

ASSESSMENT OF AIR POLLUTANTS IN KOMPLEKS PKNS, SHAH ALAM BASEMENT PARKING

Khairul Zaqwan^{a*}, Ismaniza Ismail^a

Structured Abstract

Background: This study looks at the air pollution in the basement parking area of Kompleks PKNS, Shah Alam, focusing on particulate matter (PM₁₀) and carbon monoxide (CO) levels. Vehicle emissions, a significant source of air pollution in urban areas, present serious health risks, especially in enclosed spaces with poor ventilation, like basement parking lots.

Methods: Air samples were collected using MiniVol samplers implying gravimetric method and gas analyzers over 12-hour periods to measure PM₁₀ and CO levels. Statistical analyses, including t-tests and Pearson correlation, were conducted to assess relationships between pollution levels, traffic density, and environmental conditions.

Results: The results showed that PM₁₀ and CO levels often exceeded the limits set by the Malaysian Ambient Air Quality Standards (MAAQS). For instance, the average PM₁₀ concentration was 137.25 µg/m³ on Friday and 99.5 µg/m³ on Saturday, both higher than the allowable limit of 100 µg/m³. Similarly, the average CO levels were 15 mg/m³ on Friday and 11 mg/m³ on Saturday, surpassing the 10 mg/m³ threshold. These elevated levels were mainly caused by vehicle exhaust, tire and brake wear, particle resuspension, and limited airflow in the parking area. Statistical tests, including t-tests and Pearson coefficient of correlations, showed significant links between traffic density, temperature, and pollution levels. The study also found that pollution was highest during lunch time and evening rush hours, especially on Fridays when traffic was at its peak. Based on these findings, this study aim to highlights the need for measures to improve air pollutions in basement parking facilities. Recommendations include expanding ventilation systems to address areas with stagnant air due to the accumulation of pollutant, installing real-time air quality monitoring to respond quickly to high pollution levels, and conducting personal monitoring to the workers in the area

Conclusion: The finding and result from the study are able to provide insights that is crucial for improving air pollution management in enclosed basement parking areas, ensuring compliance with environmental standards, and safeguarding public health in spaces where pollutants tend to accumulate.

Keywords: Air pollution, Basement parking, Particulate matter (PM₁₀), Carbon monoxide (CO)