

Sakkasem Saimai 2009: A Study on the Adsorption System for the Volatile Organic Compounds in a Hazardous Waste Storage Tank. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program.
Thesis Advisor: Associate Professor Montree Pirunkaset, M.Eng. 121 pages.

Research purpose is used for studying the adsorption system Volatile organics compound of oil container which's received from separation oil from waste water treatment before disposal. Studying method is estimated the overall working loss calculation an breathing loss during room temperature including the design of volatile organics compounds control system before emitting into atmosphere. For protection of the employee and control environmental.

In order to analyze the volatile organics compound in the waste water treatment system on the sampling water from the waste water treatment system. The sampling results were found that total loss of Benzene 5.48×10^{-3} , Ethylbenzene 3.54×10^{-5} , Styrene 1.65×10^{-4} , Toluene 1.38×10^{-3} , o-Xylene 9.00×10^{-6} , m&p-Xylene 7.92×10^{-6} , Phenol 1.28×10^{-13} and m&p-cresol 1.65×10^{-15} Mg/yr respectively. Then it would be to calculate the emission VOC. These data were use to design the depth of activated carbon at the flow rate of 100, 200, 300, 400, 500 and 600 ft³/min. Under the design conditions at 200 ft³/min., total pressure loss 10 inch water and the adsorption period of 30 days, it was found that the depth of activated carbon was 3.13 ft, the velocity of VOC through activated layer 75 ft/min and the cross sectional area of 2.67 ft².

It can also selected the total pressure drop of 12, 14, and 16 inch water for design conditions. Accordingly, we would obtain other operation points as the depth of activated carbon was 3.50, 3.75 and 3.94 ft, the velocity of VOC through activated layer 82, 86 and 90 ft/min and the cross sectional area of 2.44, 2.33 and 2.22 ft² respectively.

Student's signature

Thesis Advisor's signature

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