

Saowapa Petsungkart 2007: Design of Welding Ventilation System in Auto Part Industry.  
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Thumrongrut Mungcharoen, Ph.D. 129 pages.

This research is aimed to study the relationship between concentration of respirable dust and occupational health of employees and also design the welding ventilation system in Auto Part Industry. According to the study of 5-year data during 2002 - 2006, it is found that the relationship between respirable dust's concentration and employee's health can be expressed as the equation :  
 $\text{Probit} = -0.325 + 4.429 \ln(\text{dose})$ , with the confidential level of 85%.

From the study, it is also found that the capture velocity of the ventilation system of the sample factory is only 20.37 feet per minute (fpm) which is 7.34 times less than the ACGIH standard velocity. This is the main cause of dust spread out in the working area. According to the new ventilation system design using the principle of down draft, the capture velocity is increased to 150.53 fpm and the air flow rate is reduced from 3,924.9 to 225.8 cubic feet per minute. This improvement can reduce the amount of respirable dust in the working area to less than  $1.69 \text{ mg/m}^3$  which has no impact on the employee's health.



Student's signature



Thesis Advisor's signature

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