



Fate of Pathogenic bacteria in onsite biological compact unit treating domestic wastewater

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Abstract : Three stages characterize the level of treatment the domestic wastewater passes through in a biological compact unit (BCU). In the 1st compartment (stage 1) the suspended solids of sewage settles down and anaerobic treatment takes place. In the 2nd compartment (stage 2) the stacked packing material form is the catalyst for enhancing aerobic biological treatment process. The sewage is further settled in last compartment (stage 3) and full investigation was carried out for the BCU performance. The system was operated at a Hydraulic Retention Time (HRT) of 24 h. Final effluent Chemical Oxygen Demand (COD) reduction resulted in a concentration of only 40 ±11 mg/l. Relatively low removal efficiency of Total Coliform (TC), Fecal Coliform (FC), and Fecal Streptococci (FS) was observed in 1st compartment where the anaerobic reaction occurs. The majority of TC, FC, and FS removal was found to have happened in the aerobic and settling compartments resulting to an average count of $4.8 \times 10^3 \pm 2.9 \times 10^2 / 100$ ml for TC, $2.9 \times 10^2 \pm 1.1 \times 10^2 / 100$ ml for FC, and $1.8 \times 10^2 \pm 1 \times 10^2 / 100$ ml for FS in the final effluent at 29 °C. Temperature and concentration of BOD of wastewater that contained pathogens were found to have had important effect on the reduction rates. The main portion of TC, FC and FS removal in the BCU took place in the aerobic compartment assisted by the large contact surface of the packing materials.

Keywords : Sewage onsite, treatment, Pathogenic bacteria, survival rate.