

UNIVERSITI TEKNOLOGI MARA

**WATER QUALITY ASSESSMENT OF VENDING
MACHINE IN LARUT, MATANG, AND SELAMA
(LMS) DISTRICT, PERAK**

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

Faculty of Health Sciences

January 2021

ACKNOWLEDGEMENT

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

Assalamualaikum and Alhamdulillah, all praises 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 and grateful to Allah S.W.T. for the strength, high spirit and also His blessings for helping me in accomplishing my study.

Millions of thanks to my beloved parents, Mr. Abdul Fuzi Bin Abdul Rahman and for their huge support and encouragement through thick and thin experience of my study. My deepest gratitude and appreciation to my dearest supervisor, Dr. Siti Rohana Binti Mohd Yatim who spent her time and efforts in guiding and advising from the beginning till the end of my research journey. Not to forget, I would like to thank all the lecturers in Department of Environmental Health and Safety, Faculty of Health Sciences who always share their thoughts, knowledge and advices throughout my 3 years and half study in UiTM Puncak Alam. Only Allah can reward all of you with bless and goodness.

A sincere thanks and appreciation goes to all the involved staff from Water Quality and Food Safety Units at Pejabat Kesihatan Daerah Larut, Matang, and Selama who gave their full cooperation and assisted me in several ways throughout my study. A very special thanks to all of my colleagues from (NHSE10 e-pjj) HS243 that always giving supports and motivates while finishing my study. May our friendships will be lasts forever. Lastly, I would like to thank everyone who involved directly and indirectly in this study. Thank you so much, I am really appreciate it.

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ABSTRACT

Water vending machines are popularly used in public areas especially in city area. Assessment of physico-chemical and microbiological parameters that can alter the quality of drinking water is essential for the prevention of waterborne diseases outbreak in the future. The aim of this study was to assess the performance and quality of water vending machines (WVMs) in LMS district, Perak whether adhere to the standard or not. In this study, out of 15 WVMs only 2 machines were grading as satisfactory level based on observation survey. Analysis of physico-chemical parameter indicated all the water samples tested were found complied for pH value (6.40-7.40), while not complied for turbidity (0.22-1.47 NTU). There was only one WVM that incompliance for residual chlorine with 0.11 mg/L to the Food Regulations 1985 (25th Schedule). There were 5 vending machines detected total coliform (1.0-56.8MPN/100 mL) and none of *E.coli* detected for microbiological analysis. There was correlation found between the total coliform and pattern maintenance ($r = -0.718$; $n = 15$; $p = 0.003$). Overall, this study concludes that each installed WVM shall be maintained regularly according to set schedule in ensuring that drinking water is always safe to be consumed and crucial to avoid growth of harmful pathogens.

Keywords: *Vending machine, drinking water, coliform, Escherichia coli, public health.*

CHAPTER 1

INTRODUCTION

1.1 Study background

Water is very important in people's daily lives as it is used for domestic, public and industrial, trade and agriculture use. Most percentage of the country's total water supply is for domestic use. Examples of domestic uses include for drinking, food preparing and cooking, bathing, car washing, washing clothes and dishes and other purposes. Furthermore, water is also recognized by all forms of life as one of basic elements to survive, including humankind, plants, and animals, which frankly said, all may be died without water.

It is continuing be an integral component for numerous processes of vital biochemical in human being (Cabral, 2010). For example, water uses for cells, tissues and organs to help regulate temperature of body and maintain other bodily functions. It is encouraged that every person is required to drink at least 8 glasses of plain water as equal as 2 L each day to maintain their good health (Heinz & Sheila, 2002); the water need is increased to 3.3 L for man with modest physical activity and can be up to 4 till 5 L for active man (Sawka, Cheuvront, & Robert, 2005).

Malaysia generally as a tropical country with hot and humid climate prevailing throughout the year, the consumption of drinkable water among its population may prove to be useful especially in dry season. In addition to drinking enough volume of water, for safe consumption by human, it is also found crucial to ensure that the drinkable water resources remain uncontaminated and clean (Cabral, 2010; Suthar, 2010; Pirsahab, Khosravi, Sharafi, Babajani, & Rezaei, 2013).