

UNIVERSITI TEKNOLOGI MARA

**ASSESSMENT OF HEAVY METALS IN FISH
AT SUNGAI SEMBILANG AND SUNGAI
BULOH, AND THE HEALTH RISK
EVALUATION OF ITS CONSUMPTION**

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**Project submitted in fulfilment of the requirements
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DECLARATION BY STUDENT

Project entitled Assessment of Heavy Metals in Fish at Sungai Sembilang and Sungai Buloh, and the Health Risk Evaluation of Its Consumption 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 acknowledgement of collaborative research and discussions. The project was done under the guidance of Mr Nasaruddin Bin Abd. Rahman as Project 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).

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ABSTRACT

ASSESSMENT OF HEAVY METALS IN FISH AT SUNGAI SEMBILANG AND SUNGAI BULOH, AND THE HEALTH RISK EVALUTION OF ITS CONSUMPTION

Muhammad Ikram Bin Yaacob

Introduction: The contamination of water bodies such as lake and rivers by anthropogenic activities can cause the accumulation of heavy metals in the environment. This is largely due to its nature that is highly persistence which allows it to bioaccumulate inside the aquatic organisms such as fish which may cause adverse health effects to the human who consumes it in their diet. **Methodology:** *Puntius schwanenfeldii* is selected as the species of fish that is going to be studied. A number of 30 samples were collected freshly from Sungai Sembilang and Sungai Buloh in Selangor to identify the concentration of heavy metal accumulated inside the samples. Sungai Buloh is selected is study area as it is one of the heavily polluted river whereas Sungai Sembilang is chosen due to the presence of landfill which may posed as the source of heavy metal contamination. A number of water samples were also collected from the rivers to identify the concentration of heavy metals in the water. Dry-ash method was used in preparing the samples from the fish before it were analysed. Four parameters namely Cadmium (Cd), Copper (Cu) and Lead (Pb) and Manganese (Mn) were analyzed by using Atomic Absorption Spectrophotometer (AAS). SPSS software was used to analyse the data obtained from the laboratory analysis. **Results:** Estimation of health risk using Target Hazards Quotient shows that significant risk is posed by heavy metal Cd and Pb as the value exceed 1. Statistical analysis shows that there is a significant difference in Mn concentration of the fish muscle tissue between Sungai Sembilang and Sungai Buloh. Significant difference is also identified in terms if Cd and Pb concentration in water between the two study areas. **Conclusion:** The objectives of the study are fulfilled. The study hypotheses are also proven by the study conducted.

Keywords: Bioaccumulation, Cd, Cu, Pb, Mn, AAS, Target Hazard Quotient, *Puntius schwanenfeldii*