COMPOSITION OF As, Cd & Pb IN INDDOR DUST FROM SELECTED LOCATION IN UiTM PAHANG

NURAISYAH BINTI NAZMI

Final Year Project Proposal Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.) Chemistry
In the Faculty of Applied Sciences
Universiti Teknologi Mara

JANUARY 2016

ACKNOWLEDGMENT

In the name of Allah, The Most Gracious and Most Merciful and His Messenger, Prophet Muhammad S.A.W., I would like to express my gratefulness to Allah s.w.t for giving me strength and health to accomplish this final year project. I also liked to thank my parents and family for their love and encouragement, whose always support me although they are not with me while doing this thesis.

I would like to give the most thankful and deepest appreciation for all the guidance, courage, advice and constructive criticism from my beloved supervisor, Mr Fazrul Razman Bin Sulaiman. Sincere thanks from deep inside my heart. My deepest gratitude to the entire lab assistants of Faculty of Applied Science especially to Mr. Mohd Fauzi Bin Idrus who gave the permission to use all required apparatus, chemicals and equipment necessary and useful information to complete the analysis. I would also thanks to my teammates in the laboratory for working together and sharing so much opinions and thoughts about the project.

Last but not least, this thesis will never be done without the guidance from the project coordinator, Dr. Aiza Binti Harun and other lecturers for their comments and tips. Thanks for your cooperation. Hope Allah S.W.T will bless all of you.

Nuraisyah Binti Nazmi

TABLE OF CONTENTS

		Page
AKNOWLEDGEMENT		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		vi
LIST OF FIGURES		vii
LIST OF ABBREVIATIONS		viii
ABSTRACT		ix
ABSTRAK		x
CHAPTER 1 INTRODUCTION		
1.1	Background Of Study	1
1.2	Problem Statement	2
1.3	Significance Of Study	3
1.4	Scope and limitation Of Study	4
1.5	Objectives of Study	5
CHAPTER 2 LITERATURE REVIEW		
2.1	Air Pollution	6
	2.1.1 Indoor Air Pollution	7
	2.1.2 Dust	8
2.2	Indoor Air Quality	9
	2.2.1 Street Dust	9
	2.2.2 Industries	10
	2.2.3 Indoor Material	10
2.3	Heavy Metals	11
2.4	Effect to health due to heavy metal contamination	12
	2.4.1 Arsenic (As)	12
	2.4.2 Cadmium (Cd)	13
	2.4.3 Lead (Pb)	13
CHAPTER 3 METHODOLOGY		
3.1 Materials		16
3.2 Equipment and Analytical Instrument		16
3.3 Sampling Location		17
3.4 Sample Collection		18
3.5 Sample Preparation		18

3.6 Standard Preparation 19
3.7 Graphite Furnace Atomic Absorption Spectrometer (GF-AAS) 20
3.8 Calibration curve 21
3.9 Enrichment factor 21
3.10 Statistical analysis 23

CHAPTER 4 RESULTS AND DISCUSSION
4.1 Heavy Metals Concentration 24
4.1.1 As Concentration 24
4.1.2 Pb Concentration 25
4.1.3 Cd Concentration 26
4.2 Statistical Analysis 27
4.3 Enrichment Factor 28
4.4 Correlation Coefficient Analysis 30

CHAPTER 5 CONCLUSION AND RECOMMEDATION 32

CITED REFERENCES 34
CURRICULUM VITAE 41

ABSTRACT

COMPOSITION OF As, Cd & Pb IN INDOOR DUST FROM SELECTED LOCATION IN UiTM PAHANG

Most people spend most of their time doing indoor activities. Unknowingly, high concentration of indoor air pollutants might affect the occupant's health. The aim of the study are to determine concentration level of selected heavy metals in indoor dust samples collected from selected locations in UiTM Pahang and to identify the possible sources of selected heavy metals in indoor dust samples whether it is natural or anthropogenic sources. The dust samples was collected in classroom at Block Cendana (C1-03), Makmal Kimia 1 (MK1) and Hostel room in Kolej Mat Kilau based on the frequency of the room to be occupied by the occupants. The selected heavy metals studied are arsenic (As), cadmium (Cd) and lead (Pb). The samples were analyzed by using PerkinElmer Graphite Furnace Atomic Absorption Spectroscopy (GF-AAS). The highest concentration of heavy metals is Pb with ($17.80 \pm 11.10\ \mu g g^{-1}$), followed by As ($2.72 \pm 1.50\ \mu g g^{-1}$) but no detection value for Cd due to lack of many factors. The overall concentration of heavy metal were found to be arranged in order Pb>As>Cd. Using the enrichment factor (EF) analysis, the result showed that the heavy metal determined in indoor dust were contributed by a natural (soil) sources. The accumulation of these heavy metals in indoor dust may be influenced by the road dust as well as the occupant's activities.