

UNIVERSITI TEKNOLOGI MARA

**EXPOSURE TO AEROSOLIZED
BACTERIA AMONG WASTE
COLLECTORS OF RECYCLABLE
AND MIXED RESIDENTIAL WASTE**

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Project submitted in fulfillment of the requirements for
the degree of

**Bachelor in Environmental Health and Safety
(Hons.)**

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DECLARATION BY STUDENT

Project entitled “Exposure to Aerosolized Bacteria among Waste Collectors of Recyclable and Mixed Residential Waste” 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 A/P 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).

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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.

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ABSTRACT

Introduction: Numerous studies reported that the exposure towards aerosolized bacteria might cause severe respiratory and gastrointestinal problems. This is an issue because waste collectors may be exposed to aerosolized bacteria as they handle various types of waste materials. **Objective:** The study was conducted to quantify the exposure levels of airborne culturable bacteria among waste collectors of recyclable and mixed residential waste and to study the influence of outdoor temperature and relative humidity on the growth of bacteria. **Methodology:** A total of eighty microbiological air samples from waste collectors of recyclable and mixed residential waste were collected by filtration method using air sampling pump with cassette. The samples were extracted, plated on nutrient agar and incubated for 24 hours at 37°C. After incubation period, the visible colonies on the plates were counted and the average Colony Forming Unit (CFU) of bacteria was calculated. **Result:** The mean exposure level of aerosolized bacteria among mixed residential waste collectors were significantly higher than recyclable waste collectors, which was 9.28 logCFU/mL for mixed residential waste and 9.05 logCFU/mL for recyclable waste. In addition, this study has found that there is no correlation between outdoor temperature and relative humidity with the total colony count of culturable bacteria, but it was mainly influenced by the types and compositions of waste. **Conclusion:** The total colony count of culturable bacteria for both type of waste were not influenced by the outdoor temperature and relative humidity, but it was influenced by other factors especially the types and composition of waste. Bacteria exposure can adversely affect workers health. Therefore, it is necessary to lower the level of exposure towards these culturable bacteria by practicing better management system.

Keywords: *Bioaerosols, Bacteria, Waste collection, Occupational exposure*