

A study on the airborne concentration of welding fume for some manufacturing industries

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-Abstract-

The airborne concentration of the welding fumes produced during CO₂ arc welding process at shipbuilding, shiprepairing, container manufacturing and car accessory manufacturing industry were investigated.

The effect how much reduced the welding fume was checked when the portable fan was used.

The results were as follows:

1. The geometric mean of welding fume concentration in shipbuilding factory was 10.05 mg/m³. This exposure concentration was higher than other 3 manufacturing industries at 95% confidence level .
2. The sample filters for welding fume could be digested with acid within 1 hour by microwave oven. The recoveries for investigated metal elements were all over 95 %.
3. The optimal wavelength could be selected for the simultaneous analysis of

8 metal elements by ICP(Inductively Coupled Plasma).

4.Noxious gases(O_3 , NO_2) produced during CO_2 gas arc welding process were detected that the concentration of ozone(O_3) was less than 0.01 ppm and that of nitrogen dioxide(NO_2) was 0.01-0.03 ppm.

5.The geometric mean of welding fume particle diameter was 1.26 μm and geometric standard deviation was 1.51 for the counts when particle analyzer(ELZONE) had been used.

6.When the portable fan had been used,the reduced percent of total welding fume for workers was about 47.8% when portable fan was applied to blow and 71.7% when to exhaust.