UNIVERSITI TEKNOLOGI MARA

ASSESSMENT OF HOUSEHOLD WATER TANKS MICROBIAL QUALITY IN PUNCAK ALAM, SELANGOR

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work unless otherwise indicated or acknowledge as referenced work. This thesis has not been submitted to any other academics institutions or non-academic institution for any degree or qualification

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research

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ABSTRACT

Maintaining the quality of household water tanks is very crucial to the human's health as bacteria found in the water tanks can cause waterborne illnesses. Consumer usually neglect the cleanliness of their household water tank as they do not aware about the impact of their action. The aim of this study was to determine the microbial quality of water household tanks in Puncak Alam by detecting the presence of *Escherichia coli* and enumerate the coliform count of water sample. Fifteen water samples were collected from randomly picked houses around Puncak Alam area. For every houses, samples were obtained from two difference sources of water which were from municipal water supply system (kitchen tap) and from household storage tank (bathroom tap) that categorized and labelled as post and pre sample, respectively. Membrane filtration method was used in this study to quantify coliform bacteria. A volume of 100 mL of water sample was filtered through 0.45 µm membrane filter, the filter then transferred on Mac conkey agar and incubated at 37 ºC for 24 hours. Total coliform, fecal coliform (*E.coli*) and non-coliform bacteria was then confirmed by inoculating the colony into Lauryl sulphate broth and the production of gas was observed after 24 hours of incubation. The overall result of this study also shown that 10 out of 15 samples were contaminated with microorganism where the level of microbial contamination increased from before entering the storage tank to after leaving the storage tank. The results showed that, although none of the samples contained *E. coli*, they did contain other coliforms. All water samples were free from any fecal contamination by human and/or animal as no *E.coli* detected, on the other hand, other Coliform bacteria were present in water sample which are usually introduced by the environment and ineffective treatment process such as *Salmonella* sp., *Enterobacter* sp., and *Citrobacter* sp. This study proved that household storage tank contributes to the deterioration of water quality. The overall results of this study conclude that there is a lack of awareness among residents involving the importance and advantage of maintaining proper sanitation and hygiene of the household water storage tanks. Further study involving frequency of maintaining the water storage tank and coliform count should be done.

Keywords: *Coliform, microbial quality, membrane filtration, water storage tank*