

General Characteristics of Wastewater and Effectiveness of Existing Treatment Methods in Hospitals with Special Reference to Uva Province

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Hospital wastewater has gained a significant attention due to release of untreated toxic chemicals and pathogens to the environment. Although, there are some treatment facilities in hospitals, most of the wastes are partially or untreated before releasing to the environment. This study thus focuses to assess and gives suggestions to improve an existing treatment plant for better function and performance and investigate a hospital that does not have a treatment plant to give suggestions. Wastewaters from Badulla hospital (n=5) and Bibile hospital (n=4) were collected weekly over a period of three weeks (total n=27) where physical (n=5), chemical (n=12) and biological (n=1) parameters were measured. The water quality after the trickling filter in Badulla hospital shows a clear drop for Five-Day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids and pH. The BOD₅, Chemical Oxygen Demand, Total Suspended Solids and PO₄³⁻ of the waters ranged between 21-108 mg L⁻¹, 130-290 mg L⁻¹, 290-904 mg L⁻¹ and 11.84-16.39 mg L⁻¹ respectively and are much higher than Central Environmental Authority standards in Sri Lanka. There were no microbes detected after the Ultraviolet (UV) plant and perhaps due to heavy use of Chlorine in spite of the UV treatment. In Bibile hospital, all discharged water outlets are open to the environment. The BOD₅, PO₄³⁻ and NO₃⁻ of discharged water varies within 8-98 mg L⁻¹, 3.77-8.16 mg L⁻¹ and 0.80-14.60 mg L⁻¹ and are much higher than accepted standards. The treatment plant at Badulla hospital is unsatisfactory to meet the requirements of the accepted standards. Thus, the treatment process of the trickling filter needs improvements in where the rock particles have to be replaced with rock particles in a varying size order. The results indicate that a treatment plant is required for the Bibile hospital with immediate effect.

Keywords: Hospital effluent, Wastewater, Treatment plant, Environment