UNIVERSITI TEKNOLOGI MARA

E. coli CONTAMINATION IN HOT SPRINGS AT HULU SELANGOR

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Project submitted in fulfilment of the requirements for the degree of
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(Hons.)

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DECLARATION BY STUDENT

Project entitled "*E. coli* Contamination in Hot Springs at Hulu Selangor" 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 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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In the name of Allah, The Most Gracious, The Most Merciful

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ABSTRACT

Recreational use of water can have benefits to health and well-being. However, recreational water use also poses risks to health because it can lead to infections, exposure to chemical and microbiological organisms as well as physical risks such as drowning and injury if the water is polluted and unsafe. There are many well-known hot springs in Malaysia that are becoming tourist attraction. People use hot springs for many reasons such as picnic, bathing and therapy. The purpose of this study was to assess the recreational water quality at selected hot springs in Hulu Selangor. A total of three samples of water was taken from each of the three hot springs in Hulu Selangor which are Kuala Kubu Bharu hot spring, Batang Kali hot spring and Kerling hot spring. The study was repeated twice during weekend and weekday. The physical parameters (pH, temperature and turbidity) were measured in-situ using Hanna Multiparameter and turbidity meter. The biological parameter (*E. coli*) was measured ex-situ by using colilert method. The physical parameter which were turbidity and pH in the all of the three hot springs are complied with the standard but the biological parameter which is the number of *E. coli* is exceeding the acceptable level from the standard in all of the hot springs. An independent t-test shows that there is significant different ($p<0.05$) only for the turbidity level during high peak day and low peak day between hot springs but there are no significant different ($p>0.05$) for the level of pH, temperature and *E. coli.* There are no significant correlation ($p>0.05$) between the presence of the *E. coli* with turbidity. The findings in this study shows that polluted hot spring will poses risk to the users. Thus, this study can be used to formulate strategies to overcome the issues.

Keywords: *Hot springs, Recreational water, Water quality, E. coli, Polluted*