INDOOR AIR QUALITY ANALYSIS FOR SELECTED CLASSROOMS IN THE FACULTY OF APPLIED SCIENCES, UiTM SHAH ALAM
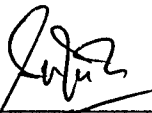
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Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Physics
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This Final Year Project Report entitled **"Indoor Air Quality Analysis for Selected Classrooms In the Faculty of Applied Sciences, UiTM Shah Alam"** was submitted by Rafael Julius, in partial Fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by
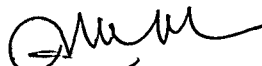
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ABSTRACT

IAQ studies are neccessary in order to determine the health and thermal comfort levels in building. However, in UiTM, there is no scientific data on the indoor air contents available especially for the building in the Faculty of Applied Science. Therefore, this project was conducted to provide scientific data of the air contents and ventilation for some selected classrooms based on real scientific measurement. The aims for this study were to measure the contents of indoor gasses (CO and CO_2), indoor air temperature and relative air humidity, to determine whether or not all of the parameters measured are within the acceptable values by comparing with the standards, to obtain the average pattern indoor gasses emission over 24-hr period and to study the effect of the number of occupants to the air contents inside the classrooms. The measurements were carried out 24 hours per day by dividing the analysis into different cases. By using SPSS, normality of the data were analysed and non parametric ANOVA was performed and the data were interpreted according to the objectives. It was found that the average concentrations of CO and relative humidity for eight hours exposure were within the recommended value. However, the average concentrations of CO_2 and air temperature did not comply with the standard guideline. CO and CO_2 have similar emission pattern in which they were found to be higher during the normal lecture hours. It was also found that the number of occupants and the CO and CO_2 emission do not fit the assumption of a linear relationship. Based on the findings, some recommendation are made for the improvement of the indoor air quality especially in those classrooms in order to keep the concentration of CO_2 as well as the air temperature within the standard in accordance to both ASHRAE and DOSH guideline.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Indoor Air Quality, (IAQ) simply refers to the quality of the air in an office or other building environments. It is represented by the concentration of pollution and thermal (temperature and relative humidity) conditions that affect the health and comfort of occupants (Brookhaven National Laboratory, 2009). The same study claim that poor Indoor Air Quality will lead to sick building syndrome. Sick Building Syndrome is a medical condition in which people in a building suffer from symptoms of illness or feeling unwell for no apparent reason. The reason tend to increase in severity with the time people spend in the building and improve over time or even disappear when people are away from the building.

The sick building syndrome has become common issues in Malaysia recentiy due to the construction of energy efficient building with poor maintenance and services of Heating, Ventilation and Air Conditioning (HVAC) system resulting the increasing of indoor air pollutants (IAP) levels (Aizat et al.2009) .