonia (0.05±0.0082 to 1.44±0.082 mgl^{-1}) nitrate concentration (0.217±0.00082 to 1.704±0.00082 mgl^{-1}), nitrite concentration (0.009±0.00082 to 0.0827±0.00094 mgl^{-1}) and phosphates (ranged from 2.71±0.00082 mgl^{-1} to 2.403±0.0125 mgl^{-1}. The levels of heavy metals contamination were; Zinc (ranged from 0.135±0.015 mgl^{-1} to 0.437±0.0047 mgl^{-1}), copper (0.0867±0.0085 mgl^{-1} to 0.1057±0.125 mgl^{-1}), lead was not detected from most of the samples and cadmium was not detected in all the samples for the seasons. Even though the values obtained for both physicochemical and heavy metals were within the maximum permissible limits of NEMA (2004), USEPA (2005) and WHO (2008) there are signs that, the concentration will go up due to increase population and construction sites taking place in the town. Special attention should be paid to mitigate pollution from these sources as their effects may become significant during seasons and years of low water flow in the stream. Therefore, constant monitoring of the Masaka channelized stream water quality is needed to record any alteration in the quality and mitigate outbreak of health disorders and the detrimental impacts on the aquatic ecosystem.