

Jongporn Mahadlek 2012: Adsorption of Fat and Oil from Canteen Wastewater in Kasetsart University by *Typha angustifolia* Linn. and *Cyperus corymbosus* Rottb. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Nipon Tungkananuruk, Ph.D. 84 pages.

This research was to study the fat and oil removal from canteen wastewater in Kasetsart University using low-cost bioadsorbents as *Typha angustifolia* Linn. and *Cyperus corymbosus* Rottb. Several factors influencing the fat and oil adsorption were including pH (3-10), mixing speed (50-200 rpm), shaking time (10-120 min), contact time (10-120 min), concentration of fat and oil (5,000-25,000 mg/L) and adsorbent dose (0.5 -3 g/L). It was found that the optimal conditions for fat and oil adsorption by 0.5 gram of *Typha angustifolia* Linn. and 1 gram of *Cyperus corymbosus* Rottb. were pH 7, 100 rpm of mixing speed for *Cyperus corymbosus* Rottb. and 150 rpm of mixing speed for *Typha angustifolia* Linn., 30 min of shaking time, 30 min of contact time, Under the conditions, the adsorption efficiency of oil in 5,000 mg/L of synthetic wastewater by *Typha angustifolia* Linn. was 63.71% and in 15,000 mg/L of synthetic wastewater by *Cyperus corymbosus* Rottb. was 87.49 %. The adsorption in batch process for both absorbents followed Freundlich isotherms and Langmuir isotherm. Under this adsorption process, *Typha angustifolia* Linn. and *Cyperus corymbosus* Rottb. can remove fat and oil in canteen wastewater from Kasetsart University at 32.23% and 43.80% respectively. For application, the adsorption efficiency of oil by *Typha angustifolia* Linn. 140 g and *Cyperus corymbosus* Rottb. 80 g in 10 L of canteen wastewater in Kasetsart University was 50.27% and 86.26% respectively. Both *Typha angustifolia* Linn. and *Cyperus corymbosus* Rottb can be used to remove not only oil in wastewater but also other parameters such as COD, TDS, TSS and conductivity can be reduced.

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Thesis Advisor's signature