

Noise Exposure Level Among Manufacturing Workers

Ainie Afiqah Asri & Noradila Mohamed*

Structured Abstract

Background: Noise-induced hearing loss (NIHL) is becoming more concern in the industrial industry, where workers are often exposed to sound levels exceeding 85 dB(A), the permissible exposure limit. In Malaysia, a considerable proportion of workers in the metal production, textile and food industries are at risk with exposure ranging from 86 to 140 dB(A). Prolonged exposure causes not just NIHL, but also stress, cardiovascular illness and cognitive impairment. Despite existing regulations, many industries lack monitoring and enforcement systems. This study was done to analyze noise exposure levels manufacturing to determine the association between noise exposure and reported health symptoms among workers.

Methods: The study employed a cross-sectional design. Noise exposure levels were measured using Sound Level Meter and personal dosimeter. Area noise mapping was developed based on data collected from the workplace area. Two selected workers from high-exposure areas were monitored for personal noise exposure. In addition, a structured questionnaire was distributed to 69 workers to identify symptoms associated with noise exposure. Pearson's correlation analysis was conducted using SPSS to analyze the association between exposure levels and reported health effects.

Results: Area monitoring recorded that the Workshop and Production areas had average noise levels of 86.55 dB(A) and 85.60 dB(A), respectively that both above exposure limit which is 85 dB(A), while Laboratory recorded 79.3 dB(A). Personal noise monitoring showed $L_{EX,8H}$ levels of 81.55 dB(A) for Workshop and 76.35 dB(A) for Laboratory. Peak levels in the Workshop reached 123 dB(C) which exceed 114 dB(C) limit. Statically significant correlations were found between noise exposure and symptoms like tinnitus, difficulty hearing, dizziness and mental fatigue.

Conclusion: The findings indicate that workers in high-noise areas are at risk of NIHL and related health issues. Noise mapping highlighted zones requiring actions. The study supports the implementation of engineering controls, use of personal hearing protection, health surveillance and administrative strategies to mitigate risks and improve workplace safety.

Keywords: Noise-Induced Hearing Loss, Noise mapping, Occupational noise, Manufacturing industry

*Correspondence: noradila@uitm.edu.my

School of Chemistry & Environment, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia