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Characterization of Indoor Air Quality (IAQ) in Healthcare Facilities: A Case Study at Pusat Kesihatan UiTM Shah Alam

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Structured Abstract

Background: Indoor Air Quality (IAQ) assessment involves the characterization of pollutants and the implementation of corrective measures to improve air quality. This is essential for protecting human health, especially in indoor environments where people spend a significant amount of time. Studies have shown that the condition, performance, and modernity of ventilation systems significantly impact the perceived indoor air quality and the indoor air-related symptoms of individuals in healthcare facilities.

Methods: To assess Indoor Air Quality (IAQ), physical, chemical, and biological parameters were monitored. Temperature, relative humidity, concentration of suspended particulate matter (PM10) and Total Volatile Organic Compounds (TVOC) were measured using the EVM-7 and formaldehyde meters were used for formaldehyde assessment. Four cycles, covering morning, noon, break, and evening, were conducted twice for 5 minutes each. For biological, Tryptone/Tryptic Soy Agar (TSA) Malt Extract Agar (MEA) was prepared. Sample collection: Samples, taken for 3 minutes per plate, were sealed, and sent to the lab. Bacterial and fungal plates were incubated at 37 °C and 25 °C for 24-96 hours, and concentrations were calculated after 3 days.

Results: All outcomes meet safety standards set by the Department of Occupational Safety and Health (DOSH) in the 2010 Industrial Code of Practice (ICOP) except for two areas exceeding the bacterial limit. Many reported work-related fatigue, headaches, dizziness, and nasal congestion. Despite assessment limitations, few occupants show signs of illness. Temperature and humidity differences, and consistent values in other parameters align with ANOVA principles, enhancing our understanding of indoor air quality at the health center.

Conclusion: In conclusion, the indoor air quality monitoring at the health center has been successful. Results indicate compliance with safety standards, with only minor concerns in specific areas. Occupants' reported symptoms are generally low, and the observed environmental variations align with established principles. Overall, the monitoring affirms a safe indoor environment within the health center.

Keywords: Indoor Air Quality (IAQ), ventilation systems, Health Center, Biological Parameters, Occupational Health and Symptoms

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