Health Risk Assessment of BTEXS Exposure in Photocopy Centers

Aungsiri Tipayarom*

Abstract

Photocopier is a machine generally used in most office. In making a copy, volatile organic compounds (VOCs) especially benzene, toluene, ethylbenzene, xylenes, and styrene (BTEXS) are released. Inhalation of these VOCs could cause health effects to the workers. The objective of this study was to determine the concentrations of BTEXS that the workers exposed in the working area and assess their health risks. The study had employed three different photocopy centers and monitored the concentrations of BTEXS obtained from the breathing zone of the workers. Samples were taken the first two weeks of the semester and throughout the semester. The results showed that the concentrations of BTEXS depended on the numbers of the photocopier, ventilation system and space in the photocopy centers. For all the centers, the highest concentrations of each compound found at the breathing zone of the workers were 2.26, 11.47, 1.52, 4.31 and 0.46 $\mu g.m^{-3}$, respectively. The concentrations of BTEXS were used to determine the health risk. For non-cancer risk assessment, the HQ less than 88.84×10^{-4} indicated that no health effect could be caused by BTEXS. For cancer risk, only benzene was assessed and the result showed its risk of less than 0.5 per 1,000,000 people.

Keywords : Photocopier, BTEXS, Occupational health, Health risk assessment

Department of Environmental Science, Faculty of Science Silpakorn University.

* Corresponding author, E-mail: aungsiri@gmail.com Received 22 September 2014, Accepted 8 December 2014