

Indoor Air Pollution of the Flexographic Printing Environment

Authors : Jelena S. Kiurski, Vesna S. Kecić, Snežana M. Aksentijević

Abstract : The identification and evaluation of organic and inorganic pollutants were performed in a flexographic facility in Novi Sad, Serbia. Air samples were collected and analyzed *in situ*, during 4-hours working time at five sampling points by the mobile gas chromatograph and ozonometer at the printing of collagen casing. Experimental results showed that the concentrations of isopropyl alcohol, acetone, total volatile organic compounds and ozone varied during the sampling times. The highest average concentrations of 94.80 ppm and 102.57 ppm were achieved at 200 minutes from starting the production for isopropyl alcohol and total volatile organic compounds, respectively. The mutual dependences between target hazardous and microclimate parameters were confirmed using a multiple linear regression model with software package STATISTICA 10. Obtained multiple coefficients of determination in the case of ozone and acetone (0.507 and 0.589) with microclimate parameters indicated a moderate correlation between the observed variables. However, a strong positive correlation was obtained for isopropyl alcohol and total volatile organic compounds (0.760 and 0.852) with microclimate parameters. Higher values of parameter F than $F_{critical}$ for all examined dependences indicated the existence of statistically significant difference between the concentration levels of target pollutants and microclimates parameters. Given that, the microclimate parameters significantly affect the emission of investigated gases and the application of eco-friendly materials in production process present a necessity.

Keywords : flexographic printing, indoor air, multiple regression analysis, pollution emission

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