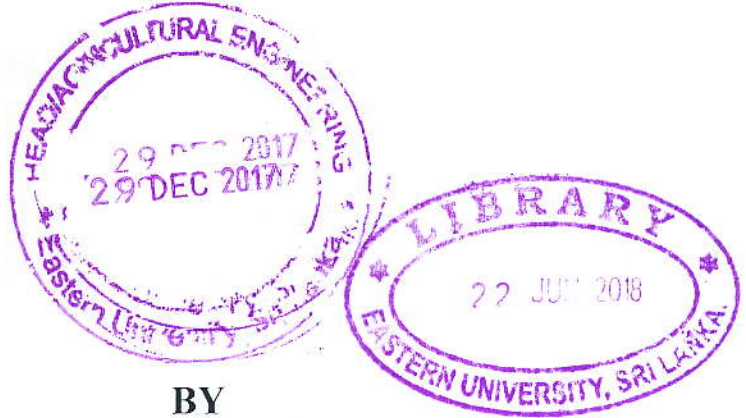


**EVALUATION OF THE EFFICIENCY OF
CONSTRUCTED WETLAND AND ACTIVATED
CHARCOAL FOR THE TREATMENT OF
SLAUGHTERHOUSE WASTEWATER**



BY

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ABSTRACT

Water quality has become a burning issue as best quality water is needed for daily lives. Wastewater from slaughterhouses and meat processing industries has been classified by EPA as the most harmful to the environment. There are several slaughterhouses functioning at Batticaloa District and a huge amount of effluent is generated and discharged openly as raw wastewater on surrounding environment. It pollutes the surface water and soil as well. Therefore, there is a need to treat slaughterhouse wastewater before discharging into water bodies to avoid environmental pollution and human health effects. Even though there are several techniques available for treating this wastewater, suitability and cost for the specific places are questionable. In this context, this study was mainly focused to design, construct and evaluate the efficiency of constructed wetland and activated charcoal treatments for slaughterhouse wastewater on the parameters of chemical oxygen demand (COD), total dissolved solid (TDS), total suspended solid (TSS), nitrate, phosphate, biological oxygen demand (BOD) and pH. Wastewater samples were collected from Eravur slaughterhouse and above mentioned parameters were measured immediately after collection. The samples from both treatments were collected at 3rd, 6th and 9th day to measure the abovementioned parameters.

The results revealed that the activated carbon and constructed wetland were significantly different in their efficacy on the treatment of slaughterhouse wastewater. It was observed that by increasing the retention time of treatment, the removal efficiency of both treatments can also be increased. The maximum removal of COD, TSS, TDS, BOD₅, nitrate and phosphate with constructed wetland were 77.5%, 88.7%, 71.3%, 93.3%, 68% and 85.8% respectively while an activated charcoal reduced COD,

TSS, TDS, BOD₅, nitrate and phosphate as 74.8%, 92.5%, 79.9%, 92.6%, 47.4% and 67% respectively. This study ensured that constructed wetland was found to more efficient than activated charcoal on the removal of COD, phosphate, BOD₅ and nitrate but higher removal efficiency of TDS was observed in activated charcoal. However, the TSS removal efficiency for both treatments was same. Finally, it is concluded that the constructed wetland has better performance than that of activated charcoal for the treatment of slaughterhouse wastewater with the special reference to nitrate, phosphate, BOD and COD. However, activated charcoal show better performance especially for the removal of dissolved solids.

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