UNIVERSITI TEKNOLOGI MARA

ASSESSMENT ON RESPIRATORY HEALTH OF WASTE COLLECTORS IN KUALA SELANGOR

IFFAH NADHIRAH BINTI MOHAMMAD ZAINURLAH

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

Faculty of Health Sciences

JANUARY 2023

ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious, The Most Merciful.

Assalamualaikum and Alhamdulillah, all praise to Allah S.W.T the Supreme Lord of the Universe. Peace and blessing to Nabi Muhammad S.A.W., all prophets, and their families. I praise Allah S.W.T. for the strength and His blessings in completing my study.

Thousands of thanks and love to my parents Mr. Mohammad Zainurlah Bin Nordin and for their support and encouragement through thick and thin of my study.My deepest gratitude and appreciation to my dearest supervisor, Associate Professor Ts Dr. Mohd Shukri Bin Mohd Aris who spent his time and efforts guiding and advising me from the beginning till the end of my research journey. Not to forget, I would like to thank all the lecturers In the Department of Environmental Health and Safety, Faculty of Health Sciences who always share their thoughts, knowledge, and advice throughout my study at UiTM Puncak Alam. Only God can reward all of you with goodness.

My sincere thanks and appreciation go to all the staff from the department and laboratory who gave their full cooperation and assisted me in many ways throughout my study. A special thanks to my friends from HS243 who always give me support and motivation while completing my study. May our friendship last forever. Lastly, I would like to thank everyone who was involved directly and indirectly in this study. ThankYou.

TABLE OF CONTENTS

ABSTRACT

The amount of waste is increasing every year causing the workload of the waste collectors to increase. Waste collectors are exposed to numerous pollutants especially particulate matter since their working condition required them to contact with waste which already contain pollutants and bacteria. The aim of this study is to assess the respiratory health of waste collectors in Kuala Selangor. The cross-sectional study was conducted among waste collectors to determine the exposure on $PM_{2.5}$ and the respiratory health-related symptoms experienced by the waste collectors. The assessment is divided into two section; exposure to $PM_{2.5}$ assessment and the respiratory health assessment. Descriptive statistic is used analyze the exposure to $PM_{2.5}$ and symptoms experienced by the waste collectors. Both Spearman and Pearson correlation are used to identify the correlation between the two objectives. The study found that the personal exposure to total dust are exceed the limit of 0.15 mg/m^3 of an 8-hour time-weighted average (TWA) of total dust exposure in workplaces. However, the exposure of waste collectors to $PM_{2.5}$ based on the area sampling does not exceed MAAQS limit of total suspended particles of 0.26 mg/m^3 for 24 hours. Moreover, majority of waste collectors experienced obstructive lung impairment while 15 out of 50 samples are tested normal lung function. Most of the waste collectors does not experienced any respiratory health-related symptoms while some of them experienced chest colds and chest illnesses, cough, and phlegm. Both exposure to $PM_{2.5}$ and respiratory health-related symptoms does not show any correlation. The finding of the study shows that the exposure to $PM_{2.5}$ and symptoms may be varied due to the environmental factors, the susceptibility of the waste collectors to the pollutants as well as the habits and lifestyles of the workers.

Keywords: *waste collectors*, *$PM_{2.5}$*, *respiratory health*

CHAPTER 1

INTRODUCTION

1.1 Background of study

The amount of waste is increasing yearly, causing waste collectors' workload to increase. According to the Department of Statistics Malaysia, the number of scheduled wastes produced from 2015 to 2019 rose 8.3 percent yearly and there were 4,013.2 tons of waste in total in 2019. The basic waste management hierarchy consists of five important steps: reuse, reduce, recycle, treat, and dispose of. Disposal is the most current process used in Malaysia (Malaysia Investment Development Authority, n.d.). Waste collection is the process where all waste from housing or public areas such as schools, parks, or markets is collected into the garbage truck until the truck is fully occupied before dumping it in the landfill. Waste collectors usually used bare hands in handling waste, wearing uncovered shoes, and wearing no face mask or face shield while working.

Waste collectors are exposed to many pollutions and hazardous substances from the environment or traffic, exposure to the waste for more than five hours, or effluent from the garbage truck that can lead to long-term and short-term respiratory diseases. Respiratory diseases that affect waste collectors can also develop unnoticeably if they are constantly exposed to hazardous substances such as particulate matter (PM), specifically $PM_{2.5}$ and endotoxin. A landfill can be considered a place where a chemical and biological reaction occurs due to the decomposition of waste that produces gases that can affect human respiratory systems (Kumar et al., 2020).