

UNIVERSITI TEKNOLOGI MARA

INDUSTRIAL EFFLUENTS AND ITS HEALTH RISKS

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**Project paper submitted in partial fulfilment of the requirements
for the degree of Bachelor in Environmental Health and Safety
(Hons.)**

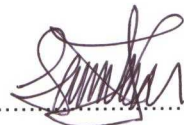
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Declaration by Student

Project entitled "Industrial Effluent and its Health Risks" 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 K.Subramaniam as Project Supervisor and Prof Madya Rodziah Ismail 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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Abstract

A Study of Industrial Effluent and Its Health Risks

Erma Syazana Binti Kamaruddin

Introduction: Industrial estates are growing from time to time in order to fulfil the demand of the growing population in the country. 9762 of river point sources were polluted by manufacturing sectors issued by DOE (2009). Without realizing, our river water become polluted from discharge of effluent into the soil and water bodies and causing serious health hazards to human health and disrupt functioning of the ecosystem. Industrial effluents, urban runoff, direct disposal of wastes into the water bodies, agricultural fertilizer and animal wastes including the human sewage remain the major water contaminants. It shows that industrial effluent need to be treated in order to minimize the environmental impacts.

Methodology: The cross sectional study was conducted in a selected factory in the Industrial Area at Sg Buloh. Treated (n=30) and untreated (n=30) effluent samples were taken sample to identify and evaluate the presence of physical, chemical, biological hazards, environmental toxicity, environmental management system and perceived health risks. The study questionnaires were distributed to workers and residents in Sg Buloh. Person-to-person interviews were carried out. Statistical analyses were conducted for descriptive and inferential statistics using SPSS version 17.0 in this study.

Results: the analyses of effluent samples (n=60) revealed that for the physical parameters (temperature, suspended solids, pH) had significant difference ($p < 0.05$) for treated and untreated effluent. Sixteen chemical parameters (COD, cadmium, chromium hexavalent, cyanide, lead, copper, manganese, nickel, tin, zinc, boron, iron, aluminium, fluoride, phenol and sulphide) had significant difference ($p > 0.05$) for treated and untreated effluent while for one parameter (free chlorine) had no significant difference ($p > 0.05$) for both treated and untreated effluent. Biological parameter, Biological Oxygen Demand (BOD_5) showed the significant difference ($p < 0.05$) for treated and untreated effluent. The results of the toxicity test (WET) showed that if the concentration of both treated and untreated effluent were high, the kill time of the *Leptobarbus hoevenii species* will be increased. There are significant association ($p < 0.05$) for types of respondents and awareness of factory effluent production, followed by EMS implementation and awareness of the effluent production and types of respondents with EMS implementation.

Conclusion: In conclusion, the industrial effluent were considered as high hazards which could affect the health of the residents since all the physical, chemical and biological hazards did occur ($p < 0.05$) with the discharge of the effluent. This factory could be considered as having poor environmental management system of industrial effluent and posed health hazards from its effluent discharges. The WET method should be used before discharging the effluents into the river ecosystem.

Keywords: industrial effluent, environmental toxicity, EMS, effluent hazards, WET, LC₅₀