

UNIVERSITI TEKNOLOGI MARA

**ULTRAFINE PARTICLES (UFP) AND
PARTICULATE MATTER_{2.5} (PM_{2.5})
ASSESSMENT IN TRANSPORTATION HUB,
KLIA 2, SEPANG, SELANGOR**

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AUTHOR'S DECLARATION


I hereby declare that the work in this final year project is my own except for the quotations and summaries which been duly acknowledged. The study is not meant to be published in any form as stipulated in agreement of secrecy and non-disclosure.

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ABSTRACT

ULTRAFINE PARTICLES AND PARTICULATE MATTER_{2.5} ASSESSMENT IN TRANSPORTATION HUB, KUALA LUMPUR INTERNATIONAL AIRPORT TERMINAL 2 (KLIA2), SEPANG, SELANGOR

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Ultrafine Particles (UFP) and Particulate Matter_{2.5} (PM_{2.5}) are the air pollutants that can seriously be harmful to human once being exposed in long period of time. Vehicle combustion and cooking activities are the particulates potentially sources. The assessment was conducted at taxis and buses waiting area in Transportation Hub, KLIA2, Sepang, Selangor during weekdays and weekend. Main objective of this study is to identify the concentration of UFP and PM_{2.5} in taxis and buses waiting area which being assessed in term of weekdays and weekend, daytime and night time comparison, and also the trend relationship between both of pollutants and other Indoor Air Quality Parameters. This study is referred to UFP and PM_{2.5} related journals, TSI Indoor Air Quality Handbook, Guideline on Industry Code of Practice 2010 by Department of Occupational Safety and Health as reference during this study conducted. UFP and PM_{2.5} assessment was conducted via walkthrough inspection, sampling readings of UFP and PM_{2.5}, Carbon Dioxide, Carbon Monoxide, Relative Humidity and Temperature in 24 hours represents weekend and weekdays and 4-time slot evenly distributed at sampling area. The instrumentations used for this study were TSI P-Trak Ultrafine Particle Counter Model 8525, Q-Track Indoor Air Quality Monitor Model 7575 and Dusttrak DRX Aerosol Monitor 8534. From the walkthrough inspection, the idle buses were not off the engines while waiting passenger and some occupier smoke near to main entrance to waiting area. Average readings for UFP and PM_{2.5} were 22373 particles/cm³ and 0.188mg/m³ respectively in weekday were higher than average readings 18994 particles/cm³ and 0.174 mg/m³ respectively in weekend. There are relationship between UFP and PM_{2.5} and IAQ parameters (p<0.05). Average readings for UFP and PM_{2.5} were higher in day time 25834 particles/cm³ and 0.101 mg/m³ respectively than night time 21327 particles/cm³ and 0.083 mg/m³ respectively. This UFP and PM_{2.5} assessment showed that the pattern of concentration was influenced by the adherence of passengers, availability of idle taxis and buses and smoking activities. Ventilation control in the area is good but there shall the regulatory control includes engine off policies and closed-smoking room for smokers. This study shall benefit to building proponent as well as academic purposes.

Keywords: UFP, PM_{2.5}, Temperature, RH, CO₂, Weekday and Weekend, Day-Time and Night-Time, Transportation, Smoking