UNIVERSITI TEKNOLOGI MARA

DETERMINATION OF LEAD IN CHILDREN PRODUCT (TOYS) IN RELATION TO CHILDREN HEALTH RISK ASSESSMENT

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

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Declaration by Student

Project entitled "Determination of Lead in Children Product (Toys) in Relation to Children Health Risk Assessment" is a presentation of my original research work. Wherever contributions of others are involved, every effort is made in indicate this clearly, with due references to the literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of En. Ahmad Razali Ishak as Project Supervisor and Professor Madya Hazilia Husaain 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).

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TABLE OF CONTENTS

Abstract

Determination of Lead In Children Product (Toys) In Relation To Children Health Risk Assessment

Tengku Zulkefli Bin Tengku Abu Bakar

Introduction: Even though toys can be indirect education to the young children, it also can cause harm to them. Heavy metal especially lead is widely present in toy products including those designed for children. The amount of lead present in toy products sometime exceeds current Consumer Product Safety Commission regulations (90ppm). Exposure to lead can affect almost every organ and system in the human body. While, exposure to low doses of lead can cause IQ deficits, attention deficit hyperactivity disorder, and deficits in vocabulary, fine motor skills, reaction time, and hand-eye coordination of human especially young children since they often put their hands and other objects in their mouths. **Methodology**: The study was conducted at 5 selected location surround Selangor state. The study design of this study is cross-sectional study. The toy samples were taken randomly at registered toy's shop and night market. The study will be done by scrapping the paint (lead-based paint) from the toys and running the test for lead detection in the UiTM laboratory using ASS Manual Handbook. The questionnaires was adopted and modified from Chicago Lead Knowledge Test (CLKT), 2006 and was distributed to certain parent who enter and searching a toy for their children in purpose of evaluating the risk of their children. **Results**: The study was found that most of toy samples (84.4%) have low detection lead level. Only 5(15.6%) of samples exceed the lead based paint surface coating standard (≤90ppm). In identifying awareness about health and safety of lead on consumer, the level of knowledge for most respondents about lead exposure or lead issue is satisfied. There is significant relation between level education of respondent with awareness toward lead issues ($p \leq 0.05$). There are also significant relation between education level and awareness toward leads' health effect (IQ decrease) ($p \leq 0.05$).. Besides that, there is also significant relation between awareness on lead issues with leads' health effect (IQ decrease) ($p \leq 0.05$).Then, there is also significant relation between gender and awareness toward lead issues ($p \leq 0.05$). While to evaluate the human health risk assessment of lead level in children product (toys) to human, ADI/TDI ways are used. The average shows that the ADI= 0.0485 ug/kg/day. In human health risk assessment, if TDI> 2.0 ug/kg/day, it is show the average contact between Lead in toy and human health is under safe limit. **Conclusion**: In conclusion, there was low detection of lead in the toy. From the HRA done, the toy is safe to use, meaning here suitable to play by children. Other than that, the parent who buy toys for their children have awareness toward this issues because there is still have potential to get lead poisoning due to ignorant action by certain parents.