

UNIVERSITI TEKNOLOGI MARA

**AIR QUALITY OF SUPPLIED AIR IN A HIGH-RISE
COMMERCIAL BUILDING**

**WAN NOR 'AFIFAH BINTI
WAN MOHAMMAD NOR**

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Declaration by Student

Project entitled Air Quality of Supplied Air in a High-Rise Commercial Building is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature and acknowledgement of collaborative research and discussions. The project was done under the guidance of Mr Haji Hashim bin Ahmad. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons.).

Student's Signature:

.....
Wan Nor 'Afifah binti Wan Mohammad Nor
2011296944
900222-14-5656

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Abstract

Air Quality of a Mechanical Ventilation System in a High-Rise Commercial Building

Wan Nor 'Afifah binti Wan Mohammad Nor

A cross-sectional study was conducted in a high-rise commercial building from February 2014 to April 2014. The main objective of the study was to determine the Air Quality supplied air in a high rise commercial building based on these parameters: Temperature, Relative Humidity, Carbon Dioxide, Formaldehyde, Carbon Monoxide and VOC. All floors were sampled at the AHU, directly before the air is released into the occupants' floors. All the readings measured were below the legal requirement of the Industrial Code of Practice on Indoor Air Quality except for formaldehyde. ANOVA statistical test showed significance of Relative Humidity between Middle Segment and Upper Segment ($p=0.002$); Carbon Dioxide between Lower Segment and Upper Segment ($p=0.023$); Formaldehyde between Lower Segment and Middle Segment ($p=0.023$), Lower Segment and Upper Segment ($p=0.000$). Through focus group discussion it was found that different floors within one segment also had an impact on the thermal comfort. When the occupants' floor is further from the main AHU, the occupants tend to feel warmer compared to those who are nearer the main AHUs. In conclusion, the air quality of supplied air is influenced by many factors. One of the main factors is the distance between the main AHUs and the tenants' floor as there is the loss factor that occurs when the supply duct carries the fresh air to the tenants' floors.

Keywords: Air Quality, Supplied Air, Thermal-Comfort, Air Handling Unit, Commercial High-rise Building