
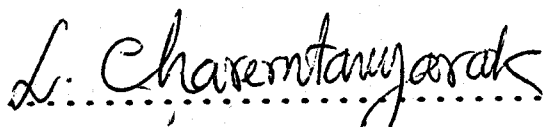


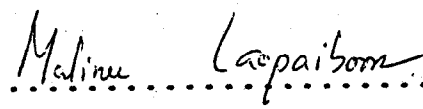
THESIS TITLE : COMPARATIVE EFFICIENCY OF DIFFERENT MEDIA  
IN ANAEROBIC FILTER SYSTEM FOR DORMITORY  
WASTEWATER TREATMENT

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## ABSTRACT

The objective of this research was to determine the efficiency of four different kinds of media in the anaerobic filter for treating the student's dormitory wastewater in Khon Kaen University. The selected media in this study were Cross Flow (CF), Polystyrene Foam (PF), Plastic Saline Bottle (PSB), and Stone No.2 (ST-2). Four cylindrical reinforced concrete tanks, 1 m. in diameter and 2 m. in height each, were constructed and used as the filters. A filter tank was calculated to have a hydraulic retention time of 24 h. and was filled with each kind of media, 1.20 m. high.

The wastewater from dormitory septic tank flowed through each filter tank in the upflow manner and the continuous flow rate was controlled by an electric water pump. The efficiency of media for the organic removal in wastewater was determined by the change of percentage of parameters in terms of Chemical Oxygen Demand (COD), Suspended Solids (SS), and Phosphate ( $\text{PO}_4^{3-}$ ).

Results indicated that there was a significant efficiency of organic removal in wastewater when CF, PF, PSB, and ST-2 tested in terms of COD were 28.91, 19.45, 24.54, and 25.41%, respectively and in terms of SS were 60.81, 49.41, 55.34, and 60.33%, respectively ( $\alpha = 0.05$ ). No significant efficiency of  $\text{PO}_4^{3-}$  removal in wastewater was observed. In addition, no significant difference of COD removal among ST-2 and PSB media when compared to CF media except for PF media. No significant difference of SS removal among media was observed. Results also indicated that PSB media were least expensive, approximately 62 bath per  $\text{m}^3$ , when the cost of each media was determined. It can be concluded that the selected media tested in this study had an efficiency for wastewater treatment from dormitory septic tank. The degree of wastewater reduction was found to be different in those media which were highest in CF media, ST-No2, PSB, and PF, respectively. Nevertheless, there are still some involved factors that need to be addressed for a better efficient wastewater treatment.