Estimating the safe duration and concentration of benzene exposure in the workplace in the printing industry

ABSTRACT

Introduction: Increased levels of benzene in the air in the work environment can increase the case of leukemia cancer in workers. In their every activity, printing workers unwittingly breathe benzene vapor from the solvent used in ink. This study aimed to estimate safe concentrations and exposure times when working with benzene exposure in the workplace. Methods:The type of this study is observational and cross-sectional. The research sample consisted of 25 people who worked in the printing industry. Results: Benzene measurements in the work environment in the production section range from 1.57-4.88 mg / m3 with an average level of 2.54 mg/m3. The average intake was 0.0243 mg/ kg/day, while the average Risk Quotient (RQ) value was >1 (88%), which means there is a risk of adverse effects due to exposure to benzene vapor. Based on the calculation results, the current conditions with the concentration and characteristics of workers obtained an average safe duration of 3.2 years. For safe concentration, assuming a working life of 25 years and with the characteristics of the workers, the average safe concentration value is 0.2 mg/m3. Conclusions: The level of risk of benzene exposure will continue to increase as the working period increases. It can be prevented by taking technical and administrative control measures and using personal protective equipment.