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BUDSAYAMAS MOONGTHANYA : AMMONIA AND PHOSPHATE
REMOVAL FROM DOMESTIC WASTEWATER BY ION EXCHANGE. THESIS
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The purpose of this study is to determine the efficiency of ion exchange in a column 2.5 cm in diameter and each resin 20 cm high in the removal of ammonia and phosphate from domestic wastewater. The effect of pH at 5, 7 and 9 was also studied. Two levels of ammonia concentration, 35 and 45 mg/l and two levels of phosphate concentration, 25 and 35 mg/l were prepared for the study. Continuous flow rates of 8 and 15 ml/min were used. The efficiency of resin before and after regeneration with 10 percent of NaCl two times were compared. The filtrates were collected every 4 hours until the concentration of ammonia and phosphate were lower than 75 percent of the initial concentration.

The results show that the pH has an effect on removal efficiencies of ammonia and phosphate. The optimum pH was 7, at which 96.08% of ammonia and 95.26% of phosphate can be removed. When the concentration of ammonia and phosphate increased the efficiency of removal decreased. When the flow rate in column increased the efficiency of removal decreased. It was also found that the initial concentration of ammonia, 35 mg/l, and phosphate, 25 mg/l, with flow rate of 8 ml/min and pH 7 gave the highest efficiency removal. The new resin and the regenerated resin have the same removal in efficiencies. The effluent from regeneration which contained high N and P can be used for fertilizer.