다중 회귀분석을 이용한 일부 영세 도금공정의 국소배기성능과 공기중 총크롬, 6가 크롬 및 니켈농도와의 관계분석

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(Abstract)

A Study on the Relationship Between Efficiency of Local Exhaust Ventilation in the Poly and Total Chromium, hexa-valent Chromium and Nickel Concentration in Somesmall Electroplating Plants.

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This study was carried out to analyze the relationship between the efficiency of local exhaust ventilation and hexa-chromium and nickel emissioned from plating process in some small electroplating plants.
These results were as follows.

1. The average concentration of worker exposure to total chromium, hexa-valent chromium and nickel was 43.05 ug/m^3, 1.70 ug/m^3, 9.29 ug/m^3, respectively, which is appropriate for Threshold Limit Value(TLV) of Occupational Safety and Health Administraton.

2. The average capture velocity measured in the chromium tank and nickl tank was 0.45 m/sec , 0.29 m/sec, respectively. These results were below recommended value of American Conference of Gervermental Industrial Hygienists(ACGIH) and National Institute for Occupational safety and Health(NIOSH) by component materials of bath.

3. The relationship between management level of local exhaust ventilation and tank and airborne total chromium was multipully compared by the

Scheffee Method. The multipull pairwise comparisions indicate that "tank wth ventilation not appropriate for criteia of NIOSH but good management"(a) is the most effective tank. Differences of total chromium, hexa-chromium and nickel concentration between "tank with ventilation not appropriate for criteria of NIOSH but good management "(a) and "tank with ventilation not appropriate for criteria of NIOSH and poor management"(b) and "tank without ventilation"(c) was statistically significant($p<0.05$). But there was no clear difference of concentration between "b" and "c".

4. Differences of total chromium, hexa-valent chromium and nickel concentration by capture velocity with 95% family confidence interval was statistically not significant.

Difference of total chromium and hexa-valent chromium concentration between "tank with slot velocity ($\rangle$ 10 m/sec) ("z") and "tank with slot velocity ($\langle$ 5 m/set) was statistically significant.