

UNIVERSITI TEKNOLOGI MARA

**HEAVY METAL CONTAMINATION
(ZINC, COPPER, LEAD, CADMIUM) IN SHRIMP
AND COCKLES AT SUNGAI HAJI DORANI,
SABAK BERNAM, SELANGOR**

**FATIN BINTI MOHD ZAMRI
FARAH ADILAH BINTI MUSA**

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

Faculty of Health Sciences

August 2020

ACKNOWLEDGEMENT

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

First and foremost, praises and thanks to the God, the Almighty, for His showers of blessings throughout our research work to complete the research successfully.

We would like to express my deep and sincere gratitude to our research supervisor, Sir Nasaruddin Bin Abdul Rahman, for giving us the opportunity to do research and providing invaluable guidance throughout this research. His dynamism, vision, sincerity and motivation have deeply inspired me. He has taught us the methodology to carry out the research and to present the research works as clearly as possible. It was a great privilege and honor to work and study under his guidance. We extremely grateful for what he has offered us. We would also like to thank him for his friendship, empathy, and great sense of humor.

Moreover, we would like to thank all lecturers in the Department of Environmental Health & Safety, Faculty of Health Sciences for all advices and guidance in this subject. Also providing the information needed regarding this course.

We extremely grateful to our parents for their love, prayers, caring and sacrifices for educating and preparing us for our future. Our Special thanks goes to our friends and classmates for the keen interest shown to complete this thesis successfully. We are extending our thanks to En. Zarul, community of Kampung Haji Dorani for their support and kindness during our research work.

Finally, our thanks go to all the people who have supported us to complete the research work.

TABLE OF CONTENTS

DECLARATION BY STUDENTS	
INTELLECTUAL PROPERTIES	
APPROVAL BY SUPERVISOR	
ACKNOWLEDGEMENT.....	i
TABLE OF CONTENTS	ii
LIST OF TABLES	v
LIST OF FIGURES	viii
LIST OF ABBREVIATIONS.....	ix
CHAPTER 1: INTRODUCTION.....	1
1.1 INTRODUCTION	1
1.2 PROBLEM STATEMENT.....	4
1.3 OBJECTIVES.....	5
1.4. HYPOTHESIS.....	5
1.4 SCOPE AND LIMITATION.....	6
1.5 SIGNIFICANT OF THE STUDY.....	7
1.6 CONCEPTUAL FRAMEWORK.....	8
CHAPTER 2: LITERATURE REVIEW	10
2.1 Literature review	10
CHAPTER 3: METHODOLOGY.....	18
3.1 Methodology	18
3.2 Study location	19
3.3 Study profile.....	21
3.4 Study design.....	22
3.5 Preparation phase.....	22
3.6 Study instrument.....	24
3.7 Data collection analysis.....	27

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Heavy metal pollution in rivers gives threat to public water supplies and also to the consumer of fishery sources. Heavy metals constitute a core group of aquatic pollutants via its bioaccumulative and non-biodegradable properties in food. Human may be contaminated by organic and inorganic pollutants associated with aquatic systems by consumption of contaminated fish and other aquatic foods from this environment. Heavy metals, such as cadmium (Cd), lead (Pb), and zinc (Zn), as well as metallic like copper (Cu) from natural and anthropogenic sources continuously enter the marine environment. Subsurface migration, fertilizer runoff from farms, storm water from streets, and other forms of diffuse pollution are now recognized as having serious environmental consequences. In more than 50 percent of estimated cases in which water quality goals are not achieved, diffuse pollution is cited as the main cause (International Institute for Applied Systems Analysis (IIASA)).

Based on national water quality from the U.S. Environmental Protection Agency, nearly half of our rivers and streams and more than one-third of our lakes are polluted and unfit for swimming, fishing, and drinking. Nutrient pollution, which includes nitrates and phosphates, is the leading type of contamination in these fresh water sources. While plants and animals need these nutrients to grow, they have become a major pollutant due to farm waste and fertilizer runoff. Municipal and industrial waste discharges contribute their fair share of toxins as well. Water quality deterioration may be comes from point sources of pollution such as discharge of wastewater and non-point sources of pollution examples from sewer leakages, overflow discharges, wildlife animal wastes and runoff from urban areas or agricultural fields that resulted from unprecedented population and economic growth, urbanization and

industrialization has been a great concern for several decades. When contamination originates from a single source, it is called point source pollution. Examples the point source pollution include wastewater (also called effluent) discharged legally or illegally by a manufacturer, oil refinery, or wastewater treatment facility, as well as contamination from leaking septic systems, chemical and oil spills, and illegal dumping. The EPA regulates point source pollution by establishing limits on what can be discharged from a facility directly into a body of water.