THAILAND

Mrs Supanoi Subsinserm
Senior Food Technologist
Fish Inspection and Quality Control Division
Department of Fisheries

I. Introduction

The Department of Fisheries (DOF) holds the legal authority for classifying and approving fisheries' harvesting areas including bivalves. DOF has imposed the Notification on Classification of bivalve harvesting areas under the authority of Fisheries Act B. E. 2490 (1947). The major objective is to ensure that fishery products exported from Thailand have been harvested from approved areas and further processed in a safe, clean and wholesome manner by approved establishments.

DOF laboratories perform the analyses required in Council Directives 91/493/EEC, 91/492/EEC and 79/923/EEC. Samples are taken to the laboratory for the DOF control of sanitary quality of fishery products as well as for the monitoring of marine biotoxins and bacteriological contamination of bivalve molluscs.

Since 1997, DOF has been submitting reports on bivalve production and sanitation program to the European Union (EU). The report comprises of monitoring results of bivalve molluscs' flesh from the approved harvesting areas for biotoxin contents like Paralytic Shellfish Poisoning (PSP), Diarrhetic Shellfish Poisoning (DSP) and Amnesic Shellfish Poisoning (ASP).

In 2002, the Commission Decision of European Union established detailed rules for the implementation of Council Directive 91/492/EEC specifying official control of microbiological classification of bivalve molluscs' production areas and maximum permitted levels which include methods of analysis for certain marine biotoxins in bivalve molluscs, echinoderms, tunicates and marine gastropods. In addition, the Commission Decision lays down limits used for the maximum levels of other toxins such as Yessotoxin (YTX), Pectenotoxin (PTX) and Azaspiracids (AZA).

Since 2003, DOF started to perform biotoxin analysis such as PSP, ASP, DSP, PTX, YTX and AZA and results thus far showed that no biotoxins were detected in all bivalve mollusc samples.

II. Objectives and Goals

The objectives are to strengthen the ASEAN capacity to detect and control the outbreak of biotoxins in ASEAN countries and also to strengthen the capacity of the laboratory for analysis of biotoxins in bivalve molluscs.

III. Survey Methodologies

a. Sampling Method, Sampling Site, Target Species, Number of Samples & Sampling Size

The sampling site would be the Trad province, which is an approved harvesting area. The target species would be Green Mussels (*Perna*

viridis). At the approved harvesting areas, the shellfish samples are taken from the top, middle and bottom of the lines. The total weight of the flesh samples should not be less than 300g at each sampling point and the total amount of samples need to be at least 36 samples.

b. Method of Analysis

There are two methods of analysis- PSP by Mouse Bioassay (MBA) and PSP by High Performance Liquid Chromatography (HPLC). The PSP by MBA method, reference method AOAC 1995, Vol II, is used for the screening of samples. Quality control is ensured by first, inoculations of one mice with reagent blank, innoculation of three mice for each sample with diluted Saxitoxin (STX) standard for the collection of conversion factor. The death time of the mice should be obtained within 5 - 7 minutes. This was performed once every 3 months.

The second method of analysis, PSP by HPLC, is used for the confirmation of detection of biotoxins in samples. The reference method used is AOAC official method 2005.06. Quality control is ensured by using a reagent blank, spiked sample to determine the percentage of recovery and perform duplicate testing for the samples.

c. Limit of Detection & Limit of Quantification

Limit of Detection (LOD) = 0.006ug/g (STX)
Limit of Quantification (LOQ) = 0.06ug/g (STX)

d. National Regulatory Limits

PSP = 0.80ug/g (STX)

IV. Results and Discussions

a. Participation in Inter-Laboratory Proficiency Testing & Results

Inter-Laboratory Proficiency Testing Programme	Results (% RSD R)
Inter-lab comparison test for PSP by Mouse Bioassay with National Oceanic and Atmospheric Administration (NOAA); United States of America (USA)	18.3
Inter-lab comparison test for PSP by Mouse Bioassay with Department of Fisheries Laboratory and Central Laboratory (Thailand) Co.,Ltd	8.6

Table T1: Participation in Inter-Laboratory Proficiency Testing

b. Survey Results & Discussion

Sampling Location	Month & Year of Sampling (MM/YYY)	Analyte Tested	No. of Samples Analysed	Minimum Concentration (ug/100g of meat)	Maximum Concentration (ug/100g of meat)	Average Concentration (ug/100g of meat)
At the approved harvesting area (Trad province)	April – June 2011	PSP (MBA)	12	Not Detected	< 35µg STXeq/ 100g	< 35µg STX eq/ 100g
	April – June 2011	PSP (MBA)	12	Not Detected	< 35µg STXeq/ 100g	< 35µg STX eq/ 100g
		PSP (HPLC)	3	Not Detected	-	Not Detected
	July – December 2011	PSP (MBA)	24	Not Detected	< 35µg STXeq/ 100g	< 35µg STX eq/ 100g
		PSP (HPLC)	6	Not Detected	-	Not Detected

Table T2: Survey Results

The findings of this survey indicated that no biotoxins were detected in the bivalve mollusc samples. However, there is still a need to continue the monitoring on the level of biotoxins to ensure that the bivalve mollusc products are free from biotoxins contamination.

c. Corrective Actions

V. Problems and Challenges Encountered

-

VI. Recommendations and Suggestions for Future Follow-Up Action

The recommendations for future follow up action are for the project to focus on updating and training on new analytical methods, specifically on multi-residues analysis for all concerned analytical method, to improve the testing capabilities on fish quality and safety in Southeast Asia and for Southeast Asian Fisheries Development Center (SEAFDEC) to provide inter-laboratory comparison tests among ASEAN countries.

The suggestions for the project are the need to establish a networking system to develop the method of analysis for fish and fishery products among ASEAN countries and also training for laboratory staff should be carried out continuously to update their knowledge and skills on the new techniques and technologies.