

Chemical Health Risk Assessment (CHRA) at Palm Product Lab In Selangor

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Structured Abstract

Background: Palm product laboratories play a vital role in research and quality control. Workers in these labs face significant health risks due to chemical exposure, necessitating a comprehensive Chemical Health Risk Assessment (CHRA). This study focuses on evaluating hazards, exposure levels, and the adequacy of control measures in the R&D facility.

Methods: This study employed the Department of Occupational Safety and Health (DOSH) CHRA methodology, involving information gathering through SDS, workplace layouts, and interviews, followed by hazard evaluation to identify Chemicals Hazardous to Health (CHTH) based on toxicity and exposure routes. A qualitative and quantitative exposure assessment was conducted, calculating frequency-duration ratings (FDR), magnitude ratings (MR), and exposure ratings (ER) for inhalation and dermal risks. Risk ratings (RR) were determined using $RR = HR \times ER$, and control measures, including engineering controls, PPE, and emergency preparedness, were evaluated for adequacy. Recommendations were prioritized based on action priority levels to ensure workplace safety.

Results: The assessment identified five Chemicals Hazardous to Health (CHTH) across two work units. The Iron Tester unit involved 4-Methyl-2-Pentanone, Iso Propanol Alcohol, and Base Oil, with one high-risk inhalation hazard ($RR=20$) and two moderate dermal risks (M2). The Phosphorus Determination unit used Nitric Acid and Ammonium Metavanadate, showing one high dermal risk (H1) and one moderate inhalation risk ($RR=12$). Existing control measures, such as fume hoods, ventilation systems, PPE (e.g., nitrile gloves and goggles), and emergency equipment (chemical showers and eyewash stations), were found to be adequate in minimizing risks and maintaining compliance with safety standards.

Conclusion: The CHRA highlighted significant risks associated with chemical exposure in laboratory environments and the effectiveness of existing safety measures. Recommendations emphasize continuous monitoring, training, and adherence to safety protocols to maintain a safe work environment.

Keywords: Chemical Health Risk Assessment, palm product laboratory, chemicals hazardous to health, safety protocols

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