

Indoor Air Quality and Health Risk Assessment among Occupants in Pasta Panas, Seksyen 7, Shah Alam

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Structured Abstract

Background: Indoor air quality (IAQ) plays a crucial role in ensuring the health and comfort of occupants, especially in enclosed food premises. This study aimed to investigate IAQ and the associated health risks among occupants of Pasta Panas restaurant. The study focused on physical, chemical and biological parameters of indoor contaminants and evaluated occupant exposure through environmental monitoring and health risk assessment.

Methods: IAQ parameters were measured using calibrated instruments over an eight-hour working period. Environmental observations, complaint surveys, and questionnaires were conducted to identify sources of contamination and occupants' health symptoms. Health risk assessments for both carcinogenic and non-carcinogenic were calculated using the United States Environmental Protection Agency (USS EPA) inhalation exposure model.

Results: This study showed that several parameters exceeded the recommended limits under the ICOP IAQ 2010, particularly temperature, relative humidity, formaldehyde, PM_{2.5}, PM₁₀, and total fungal count. Key contributing factors included poor ventilation, cooking emissions and high occupancy. Health symptoms frequently reported included headaches, fatigue, drowsiness, coughing, and a stuffy nose, which corresponded to the IAQ findings. The result indicated a potential cancer risk from PM_{2.5} that exceeded acceptable limits, while hazard quotient values showed low risk for PM_{2.5} and moderate risk for PM₁₀. These findings highlight short- and long-term mitigation strategies to address IAQ problems and health concerns among occupants.

Conclusion: The study found high levels of temperature, relative humidity, formaldehyde, PM_{2.5}, PM₁₀, and total fungal count that exceeded the ICOP IAQ 2010 recommended limits. Headaches, fatigue, and coughing were among the symptoms reported in association with these environments. The health risk assessment results indicated a low to moderate non-carcinogenic risk and a high carcinogenic risk. These findings underscore the critical need for targeted mitigation strategies to reduce exposure and improve indoor air quality in food industry settings.

Keywords: Indoor air quality, health risk assessment, restaurants, health symptoms

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