

Original Papers(None)

Relationship Between the Ambient Concentration of Toluene in the Air of Workplaces and the Concentration of Toluene or Its Metabolites in the Urine of Workers

Hiromi MITCHITSUJI¹⁾, Yukio FUJIKI¹⁾ and Masana OGATA²⁾

Matsushita Science Center of Industrial Hygiene Department of Medical Social Work Kawasaki University of Medical Welfare¹⁾

Kawasaki University of Medical Welfare²⁾

(Accepted 1995-10-30 00:00:00+09)

Key words:air pollution, ambient monitoring, biological monitoring, air sampling, solvent

Abstract

According to regulations issued by the Japanese Ministry of Labor, all workplaces that use major solvents must be monitored in two ways. The vapor concentrations in the workplace must be measured and urine of exposed workers must be analyzed for the metabolites of the solvents being used. To investigate the relationship between the concentration of toluene vapor in the workplace and the concentration of toluene or its metabolite in the workers' urine, three sets of air samples were taken. A first set of samples (1) was taken at many points equally distributed in the workplace to get an average value, a second set (2) was obtained from places near the position of the workers and a third set (3) was secured from the breathing zone of workers. Close correlations were found between the concentration for each air sampling, i.e. there was a straight line relationship when comparing sets (1)–(2), (2)–(3) and (1)–(3). There was also a close relationship between the concentration of toluene in the air samples and the concentration of toluene or its metabolites in the urine of the workers. The results suggest that the concentration of solvent vapors near the workers is a useful indicator of exposure suffered by workers who remained in the same place for most of their working time.
