

**UNIVERSITI TEKNOLOGI MARA**

**IDENTIFICATION OF *SALMONELLA*  
AND *ESCHERICHIA COLI* IN FOOD  
WASTE DURING STORAGE PROCESS**

**NUR ASHNIDAR BINTI ABIDIN**

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

**Faculty of Health Sciences**

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## DECLARATION BY STUDENT

The project entitled “Identification of *Salmonella* and *Escherichia coli* in Food Waste during Storage Process” is a presentation of my original work. Wherever contributions from others involved, every effort is made to indicate this clearly, with due references to the literature, and acknowledgement of collaborative project and discussions. This project was done under the guidance and supervision of Madam Siti Rohana binti Mohd Yatim as a project supervisor. It has been submitted to the Faculty of Health Sciences in partial requirement for Degree of Bachelor in Environmental Health and Safety (Hons.).

Student’s signature

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Nur Ashnidar binti Abidin

2014434022

930924-10-5728

Date : .....

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## ABSTRACT

Food waste consist high amount of organic waste and its storage conditions are important to encourage reaction of microbial community in degrading the waste. This study is carried out to determine the presence of *Salmonella sp.* and *Escherichia coli sp.* in food waste during storage process. The results were deemed to relate on the existence of pathogens with potential health risk reported by waste worker in previous studies. The study design was cross-sectional. Ten kilograms of food waste was collected from RoRo bins at a low-cost high-rise units located in Puncak Alam, Selangor was kept anaerobically in two different reactors (30<sup>0</sup>C and 40<sup>0</sup>C). Waste and leachate sample were taken 24 hours every for 14 days. Sample taken from both incubator are done by using dilution and spread plate method for microbial identification and colony concentration. A review is done on previous studies to relate on health problems associated with the exposure towards pathogenic microorganisms during collection process. Results are analyzed by using Pearson Correlation Coefficient of SPSS Version 21 and Microsoft Excel 2010. From waste and leachate sample analysis, the result showed presence of *Salmonella sp.* and *Escherichia coli sp.* in both reactors and there is a significant correlation on physical parameters with the growth of microbial population where  $p < 0.05$ . The findings in this study shows that the presence and concentration levels of pathogens are causing potential health risk as most self-reported health problems experienced by waste workers are due to the lack of proper personal hygiene. However, to obtain strong evidence focusing on health problems associate with specific pathogenic microorganisms, an evaluation that assess microbial concentration exposure on worker's apparel and skin is highly suggested.

**Keywords:** *food waste, waste collector, microbial population, potential health risk*