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THE DEVELOPMENT OF RECOMMENDED PROTOCOLS TO PREVENT AND CONTROL INDUSTRIAL OTOTOXICITY RISK ARISING FROM ORGANIC SOLVENTS EXPOSURE

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ABSTRACT

Occupational hearing loss is traditionally thought to be caused solely by exposure to loud noise. However, the present global incidence of hearing loss cannot be attributed just to exposure to loud noise; chemicals have a significant role as well. The likelihood of a correlation between organic solvent exposure and hearing loss cannot be ruled out. The critical gap is that there are no studies on government policies that link chemical ototoxicity to occupational hearing loss. Therefore, until revised standards are established, a prudent way to incorporate this gap and challenge is to develop protocols for employers and safety management teams to prevent and control ototoxicity risk arising from organic solvents. This study aims to develop industrial ototoxicity recommended protocols to prevent and control ototoxicity risks arising from organic solvent exposure. This study employed Design and Development Research (DDR) approach. Based on the approach, the study was divided into three (3) phases. In the first phase, a Needs Analysis survey was conducted on 195 workers in paint and coating companies to identify their awareness level of the organic solvents' ototoxicity risk and the needs of the protocols. The data were analysed using descriptive statistics using Statistical Package for the Social Science (SPSS) software. The Needs Analysis was strengthened by conducting an interview session with three (3) experts where the data was analysed using thematic analysis. The outcome of this phase indicated that there is a strong need for the Recommended Protocols to prevent and control the risk of hearing problems arising from organic solvents to be developed. In the second phase, two (2) reference models and literature were analysed to design the main components and the elements of the recommended protocols. The components and elements were validated by eleven (11) experts based on their consensus through Fuzzy Delphi Method (FDM). The outcome of this phase results in the establishment of the Industrial Ototoxicity Control (IOC) Recommended Protocols. The third phase was the usability evaluation by six (6) experts from the paint and coating industry via a semi-structured interview method where the data was analysed using thematic analysis. The results showed that all experts involved in this phase agreed that the main components, elements, and the sequence of priority of the Recommended Protocols are appropriate and practicable to be employed. To conclude, this study has significantly succeeded in establishing validated Recommended Protocols to provide strategies for preventing and controlling industrial ototoxicity risk arising from organic solvent exposure. It should be noted that this empirical research has successfully achieved all specific objectives for each phase of the research. The outcome of this research provides great benefits to the education field in further catalysing occupational ototoxicity studies in Malaysia. Moreover, the Recommended Protocols promote a proactive approach to dealing with ototoxic hazards in the industry.

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