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Evaluation of Worker Exposure to Chemical Hazards in Manufacturing Part Component Industry

Mohamad Aqwa Hafidzi Azaazwin[a], Nor Suhaila Mohamad Hanapi[a*]

Structured Abstract

Background: Chemical exposure is a common occupational hazard in the manufacturing part component industry. In Malaysia, Chemical Health Risk Assessment (CHRA) is legally required to ensure chemical risks are properly controlled. Workers in washing and milling units are frequently exposed to chemicals during production activities, which may affect their health if not adequately managed. Therefore, this study aimed to evaluate chemical exposure risks among workers in selected work units of a manufacturing part component factory.

Methods: A qualitative study was conducted using the Chemical Health Risk Assessment (CHRA) approach based on the *Manual of Recommended Practice on Assessment of Health Risks Arising from the Use of Chemicals Hazardous to Health at the Workplace* published by the Department of Occupational Safety and Health (DOSH). The assessment was carried out in selected work units of a manufacturing part component factory. Information on chemicals used was obtained through site observation, Safety Data Sheets (SDS), and interviews with workers and supervisors. Work activities, exposure routes, and duration of chemical use were identified for each work unit. The level of health risk was evaluated by considering the hazardous properties of the chemicals, the degree of exposure, and existing control measures. The effectiveness of current controls, including engineering controls, administrative controls, and personal protective equipment (PPE), was then assessed based on CHRA guidelines.

Results: Chemical risk assessment showed that six (6) chemicals were used in both the washing and milling work units, of which three (3) and six (6) chemicals respectively were identified as Chemicals Hazardous to Health (CHTH). All identified CHTH were categorized as Action Priority 3 (AP-3). Potential exposure routes included inhalation, dermal contact, and ingestion. However, ingestion risks were eliminated through strict prohibition of food and drink in the work areas. Chemical handling was conducted under functioning Local Exhaust Ventilation (LEV), and appropriate Personal Protective Equipment (PPE) was consistently used. Based on CHRA findings, chemical exposure was minimal as tasks involved small quantities of chemicals and were performed for less than fifteen (15) minutes per activity; therefore, exposure monitoring was not required.

Conclusion: A Chemical Health Risk Assessment (CHRA) was conducted for the Washing and Milling work units in the manufacturing part component industry. Of the twelve (12) chemicals assessed, nine (9) were identified as Chemicals Hazardous to Health (CHTH). The Washing work unit presented low risk, while the Milling work unit showed moderate risk due to inhalation and dermal exposure. All CHTH were classified as Action Priority 3 (AP-3), indicating that existing control measures were generally effective.

Keywords: Manufacturing Part Component Industry, Chemical Health Risk Assessment, Action Priority

*Correspondence: norsuhaila979@uitm.edu.my

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