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PORNPHAN PHANPHATTRAPONG : INFLUENCE OF TEMPERATURE AND NUTRIENT ON BIOREMEDIATION OF CRUDE OIL IN SOIL BY *CANDIDA TROPICALIS*. THESIS ADVISORS : SUCHART UPATHAM Ph.D., PRAYAD POKETHITIYOOK Ph.D. 110 p. ISBN 974-662-568-3

Environmental parameters, temperature and nutrient, were investigated as the influencing factors on the bioremediation of Tapis crude oil in soil by the yeast *Candida tropicalis*. In this study, all experiments were performed in the designed slurry reactors and incubated for 50 days in the dark. The temperature points of 20°, 30°, and 40°C were selected for studying the influence of temperature. The results showed that the highest level of crude oil removal by *C. tropicalis* was obtained at 30°C (78.18%); lower levels of removal were achieved at 40°C (73.63%) and 20°C (71.76%). The major peak hydrocarbon (MPHC: C_{17}-C_{18}) removal percentages were 69.69, 77.97 and 73.47%, at 20°, 30°, and 40°C, respectively. The rates of crude oil degradation by *C. tropicalis* in soil were 0.61, 0.66, and 0.63 mg/day at 20°, 30°, and 40°C, respectively. Abiotic loss process also affected the degradation of crude oil. The removal percentages of crude oil under abiotic loss were 56.09, 59.60, and 56.24% at 20°, 30°, and 40°C, respectively. Nutrient supplementation was conducted by the addition of nitrogen as NH_4Cl and phosphorus as K_2HPO_4. The results indicated that the addition of nutrient stimulated the rate and extent of hydrocarbon degradation. The removal percentages of crude oil with added nutrient were 84.59, 88.13, and 84.94% at 20°, 30°, and 40°C, respectively. The average rate of hydrocarbon degradation of the system with added nutrient (0.73 mg/day) was higher than that obtained from the system without added nutrient (0.63 mg/day). The results showed that nutrient supplementation provided stronger effect on crude oil biodegradation than temperature modification factor. Furthermore, the results also exhibited the potential of the designed reactors for soil treatment and recovery from hydrocarbon contamination.