UNIVERSITI TEKNOLOGI MARA

HEAVY METAL EVALUATION OF RIVER AND FISH IN KUALA SELANGOR, SELANGOR

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Project submitted in fulfillment of the requirements for the degree of
Bachelor in Environmental Health and Safety (Hons.)

Faculty of Health Sciences

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DECLARATION BY STUDENT

Project entitled “Heavy Metal Evaluation of River and Fish in Kuala Selangor, Selangor” 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, acknowledgement of collaborative research and discussions. The project was done under the guidance of Mdm. Siti Rohana Binti Mohd Yatim as my 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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In the name of Allah, The Most Gracious, The Most Merciful.

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ABSTRACT

Heavy metals considered as a major source of metal contamination in surrounding environment, especially aquatic (water). Heavy metals can cause illness as the accumulation in fish could pose potential risk to human. The aim of this study is to determine the physico-chemical parameter of river water, heavy metal concentration of river water and fish muscle tissue, and the potential health risk to human. The physico-chemical parameters of river water samples were tested using a multi-parameter probe, followed by digestion method involving HNO_3 to be analyzed for metal concentration using Atomic Absorption Spectrophotometer. For fish samples, dry ashing method was used using a muffle furnace to prepare samples for metal concentration determination. The result showed no violation on physico-chemical parameters. However, there was a violation on cadmium concentration (0.016 mg/L) in water samples based on the standard regulation limit (0.001mg/L) but no violation recorded in the fish samples. Besides that, there are no violation of metal concentration were recorded on lead and copper in both samples. Hazard quotient for Pb, Cu and Cd indicated that there were no potential health risk to human via consumption of the fish. Simple linear regression model was used to determine the relationship between metal concentration in river water samples and fish samples. However, a p-Value of 0.132 ($p>0.05$) was obtained indicating that there was no significant difference between metal concentration in river water samples and the fish samples.

Keywords: *Heavy metal, river water, Oreochromis mossambicus, atomic absorption spectrophotometer, health risk.*