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(ENVIRONMENTAL SANITATION)

KEY WORD : SEQUENCING BATCH REACTOR/ANOXIC TIME/SOLID  
RETENTION TIME

CHANSAK KARCHARNUBARN : EFFICIENCY OF A SEQUENCING BATCH  
REACTOR IN THE REMOVAL OF ORGANICS, NITROGEN AND PHOSPHORUS  
FROM MACKEREL WASTEWATER PLANT. THESIS ADVISORS : PRAYOON  
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The objectives of this research were to study the efficiency of 3 similar sequencing  
batch reactors (SBRs) in the removal of COD, TKN and TP from a mackerel wastewater plant.  
The 3 similar sequencing batch reactors (SBRs) were operated on 5 - hours static fill, 16-hours  
react, 1 hour settle, 1 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 3, 4 and 5 hours, and the solid retention time (SRT) was set at 10, 20 and 30 days.

The results showed that the COD, TKN and TP removal efficiencies were in the  
range of 97.44-98.74%, 68.15-97.80% and 98.50-99.69%, respectively. In addition, statistical  
analysis of the data also illustrated that the efficiencies of COD and TKN removals at the 3-hours  
anoxic time were significantly higher than those at 4-hours and 5-hours anoxic time  
(P-value < 0.05) whereas no significant differences of TP removal efficiencies were found for the  
3, 4 and 5-hours anoxic times. The efficiencies of COD removal at the 10-days and 20-days SRT  
were significantly higher than that of 30 days SRT (P-value < 0.05) whereas the efficiencies of  
TKN and TP removals at the 10-days SRT were significantly lower than those at 20-days and  
30-days SRT (P-value < 0.001). The most suitable running conditions of the SBR were at  
3-hours anoxic time and 20-days SRT which yielded COD, TKN and TP removal efficiencies of  
98.70%, 97.44% and 99.28, respectively.