UNIVERSITI TEKNOLOGI MARA

TOXICITY EVALUATION OF NON-SANITARY LANDFILL LEACHATE IN SELANGOR USING NILE TILAPIA (*Oreochromis niloticus)*

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DECLARATION BY STUDENT

Project entitled "Toxicity Evaluation of Non-sanitary Landfill Leachate in Selangor using Nile Tilapia *(Oreochromis Niloticus)"* 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 Mrs. Shantakumari Rajan 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

Introduction: Landfill leachate had implicated the environmental pollution and health impact.This study was conducted to determine the toxicity of leachate discharge from non-sanitary landfills in Selangor. The chosen landfill leachate was from Kalumpang and Bukit Beruntung where the leachate was untreated. The toxicity of landfill leachate was evaluated using Nile Tilapia (*Oreochromis Niloticus)* based on the acute toxicity of Whole Effluent Toxicity Testing. **Method:** The samples of leachate were characterized by physico-chemical characteristics. The sample of leachate was analyzed for the value of ph, Ammonical Nitrogen, BOD, COD, Total Dissolved Solid and Conductivity according to USEPA method. The static method of acute toxicity test was used. The data obtained were statistically evaluated by the use of the SPSS computer program based on Probit Analysis Method. **Results:** The physical and chemical analysis of leachate was compare with Second Schedule (Regulation 13) in Environment Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulation 2009. The result for leachate samples for Kalumpang and Bukit Beruntung Landfill was not complies as the standard for the BOD and COD analysis. The 96hr LC_{50} values of landfills leachate from both landfills using Nile Tilapia were found to be 10.466% and 9.989% respectively. The relationship between the chemical parameters and toxicity of leachate shows that the higher values of BOD and COD have indicates the level of toxicity of the leachate (LC50).**Conclusion:** The leachate discharge from non-sanitary landfill effect the aquatic organisms and human health since fish were involved in human food chain. Further research with toxicity testing methods directly on fish will be very useful in assessing possible ecological risk assessment of landfill leachate.

Keywords: Landfill leachate, Water, Nile Tilapia *(Oreochromis Niloticus)*, Whole Effluent Toxicity, Acute Toxicity, LC50