

**UNIVERSITI TEKNOLOGI MARA**

**WATER QUALITY ASSESSMENT  
AT SELECTED RECREATIONAL AREA IN SARAWAK**

**SHERILENE ANNE ANAK ROGIE**

**BACHELOR IN ENVIRONMENTAL HEALTH AND  
SAFETY (HONS.)**

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### Declaration by Student

Project entitled "Water Quality Assessment at Selected Recreational Area in Sarawak" is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature and acknowledgment of collaborative research and discussions. The project was done under the guidance of Mr. Hashim bin Ahmad as Project Supervisor and Madam Siti Nor Ain binti Seri Masran as Co-supervisor. It has been submitted to the Faculty of Health Sciences in partial fulfillment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

Student's Signature:



(SHERILENE ANNE ANAK ROGIE)

2010215548

890921-13-5098

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## Abstract

### Water Quality Assessment at Selected Recreational Area in Sarawak

Sherilene Anne Anak Rogie

**Introduction:** Recreational water parks become a common leisure place for many individuals but many are not aware of the quality of water. **Objective:** This study objective is to determine the recreational water quality and estimate the potential and health risk based on chemical parameters. **Methodology:** This cross-sectional study was carried out at two different recreational area in Sarawak. A total of 32 samples were taken from two different study locations; Ranchan Pool and Sungai Cina. A survey form consisting demographic questions adapted from previous journals was also used to obtain other information. A survey form of sanitary survey was used to obtain information on potential contamination to water. There are two types of data obtained from the recreational water quality sampling; i.e. in-situ and laboratory analyses data. A total of five water quality parameters were measured namely pH, temperature, turbidity, conductivity and dissolved oxygen using ExStik EC500 Instrument, turbidimeter Martini Instrument, and Portable Dissolved Oxygen meter Milwaukee Instrument. While, for laboratory analysis, there are three parameters measured namely copper, iron and nitrate. For biological analysis, *Escherichia coli* were identified by using Eosin Methylene Blue Agar based on occurrences of green metallic sheen on the surface agar. **Results:** The results of physical and chemical parameter at both study location were compared between weekday and weekend. There were highly significant different of physical and chemical parameter at Ranchan Pool and Sungai Cina during weekday and weekend. *Escherichia coli* were found presence at both study location. The health risk assessment found that chronic daily intake (CDI) and hazard quotient (HQ) was calculated. HQ values were less than 1 which indicated that the non carcinogenic risk associated with exposure to copper, iron and nitrate via ingestion pathway and dermal contact was negligible and pose no risk to the public. **Conclusion:** Moreover, there was no complaint regarding health effect from the public through questionnaire survey. Although the result of health risk assessment indicates low health risk, but the recreational water management need to perform any strategies such as public information, awareness campaign, the development of monitoring and assessment strategies that is useful to safeguard the healthy environment of the recreational water for the future generations.

**Keywords :** *Recreational water, physical parameter, chemical parameter, biological parameter, health risk assessment*