

Kritsana Suphachitranon 2008: Control of Kerosene Vapor Amount in Surface Treatment Process Using Local Exhaust Ventilation. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Nanthiya Hansupaluk, Ph.D. 141 pages.

In a precleaning process employed in a manufacturer, specialized for surface treatment, kerosene is used to soften grease coated on small metal parts. Kerosene vapor concentration in the workplace during the past three years was found to be higher than the NIOSH TLV, 100 mg/m^3 , which could have long term effects on the respiratory tract and nervous system. As a result, this work focused on designing a local ventilation system to control kerosene concentration in the work area. The installation position of an air –cleaning device and a fan, on the ground or on a platform which was 7 meters above the ground level, was also a factor included in the design. According to American Conference of Governmental Industrial Hygienists (2001), a slot hood was suitable for a 1.64ft-by- 3.94ft tank containing liquid kerosene utilized in the manufacturer. Based on calculations, it was found that the total pressure loss difference between the inlet and the outlet of the ventilation system when both an air –cleaning device and a fan were placed on the platform was lower than that when both equipments were on the ground level, which resulted in the smaller fan size for the former. The difference in the sizes of the fan was however too small and thus the same fan could be applied to both ventilation systems. Placing both equipments on the platform might help reducing the number of fittings, the duct length, and the fan size, but due to the cost of building a platform and a ladder the total expense was still more expensive than that when installing both equipments on the ground level.

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Thesis Advisor's signature

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