

## 2. Chromosomal Aberrations of Welding Fume Exposed Workers.

Seung Hee Maeng, Byung Soon Choi, Sang Hoon Byun and Il-Je Yu  
Department of Toxicology, Industrial Health Research Institute,  
Korea Industrial Safety Corporation,  
34-4 Kusan dong, Buk gu, Inchon, 403-120, Korea

### -Abstract-

Currently we studied the composition of welding fume and its clastogenic effects on Korean welders. Individual air samples from the welding fume exposed workers were monitored in two shipbuilding plants and one container manufacturing plant. Chromosome aberrations (CA) were studied in the peripheral blood lymphocytes of 99 fume exposed workers.

Total fume was weighed after processing sampled filter papers in microwave oven. Composition of metals was analyzed with an ICP (Inductive Coupling Plasma) analyzer, and other chemicals were evaluated by spectrophotometry.

The mean durations of exposure were 12.6, 10.7 and 7.1 years in 3 plants, respectively. The average fume concentration of plant B ( $5.89 \text{ mg/m}^3$ ) was the highest among them and its value was a little higher than the permissible exposure level (PEL,  $5 \text{ mg/m}^3$ ). However, the fume levels of other two plants ( $1.86 \text{ mg/m}^3$  and  $1.62 \text{ mg/m}^3$ , respectively) were below the PEL. ICP analysis showed that the mean levels of Fe, Cu, Mn, Pb, and Zn were not higher than the PEL. Cd, Ni and Cr were not detected. The concentrations of  $\text{NO}_2$  and  $\text{O}_3$  were also negligible.

CA analysis of 99 welders showed negative incidence of CA (less than 5%) and only one worker had inconclusive incidence of CA (from 5% to less than 10%). Most types of observed CA were chromatid breakages and exchanges. None of chromosomal typed

aberration was observed. CA of the welding fume exposed workers showed no increase in the frequencies of aberrant cells as compared with control groups. Smoking status and duration of exposure had no effects on the increase of CA frequencies.