

Siriporn Kasemchotipat 2011: The Utilization of Chitosan from Shrimp Shell and Commercial Chitosan to Remove Formaldehyde from Aqueous Solution. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment.  
Thesis Advisor: Associate Professor Kanita Tungkananurak, M.Sc. 101 pages.

The objective of this research is to study the use of chitosan to adsorb formaldehyde. In this study, chitosan from shrimp shell and commercial chitosan have been investigated. Factors influencing formaldehyde adsorption were optimized including pH (3-9), mixing speed (50-200 rpm), shaking time (10-120 min), contact time (10-120 min) and amount of adsorbent (10-50 g/L). Under the optimal condition by 5 g. of chitosan from shrimp shell, pH 3-9, 50 rpm of mixing speed, 10 min of shaking time, 10 min of contact time, 48.34% of the formaldehyde was absorbed and 3 g. of commercial chitosan pH 3-8, 150 rpm of mixing speed, 60 min of shaking time, 30 min of contact time, 53.10% of the formaldehyde was adsorbed. The adsorption of formaldehyde in batch process by both types of chitosan followed Langmuir isotherm. Continuous flow experiment of both chitosan were conducted having wastewater flow rate of 80, 120 and 160 ml/min, respectively on both chitosan. It was found that at flow rate of 80 ml/min. was the best condition to remove formaldehyde by both chitosan. The break through point and exhaustion point of chitosan from shrimp shell and commercial chitosan were found at 2.4 and 3.2 L respectively and 8.80 and 9.60 L respectively. In addition, chitosan from shrimp shell can remove formaldehyde in TOC Glycol Co.,Ltd wastewater effectively (97.80 % adsorption).

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Thesis Advisor's signature