

Correlation of toluene safe duration (hours/day) and glutathione concentration, malondialdehyde and neurotoxic symptoms in Osowilangun shoe home industry workers

ABSTRACT

Introduction: Exposure of toluene can cause a decrease in glutathione concentration, increase in malondialdehyde and neurotoxic symptoms. The safe duration of toluene in hours/day for each person can vary. The purpose of this study is to determine the relationship between the safe duration of toluene (hours/day) with the concentration of glutathione, malondialdehyde and neurotoxic symptoms in Osowilangun shoe home industry workers. Methods: This research was observational with quantitative approach and cross-sectional design. The sampling technique used was accidental sampling with 25 respondents. The variables studied were safe toluene duration (hours/day), glutathione concentration, malondialdehyde concentration, and neurotoxic symptoms. Data were analyzed using Pearson and Phi correlation. Result: The average of safe duration was 1,489 hours/day, glutathione concentration was 58,349 $\mu\text{g/L}$, and malondialdehyde was 7,847 MU. As many as 11 out of 14 workers experienced neurotoxic symptoms. The relationship between safe duration (hours/day) with glutathione concentration ($r=0.139$) and malondialdehyde ($r=-0.146$) was very weak. While, the relationship between safe duration (hours/day) and neurotoxic symptoms was weak ($r=-0.223$). Conclusion: The relationship between safe duration in hours/day with glutathione concentration and malondialdehyde was very weak, while relationship with neurotoxic symptoms was weak.

Keyword: Neurotoxic symptoms; Glutathione; Safe concentration; Malondialdehyde; Toluene