Nuntana Wijittassana 2007: Treatment of Activated Sludge from Petrochemical Industry using Co-composting Process. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Mr. Suchat Leungprasert, Ph.D. 95 pages.

This study is to determine the optimum aeration rate , the optimum ratios of petrochemical activated sludge to composting material , composting efficiency , compost quality and toxicity. The experimental conditions include variation of aeration rates of 0.2 ,0.4 and 0.6 m^3 /kgVS/d and addition amount of sludge 0, 5 ,10 and 15 % by volume. Composting efficiency was analysed by percent removal of organic carbon ,total petroleum hydrocarbon that is a mainly component of sludge from petrochemical industry wastewater treatment plant and volatile solids. Compost quality was analysed in terms of nitrogen , phosporus , potassium , C / N ratio , moisture and heavy metals, and then was compared to the fertilizer standard of Department of Agriculture.

The optimum aeration rate was 0.4 m^3 /kgVS/d . At 5 % sludge mixture , it was found that volatile solids, organic carbon and total petrolium hydrocarbon were reduced 62.26% ,52.79% and 60.16% , respectively for 41 days of composting period. The compost product contains 1.92% of nitrogen ,0.55 % of phosporus , 0.58 % of potassium ,18.59 C / N ratio ,and 42.35 % moisture. Heavy metals including arsenic , cadmium , copper , lead , mercury were about 3.00 , 0.10 , 2.32 , 2.00 , 0.19 mg/kg , respectively .The compost product meets the fertilizer standard of Department of Agriculture. The germination test results showed that compost product is no toxic to tested seeds.

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