

UNIVERSITI TEKNOLOGI MARA

**ASSESSMENT OF PM 2.5, CO₂ AND NO₂ IN
RELATION WITH TRAFFIC DENSITY IN UITM
PUNCAK ALAM**

NURSYAFIQAH LIYANA BINTI ABDUL JABAR

Project submitted in fulfillment of the requirements for
the degree of
**Bachelor in Environmental Health and Safety
(Hons.)**

Faculty of Health Sciences

July 2018

DECLARATION BY STUDENT

Project entitled “Assessment of PM 2.5, CO₂ and NO₂ in Relation with Traffic Density in UiTM Puncak Alam” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor, Dr. Shantakumari Rajan. 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:

.....

(Nursyafiqah Liyana Binti
Abdul Jabar)

2014864846

950818-06-5900

Date:

ACKNOWLEDGEMENT

Alhamdulillah, all praise to the Almighty that I am finally be able to complete my final year project. I wish to thank God for giving me the opportunity to embark on my degree in Bachelors of Environmental Health and Safety (Hons.) and for completing this long and challenging journey successfully. My gratitude and thanks goes to my supervisor Dr. Shantakumari Rajan. Without her constant guidance and encouragement I might not be able to come to this end. Thank You so much Dr!

My appreciation also goes to the my friend (Nurlina Alyaa binti Shahril) who always be there, supporting and comforting me with her warm words whenever I needed one. Special thanks to Department Environmental Health staffs that provided the facilities and assistance during sampling. Not forgetting to all my colleagues and friends for helping me with this project.

Finally, this thesis is dedicated to both my father (Abdul Jabar Bin Mohd Nor) and mother (Aminah Binti Harun) for the vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulillah.

TABLE OF CONTENTS

DECLARATION BY STUDENTS	ii
INTELLECTUAL PROPERTIES	iii
APPROVAL BY SUPERVISOR	v
ACKNOWLEDGEMENT	vi
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF PLATES	xiv
LIST OF ABBREVIATIONS	xv
LIST OF APPENDICES	xvi
ABSTRACT	xvii
ABSTRAK	xviii
CHAPTER 1: INTRODUCTION	
1.1 Background	1
1.2 Problem Statement	4
1.3 Objectives	5
1.3.1 General Objective	5
1.3.2 Specific Objectives	5
1.4 Study Hypothesis	5
1.5 Study Justification	6
1.6 Research Questions	6
1.7 Conceptual Framework	7
CHAPTER 2: LITERATURE REVIEW	
2.1 Introduction	8
2.2 Characteristic of Pollutants	8
2.2.1 PM 2.5	8
2.2.2 NO ₂	10
2.2.2 CO ₂	11
2.3 Sources of Pollutants	12
2.3.1 PM 2.5	12

ABSTRACT

Transportation sector is one of the contributors to particulate matter 2.5 (PM 2.5), carbon dioxide (CO₂), nitrogen dioxide (NO₂) and other air pollutant emissions leading to the deterioration of air quality. Seasonal emission level between peak and non-peak periods from road traffic were studied in UiTM Cawangan Selangor, Kampus Puncak Alam and the pattern of these pollutants were measured at three bus stops within the campus by using EVM 7. Independent t-test were carried out to find the mean differences in pollutant concentrations between both periods. Concentration levels of PM 2.5 and CO₂ were significantly higher during the peak period compared to non-peak period with p-values of 0.001 and 0.001 respectively, whereas there was no significance difference in NO₂ concentration level between both period (p-value 0.425). A strong correlation between PM 2.5 (r 0.865) and CO₂ (r 0.721) with traffic density was also concluded from this study. To conclude, results from this study can provide data for evidence-based environmental policy decision making to regulate strict enforcement of environmental regulations in higher learning institutions.

Keywords: *traffic related air pollution, higher learning institution, peak and non-peak period*