Thesis Title	The Treatment of Combined Oily Sludge and Bio-sludge Under Aerobic Condition.
Thesis Credits	6
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Abstract

This thesis deals with the studies of acrobic biodegradation of hydrocarbon in the combined sludge of oily sludge, and bio-sludge, collected from a dissolved air flotation unit and wastewater treatment unit. The experimentation was conducted in a laboratory, where incubated temperature was 30°C and incubated in the rotary shaker (200rpm) for 42 days. The results indicated that characteristic of hydrocarbon in oily sludge showed more complex composition than bio-sludge. Oily sludge composed of C_{16}-C_{30} while bio-sludge lack of some odd number of hydrocarbon atom such as C_{17}, C_{19} and C_{21}. The results of biodegradation showed that the most appropriate growth of Hydrocarbon Degradation Microorganism (HDM) and the reduction of total hydrocarbon occurred at a concentration of 5% oil, which reduce the total hydrocarbon by 11% on day 42. When concentration of oil was increased, the growth of HDM could adjust themselves better than other microorganisms. The C:N ratio of 10:1 by added $(NH_4)_2SO_4$, could increase the reduction of total hydrocarbon by 54% on day 21, The addition of nitrogen could stimulate HDM growth by 3 log-cycle. The results of hydrocarbon degradation studied by gas chromatography clearly showed the reduction of some hydrocarbon atom. The study of effect of surfactant on biodegradation, SDS and Triton X-100, inhibited HDM growth as well as the degradation of hydrocarbon.

To utilize degraded sludge as compost was inappropriate, because original C:N ratio was less than C:N ratio of the compost, In order to use the aerobic sludge system to produce compost, higher C:N ratio should be initially adjusted.

Keywords : aerobic degradation / oily sludge / bio-sludge / surfactant / hydrocarbon.