

Pintip Kaewkamthong 2010: Removal of Heavy Metals from Wastewater by Egg Shell Membrane. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Sanya Sirivithayapakorn, Ph.D. 72 pages.

This research was carried out to investigate the removal of heavy metals in synthetic wastewater by egg shell membrane (ESM). The effect of operating parameters, such as contact time, initial pH and initial concentrations in batch experiments were investigated.

The results from this work showed that the contact time of approximately 30 minutes was required for egg shell membrane (ESM) to reach the equilibrium for cadmium and zinc removal in synthetic wastewater. The optimum initial pH for adsorption of cadmium and zinc were 6.0 and 5.0, respectively. The kinetics of cadmium and zinc removal were studied using rate laws for chemical reaction. The results indicated that the initial removal rates of both cadmium and zinc were first-order with  $K_L a$  values of 0.0031 and 0.0096  $\text{min}^{-1}$ , respectively.

The removal efficiencies of both metals on ESM decreased with increasing the pH and concentration. The system equilibrium could be explained by Freundlich isotherm for cadmium and zinc.

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