

UNIVERSITI TEKNOLOGI MARA

**ASSESSMENT OF HEAVY METAL CONCENTRATION
IN DRIED SALTED FISH AND FISHERY PRODUCTS
FROM MALAYSIA AND THAILAND**

MUKHAINIZAM MAH HASSAN

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

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Student's Signature
Mukhainizam Mah Hassan
2008254514
690815-03-5327
Date 18/07/2013

Declaration by student

Project entitled "Assessment on Heavy Metal Concentration in Dried Salted Fish and Fishery Products from Malaysia and Thailand" is a presentation of my original work. Wherever contributions of others are involved, every efforts is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaboration research and discussions. The project was done under the guidance of Mr.Ahmad Razali Ishak as Project Supervisor and Assoc. Prof. Dr.Hazilia Hussin 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).

Accepted to be evaluated by

(Ahmad Razali Ishak)

Student's signature:

Mukhainizam Mah Hassan

2008254514

Accepted to 690815-03-5337

Date: 18/07/2013

(Assoc. Prof. Hazilia bi Hussin)

Project Co-Supervisor

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Abstract

Assessment on Heavy Metal Concentration in Dried Salted Fish and Fishery Products from Malaysia and Thailand.

Mukhainizam Mah Hassan

Introduction: Assessment of heavy metals content in different commercial dried salted fish and fishery products are of particular interest since fish is important to the human diet and nutrition. Moreover, they are being a bio-indicator for marine pollution and contamination and food safety. Most contemporary studies focus on marketplaces, ports, seaside or direct sampling from natural habitat marine and fresh water fishes. There were very few studies being conducted on the subjects of dried salted fish and fishery products; hence this study aims to compare the heavy metal concentration of marine dried salted fish obtained from Malaysia and imported from Thailand. **Methodology:** This cross-sectional study was carried out at two different locations namely, Sungei-Kolok town in Thailand and Tumpat in Malaysia. Sixty (n=60) dried salted fish and fishery products were randomly purchased from the selected location. The purchased samples of dried fishes and fishery products were brought to the environmental laboratory on the UiTM Puncak Alam campus. They were analyzed for Lead (Pb), Cadmium (Cd) and Arsenic (As) by using flame atomic-absorption spectrometry (F-AAS) through dry ashing-acid digestion method. **Results:** The analyzed samples from Malaysia and Thailand were statistically compared for any significant difference ($p < 0.05$). Pb, Cd and As contents ranged from 0.28 – 4.04 mg/kg, 0.01-0.34 mg/kg and 6.00×10^{-6} – 2.40×10^{-4} respectively for both Malaysia and Thailand samples. Mean comparisons between countries were found to be significantly different only for Cd whereby Pb and As did not show any difference ($p > 0.05$). The study had revealed that Pb contents in the samples had exceeded the safety limit for human consumption. Meanwhile, Cd and As concentration were found to be safe for human consumption which fall within the safety limit when compared to the standard permissible limits from the Fourteenth Schedule of Malaysian Food Regulations 1985.

Keywords: Acid digestion, dry ashing, F-AAS, heavy metals, pollution.