

4036221 PHET/M : MAJOR : ENVIRONMENTAL TECHNOLOGY ;
M.Sc. (ENVIRONMENTAL TECHNOLOGY)
KEY WORDS : ANAEROBIC SEQUENCING BATCH REACTOR/
ANOXIC TIME / SOLID RETENTION TIME
ANUSITTH YAMASMIT : EFFICIENCY OF AN ANAEROBIC
SEQUENCING BATCH REACTOR (AnA^2/O^2 SBR) IN THE TREATMENT OF
TEXTILE WASTEWATER. THESIS ADVISORS: PRAYOON FONGSATITKUL
Ph.D.(Env. Eng.), CHAOVAYUT PHORNPIMOLTHAPE M.S.I.E.(Operations
Research), UDOMSAK KONGMUANG M.Sc.(Env. Eng.), 173 p.
ISBN 974-664-390-8

The objectives of this research were to study the efficiency of an Anaerobic Sequencing Batch Reactor (AnA^2/O^2 SBR) in the removal of COD, TKN, TP and color from textile wastewater. The 3 similar Anaerobic SBRs were operated on 4-hours static fill, 17-hours react, 1.5-hours settle, 0.5-hour draw out and 1-hour idle period. This experimental research was planned to be 3^2 factorial design with 9 running conditions and scheduled to control the anoxic time at 2, 4 and 6 hours, and the Solid Retention Time (SRT) was set at 40, 60 and 80 days.

Under 9 running conditions, the results showed that the COD, TKN, TP and color removal efficiency were in the range of 80.7-90.7%, 82.0-94.6%, 56.8-79.9% and 29.1-51.5%, respectively. From statistical analysis of data, under 2, 4 and 6-hours anoxic time, it was found that there were no significant differences in COD, TP and color removal efficiency ($p < 0.05$), but the removal efficiency of TKN at the 2-hours anoxic time was significantly higher than that of 4 and 6-hours anoxic time ($p < 0.05$). In addition, under 40, 60 and 80-days SRT, it was illustrated that the efficiency of COD and color removal at 80-days SRT was significantly higher than that of 40 and 60-days SRT ($p < 0.05$). However, the efficiency of TKN and TP removal at 40 and 80-days SRT was significantly lower than that of 60-days SRT ($p < 0.05$).

The optimum running condition of Anaerobic SBR in the treatment of textile wastewater was at 2-hours anoxic time and 60-days SRT which yielded COD, TKN, TP and color removal efficiency of 82.8%, 94.6%, 75.3% and 34.5%, respectively.