

UNIVERSITI TEKNOLOGI MARA

***OREOCHROMIS NILOTICUS* (TILAPIA) AS BIO-
INDICATOR OF HEAVY METALS
CONTAMINATION IN TWO DIFFERENT
LAKES AND ITS POTENTIAL HEALTH RISK**

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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 “*Oreochromis Niloticus* (Tilapia) as Bio-indicator of Heavy Metals Contamination in Two Different Lakes and Its Potential Health Risk” 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, Mr. Nasaruddin Bin Abd Rahman. 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

In aquatic ecosystem, heavy metals are one of main pollutants that cause serious adverse effects towards aquatic pollution. Mainly, most of heavy metals were emitted to the environment through several anthropogenic sources and human activities. In this study, fish was used as bio-indicators because fish act as an important role in the purpose of heavy metals pollution monitoring. The objectives of this study are to compare the concentration of heavy metals in two different lakes and determine whether the concentration of heavy metals in fish are compliance with Malaysia Food Act 1983 (Act 281), Food Regulations 1985 and International Standard and its potential health risk. Heavy metals in fish were analysed by using Atomic Absorption Spectrophotometer (AAS). Concentrations of heavy metals namely Pb, Cd, Zn, and Cu were detected in *Tilapia Oreochromis niloticus* from Raban Lake and Temenggor Lake. Between four parameters of heavy metals that been analysed in *Tilapia Oreochromis niloticus*, zinc showed highest concentration in samples followed by lead, cadmium and copper. Levels of cadmium and zinc were detected highly in samples that from Raban Lake whereas *Oreochromis niloticus* from Temenggor Lake showed highest concentration of lead. However, concentrations of heavy metals in fish were lower than permissible limit set by Malaysia Food Act 1983 (Act 281), Food Regulations 1985 and International Standard. For health risk assessment, there were no significant potential health effects for consuming the *Tilapia Oreochromis niloticus* from both locations.

Keywords: *Bio-indicators, Heavy metals, Raban Lake Temenggor Lake, fish, health risk assessment, health effects*