

CONCENTRATION OF As, Cd, Hg AND Pb IN SQUID, *L. chinensis*  
LANDED AT PENGKALAN MARAS, KUALA NERUS, TERENGGANU

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***PENGAKUAN DAN PENGESAHAN LAPORAN***

It is hereby declared and verified that this project report titled **Concentration of As, Cd, Hg and Pb in Squid, *L. chinensis* Landed at Pengkalan Maras, Kuala Nerus, Terengganu** by **Mimi Aaina Najeyha binti Noor Ley UK30529** have been examined and all errors identified have been corrected. This report is submitted to the School of Marine and Environmental Sciences as partial fulfillment towards obtaining the **Bachelor of Science (Marine Science)** from School of Marine and Environmental Sciences, Universiti Malaysia Terengganu.

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DECLARATION

It is hereby declared and verified that this project report titled **Concentration of As, Cd, Hg and Pb in Squid, *L. chinensis* Landed at Pengkalan Maras, Kuala Nerus, Terengganu** by **Mimi Aaina Najeyha binti Noor Ley UK30529** have been examined and all errors identified have been corrected. This report is submitted to the School of Marine and Environmental Sciences as partial fulfillment towards obtaining the **Bachelor of Science (Marine Science)** from School of Marine and Environmental Sciences, Universiti Malaysia Terengganu.

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## LIST OF ABBREVIATIONS

µg	-	microgram
g	-	gram
kg	-	kilogram
As	-	Arsenic
Hg	-	Mercury
Pb	-	Lead
Cd	-	Cadmium
<i>L. chinensis</i>	-	<i>Loligo chinensis</i>
PTWI	-	Provisional Tolerable Weekly Intake
FAO	-	Food and Agriculture Organization

## ABSTRACT

This study was conducted to determine the concentration of heavy metals in squid, *L. chinensis* landed at Pengkalan Maras, Kuala Nerus, Terengganu in 3 consecutive months 12 May, 22 June and 22 July (25 squids sample). The aims of this study are to provide information on the concentration of heavy metals As, Cd, Hg, and Pb in bone, internal organs, tentacles and mantle in *Loligo chinensis* species and estimate the "Provisional Tolerable Weekly Intake" (PTWI) of respective metal by humans. The concentration was measured using Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Each sample contains As, Cd, Hg, and Pb in the range of 46.1-1017.1 µg/kg, 1.3-571.7 µg/kg, 0.3-100.7 µg/kg and 0.5-52.5 µg/kg dry weight respectively. Range of heavy metals were lower than the maximum level issued by the FAO/WHO (2004). The concentration of heavy metals in the selective *L. chinensis* tissue is in descending order; As> Cd> Hg> Pb. PTWI rate also shows that the concentration of heavy metals in the organs of the *L. chinensis* are in line and under standard had issued by FAO. Therefore, *L. chinensis* that landed in Pengkalan Maras are safe to be consume by human in terms of selected heavy metal concentrations.

# KEPEKATAN As, Cd, Hg DAN Pb DALAM SOTONG, *L. chinensis* YANG DIDARATKAN DI PENGKALAN MARAS, KUALA NERUS, TERENGGANU

## ABSTRAK

Kajian ini dijalankan untuk menentukan kepekatan logam berat dalam sotong, *L. chinensis* yang didaratkan di Pengkalan Maras, Kuala Nerus, Terengganu. Tujuan kajian ini adalah untuk memberi maklumat mengenai kepekatan logam berat As, Cd, Hg, dan Pb dalam tulang, organ-organ dalaman, sesungut dan mantel dalam spesies *Loligo chinensis* dan menganggarkan "Provisional Tolerable Weekly Intake" (PTWI) terhadap manusia. Kepekatan diukur menggunakan Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Setiap sampel mengandungi As, Cd, Hg, dan Pb dalam lingkungan 46.1-1017.1 µg/kg, 1.3-571.7 µg/kg, 0.3-100.7 µg/kg and 0.5-52.5 µg/kg masing-masing. Julat logam berat adalah lebih rendah daripada tahap maksimum yang dikeluarkan oleh FAO/WHO (2004). Kepekatan logam berat dalam tisu *L. chinensis* terpilih adalah dalam turutan menurun; As > Cd > Hg > Pb. Kadar PTWI juga menunjukkan bahawa kepekatan logam berat di dalam organ-organ *L. chinensis* adalah selaras dan di bawah standard telah dikeluarkan oleh FAO. Oleh itu, *L. chinensis* yang didaratkan di Pengkalan Maras adalah selamat untuk dimakan oleh manusia dari segi kepekatan logam berat terpilih.