

3836014 PHES/M : MAJOR : ENVIRONMENTAL SANITATION

: M.Sc. (ENVIRONMENTAL SANITATION)

KEY WORDS : BURNT RICE HUSK / FILTRATION RATE / SURFACTANT /
PHOSPHATE / ORGANIC MATTER

SORAWUT WACHAREENANT : EFFICIENCY OF TWO STAGE - SAND FILTRATION
AND BURNT RICE HUSK SYSTEM IN THE REMOVAL OF SURFACTANT , PHOSPHATE
AND ORGANIC MATTER FROM LAUNDRY WASTE. THESIS ADVISORS :PRAYOON
FONGSATITKUL Ph.D. (Env.Eng.), PAKORN SUMATANURUKAKUL M.Sc. (Parasitology),
CHALASAI HUNGPRASERT M.P.H. (Env.H.). 165 p. ISBN 974-661-975-6

The research aimed at recommending the appropriate depth, filtration rate and maximum loading capacity of a two stage - sand filtration and burnt rice husk system in the removal of surfactant, phosphate and organic matter from laundry waste. The results showed that the efficiency of sand filtration in the removal of suspended solids was about 63.3 %. Changing the sand bed in the sand filtration system after each run had no effect on the low removal efficiency of surfactant, phosphate and organic matter. Moreover, burnt rice husk beds of 15, 30 and 45 cm depth and filtration rates of 0.25, 0.5 and $1 \text{ m}^3/\text{m}^2/\text{hr}$ were tested. It was found that the depth of 45 cm and the filtration rate of $0.5 \text{ m}^3/\text{m}^2/\text{hr}$ were the optimum removal conditions, resulting in the removal of 100 % , 98.96 % and 87.96 % of surfactant, phosphate and organic matter, respectively. The depth and filtration rate showed significant interactions with each other ($p<0.05$) in the removal of organic matter and phosphate, but not for the surfactant. Under the condition of increasing the depth, a lower filtration rate tended to provide a better removal efficiency for organic matter and worse removal efficiency for the phosphate.

Tests of the regeneration of the burnt rice husk system by using different quantities of water or different concentrations of nitric acid, indicated that the system could only remove the surfactant and organic matter but not the phosphate.