

NO 2.

GREYWATER TREATMENT USING A NATURAL WETLAND IN GHANA

Muzola Aimé, Esi Awuah, Sampson Oduro-Kwarteng
Department of Civil Engineering, Kwame Nkrumah University of Science and
Technology, Kumasi, Ghana.

*Corresponding author; E-mail: esiawuahrt@yahoo.com

Abstract

The untreated Greywater in Ghana is not properly treated and as a result, the receiving streams and rivers have become polluted. The potential of a natural wetland to treat greywater on the increasing University campus was assessed. The study was conducted over eight week duration. Analysis of COD, BOD, Total Coliform, Turbidity, Suspended Solids, Phosphates, Nitrite-N, Conductivity, Nitrate –N, Mn, Pb, Cu, Fe and Zn were made. The soils were sandy loam with the clay portion of less than the ideal distribution for wetland soil of 15%. The inflow rate was 7.16 l/s and outlet flow rate was 45% of inlet flow rate. The Hydraulic loading rate was 1.4cm/d. Results of the Greywater characteristics analysis showed that the removal efficiencies of the Turbidity, Suspended Solids, COD, BOD, Total Coliform ranged between 85-99%; Phosphates and Nitrite-N ranged between 70-85% ;Conductivity and Nitrate –N were less than 50% ; heavy metals(Mn and Pb) were less than 50%, Cu and Fe ranged between 50-70% , Zn was 78.8% and Cd was found to have accumulated in the soils receiving greywater. Best performance was obtained in the removal of suspended solids with a removal efficiency of 98.8%. A normal hydraulic retention time of 3days was maintained in the system. Most of the parameters under study met the EPA (Ghana) guideline values. The wetland species present in the natural wetland were predominantly *Colocasia esculenta*, *Xanthosoma sp*, *Thala sp.* and *Coix lacryma*.