

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
NATIONAL AGRO-FORESTRY-FISHERIES QUALITY ASSURANCE DEPARTMENT

REPORT
on Results of Sanitation Monitoring Program
for Bivalve Mollusc Production Areas in 2011
and
Plan for Program implementation in 2012

Hanoi, March 2012

PART I
**IMPLEMENTATION RESULTS OF THE SANITATION MONITORING
PROGRAM FOR BIVALVE MOLLUSC PRODUCTION AREAS IN 2011**

1. Monitored scope and species under the Program:

1.1. Species:

- Baby clam (*Meretrix lyrata*);
- Yellow clam (*Paphia sp.*);
- Blood clam (*Tegillarca granosa*);
- Antique ark (*Anadara subcrenata*);
- Antique ark (*Anadara antiquata*);
- Scallop (*Chlamys nobilis*).

1.2. Scope: In 2011, the Monitoring Program is continuously applied to 15 EU approved bivalve mollusc production areas located in 8 following provinces/cities: Thai Binh, Nam Dinh, Tien Giang, Ben Tre, Ho Chi Minh City, Binh Thuan, Tra Vinh and Kien Giang (please see details in Table 1).

Table 1: Scope, Species and Surfaces under the Monitoring Program 2011

No.	Production areas	Province	Species	Surface (ha)	Sampling points	Starting year
1	Tien Hai	Thai Binh	Baby clam (<i>Meretrix lyrata</i>)	1,250	3	2004
2	Giao Thuy	Nam Dinh		1,400	2	2004
3	Nghia Hung			210	1	2004
4	Tan Thanh	Tien Giang	Baby clam (<i>Meretrix lyrata</i>)	2,150	3	1997
5	Binh Dai		Baby clam (<i>Meretrix lyrata</i>)	2,050	2	1997
			Blood Clam (<i>Tegillarca granosa</i>)	834	1	
6	Ba Tri	Ben Tre	Baby clam (<i>Meretrix lyrata</i>)	980	5	1997
			Blood Clam (<i>Tegillarca granosa</i>)	108	1	
7	Thanh Phu		Baby clam (<i>Meretrix lyrata</i>)	615	2	1997
			Blood Clam (<i>Tegillarca granosa</i>)	90	1	
8	Can Gio	Hochiminh City	Baby clam (<i>Meretrix lyrata</i>)	1,584	2	1999
			Blood Clam	0	1	

			<i>(Tegillarca granosa)</i>			
9	Tuy Phong	Binh Thuan	Antique ark <i>(Anadara antiquata)</i>	16,500	1	2004
			Scallop <i>(Chlamys nobilis)</i>		1	
10	Ham Tan		Antique ark <i>(Anadara antiquata)</i>	1,330	1	2004
11	Phan Thiet		Antique ark <i>(Anadara antiquata)</i>	16,050	1	2004
			Scallop <i>(Chlamys nobilis)</i>		1	
12	Cau Ngang	Tra Vinh	Baby Clam <i>(Meretrix lyrata)</i>	1,418	1	2001
13	Hiep Thanh				1	2001
14	Duyen Hai				2	2001
15	Ba Lua	Kien Giang	Yellow Clam <i>(Paphia sp.)</i>	36,000	2	2000
			Antique ark <i>(Anadara subcrenata)</i>			2006
Total				82,569		

(Locations of bivalve molluscs production areas are showed in Annex 1).

2. Contents and implementation procedures:

The implementation of the Program is in accordance with the Regulation on sanitation monitoring in bivalve mollusc production areas (promulgated by Decision No. 131/2008/QĐ-BNN of 31 December 2008 of the Ministry of Agriculture and Rural Development), Manual of the Sanitation monitoring Program for Bivalve mollusc production areas and amending document thereof of the National Agro-Forestry-Fisheries Quality Assurance Department in compliance with EC regulations.

3. Program implementation results in 2011

3.1. Algal toxins and marine biotoxin

a. Algal toxins and PSP:

Monitoring results for PSP generating algae in BM production areas in 2011 showed that *Alexandrium spp.* was found in nearly every BM production area, however the detection level is not high (7/1004 samples, equivalent 0.7%) and algal density was detected lower than 16 cell/litre, much lower than that of the warning level (200 cell/litre). *Gymnodinium catenatum* was detected in Ba Lua area (at 37/186 samples) with algal density lower than 15 cell/litre.

Results of PSP analysis: PSP has not been detected in all samples collected from 15 production areas.

b. Algal toxins and lipophilic toxins:

- Among lipophilic generating algae, *Dinophysis caudata*, *Protoceratium spp.* and *Protoberidinium spp.* were detected. Details are as follows: *Dinophysis caudata* was found in water samples taken from nearly every production area, the detection level is relatively high (211/1028 samples, equivalent 20.5%). 15 samples were detected at level exceeding the warning limit (500 cell/litre) in Giao Thuy (on 1 November 2011), Ba Tri (17 January 2011) and Ba Lua (11 January, 11 March, 15 April, 16 December 2011) with the highest level at 5,159 cell/litre. *Protoceratium spp.* was detected 25/1,004 samples in Binh Dai, Ba Tri, Thanh Phu and Ba Lua areas with the highest detection of 1,464 cell/litre. *Protoberidinium spp.* was detected in 487/1004 samples in nearly every production area, with the highest detection of 2,100 cell/litre.

- Results of lipophilic analysis: Among 1236 analysis (including samples from intensified sampling) analyzed samples, 185 analysis were positive with lipophilic toxins, making up 14.97%, higher than that in 2010 (6.23%). For BM samples taken in Phan Thiet, Tuy Phong and Ham Tan areas: lipophilic was detected in whole BM (in both mollusc flesh and intra-valvular liquid). However, testing result for lipophilic was negative for adductor (of scallop) or flesh (of Antique ark) sample.

c. Algal toxins and ASP

- *Pseudonitzschia spp.* was detected in nearly every production area with 3 detections exceeding warning limit from samples collected in Tien Hai (7 March 2011), Giao Thuy (7 March 2011) and Nghia Hung (7 March 2011) at the highest density of 175,000 cell/litre while testing result for this algal toxin in 2010 had showed no detection exceeding warning limit. In Cau Ngang, Hiep Thanh and Duyen Hai production areas of Tra Vinh province, *Pseudonitzschia spp.* was not detected.

- Analysis results for ASP: 05/899 samples were found with ASP at 3.7 – 5.5 µg/g, much lower than warning limit (20 µg/g).

(please see details in Annexes 2 and 3)

3.2. Microbiological criteria:

a. Classification of production areas using *E. Coli*: please see details in Table 2:

Table 2: Classification of production areas in 2011

Province	Production area	% of samples deteted with <i>E.coli</i>			Classification of production area
		< 230 MPN/100g	230 - 4600 MPN/100g	4600 - 46000 MPN/100g	
Thai Binh	Tien Hai	26.39	59.72	13.89	C
Nam Dinh	Giao Thuy	27.08	68.75	4.17	B
	Nghia Hung	20.83	70.83	8.34	B
Binh Thuan	Tuy Phong	42.11	52.63	5.26	B
	Phan Thiet	46.88	50.00	3.12	B

	Ham Tan	60.00	40.00	0	B
Hochiminh City	Can Gio	61.70	38.30	0	B
Kien Giang	Ba Lua	96.83	3.17	0	A
Tien Giang	Tan Thanh	60.00	38.67	1.33	B
Tra Vinh	Cau Ngang	86.96	13.04	0	B
	Hiep Thanh	100.00	0	0	A
	Duyen Hai	91.67	8.33	0	A
Ben Tre	Binh Dai	66.67	30.67	2.66	B
	Ba Tri	60.67	38.67	0.66	B
	Thanh Phu	53.52	46.48	0	B

b. Analysis results for *Salmonella* in mollusc flesh and intra-valvular liquid

Analysis results show that *Salmonella* has not been detected in almost all areas. In total 824 analyzed samples, 13 samples, making up 1.58% were positive with *Salmonella*, higher than that in 2010 (0.4%), including 3 samples collected from Giao Thuy (in February, October and November 2011), 1 in Nghia Hung (in February 2011), 2 in Tien Hai (in August and October 2011), 1 in Can Gio (in December 2011), 1 in Ham Tan (in October 2011) and 5 in Thanh Phu (September, October, November and December 2011). However, following above-mentioned classification results, BM harvested from all 15 production areas must be relayed and/or heat-treated prior to consumption.

(Please see details in Annex 4)

3.3. Chemical contaminants

- Organochlorinated substances residues were not found in 600 analyzed samples collected from all production areas.

- Heavy metal residues (Hg) were found in 31/77 BM samples with the detection levels ranging between 9 - 30 ppb, much lower than the MRL (500 ppb).

- Heavy metal residues (Pb) were found in 57/77 BM samples with the detection levels ranging between 3 - 330 ppb, much lower than the MRL (1,500 ppb).

- The Cadimium (Cd) residues were detected in all samples with the detection levels ranging from 70 to 4,900 ppb. Among that, 72/173 samples, making up 41.62% collected from areas in Binh Thuan, Kien Giang and Ben Tre provinces were detected with Cd residue levels exceeding EU Cd MRL, lower than that in 2010 (70.73%).

(Please see details in Annexes 5 and 6)

4. Handling of testing results, issuance of harvesting note and alert notification:

In case of satisfactory testing results, inspecting bodies issued harvesting note and handled the post-harvesting in compliance with the Regulation on Sanitation Monitoring in BM production (promulgated with the Decision No. 131/2008/QD-BNN of 31 December 2008 of the Ministry of Agriculture and Rural Development). In case of unsatisfactory testing results, inspecting bodies issued alert notification and coordinated

with local competent authorities to intensify sampling in accordance with the Regulation, specifically:

- Detection level of toxic algae exceeding the warning limit: Following the detection level of *Dinophysis caudate* exceeding the warning limit in water samples collected from Giao Thuy, Ba Tri and Ba Lua, NAFIQAD- Southern Region Authority (SRA) required local competent authorities to intensify samplings to test for alga density and Lipophilic in mollusc flesh. Results: In all intensified samples, *Dinophysis caudate* were detected under the alert levels and Lipophilic was not detected.

- Lipophilic exceeding MPL: Following the detection of this toxic alga (positive by mouse bioassay) in BM collected from Tien Hai (Thai Binh Province), Ba Tri, Binh Dai, Thach Phu (Ben Tre Province), Ba Lua (Kien Giang Province), Phan Thiet, Tuy Phong, Ham Tan (Binh Thuan Province), NAFIQAD SRA notified the stop-harvesting from the above-mentioned areas and required relevant local CA to intensify the sampling to test for this toxin and take water samples to survey the variation of alga. In case of Lipophilic positive in whole BM but negative in adductor (of scallop) or flesh (of Antique ark) sample (in Phan Thiet, Tuy Phong, Ham Tan areas), NAFIQAD SRA issued harvesting notes to these areas but BM must be processed into appropriate type of products in approved establishments and tested for food safety criteria (including Lipophilic) with satisfactory results prior to being placed on the market.

- Cd residue level exceeding MRL: BM collected from Tuy Phong, Phan Thiet, Ham Tan (Binh Thuan Province) were detected with Cd exceeding EU MRL (>1ppm) in the sample as a whole. NAFIQAD SRA in coordination with local CA took samples of adductor (of scallop)/Antique ark without gills and mantles to test for Cd. The results were satisfactory. NAFIQAD SRA issued harvesting notes to these areas but BM must be processed into appropriate type of products in approved establishments and tested for food safety criteria (including Cd) with satisfactory results prior to being placed on the market.

PART II

PLAN OF THE SANITATION MONITORING PROGRAM FOR BIVALVE MOLLUSC PRODUCTION AREAS IN 2011

1. Species:

- Baby clam (*Meretrix lyrata*);
- Yellow clam (*Paphia sp.*);
- Blood clam (*Tegillarca granosa*);
- Antique ark (*Anadara subcrenata*);
- Antique ark (*Anadara antiquata*);
- Scallop (*Chlamys nobilis*).

2. Scope:

The Program will be continuously implemented in 15 EU approved bivalve mollusc production areas located in 8 following provinces/cities: Thai Binh, Nam Dinh, Tien Giang, Ben Tre, Ho Chi Minh City, Binh Thuan, Tra Vinh and Kien Giang.

Table 3: Scope and Species of the Monitoring Program 2012

No.	Production areas	Province	Species	Surface (ha)	
1.	Tien Hai	Thai Binh	Baby clam (<i>Meretrix lyrata</i>)	1,400	
2.	Giao Thuy	Nam Dinh	Baby clam (<i>Meretrix lyrata</i>)	1,500	
3.	Nghia Hung			210	
4.	Tan Thanh	Tien Giang	Baby clam (<i>Meretrix lyrata</i>)	2,150	
5.	Binh Dai	Ben Tre	Baby clam (<i>Meretrix lyrata</i>)	2,050	
			Blood clam (<i>Tegillarca granosa</i>)	834	
6.	Ba Tri		Baby clam (<i>Meretrix lyrata</i>)	980	
			Blood clam (<i>Tegillarca granosa</i>)	108	
7.	Thanh Phu		Baby clam (<i>Meretrix lyrata</i>)	615	
			Blood clam (<i>Tegillarca granosa</i>)	90	
8.	Can Gio		Hochiminh City	Baby clam (<i>Meretrix lyrata</i>)	2,753
9.	Tuy Phong		Binh Thuan	Antique ark (<i>Anadara antiquata</i>)	16,500
		Scallop (<i>Chlamys nobilis</i>)			
10.	Phan Thiet	Antique ark (<i>Anadara antiquata</i>)		1,330	
		11.		Ham Tan	Antique ark (<i>Anadara antiquata</i>)
Scallop (<i>Chlamys nobilis</i>)					
12.	Cau Ngang	Tra Vinh		Baby clam (<i>Meretrix lyrata</i>)	220
13.	Hiep Thanh				150
14.	Duyen Hai				1200
15.	Ba Lua	Kien Giang	Yellow clam (<i>Paphia sp.</i>)	36,000	
			Antique ark (<i>Anadara subcrenata</i>)		
	Total			84,140	

3. Sampling plan:

Table 4: Sampling plan for BM Monitoring Program 2011

No.	Production areas	Sampling points	Number of sampling phases	Number of samples		Remarks
				BM	Water	
1.	Tien Hai	3	24	72	144	
2.	Giao Thuy	3	24	72	144	
3.	Nghia Hung	1	24	24	48	
4.	Tan Thanh	3	26	78	156	
5.	Binh Dai	3	26	78	156	
6.	Ba Tri	6	26	156	312	
7.	Thanh Phu	3	26	78	156	
8.	Can Gio	2	26	52	104	
9.	Tuy Phong	2	34	68	136	Scallop will not be sampled between April 1 st and July 31 st , 2011 for resource protection reason
10.	Phan Thiet	2	34	68	136	
11.	Ham Tan	1	34	34	68	
12.	Cau Ngang	1	26	26	52	
13.	Hiep Thanh	1	26	26	52	
14.	Duyen Hai	2	26	52	104	
15.	Ba Lua	2	27	108	108	In every sampling point, both BM species will be sampled.
	Total	35	409	992	1,876	

4. Contents and implementation procedures

The implementation of the Program will be in accordance with the Regulation on sanitation monitoring in bivalve mollusc production areas (promulgated by Decision No. 131/2008/QĐ-BNN of 31 December 2008 of the Ministry of Agriculture and Rural Development), Manual of the Sanitation monitoring Program for Bivalve mollusc production areas and amending document thereof of the National Agro-Forestry-Fisheries Quality Assurance Department.

PART III
RECOMMENDATIONS

1. The Sanitation Monitoring Program for Bivalve Molluscs Production areas in Vietnam in 2011 was implemented in compliance with Vietnamese regulations and fully met EU requirements for EU approved BM production areas.

2. Sampling frequency for sanitary parameters in BM production areas:

a. Sampling in BM production areas of Nam Dinh, Thai Binh, Hochiminh City, Ben Tre, Tien Giang and Tra Vinh provinces shall be maintained once a week when harvesting is being done (equivalent twice a month).

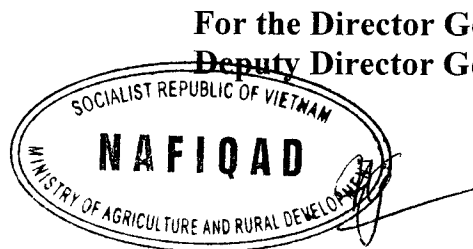
b. For BM production areas of Binh Thuan and Kien Giang provinces (where the harvesting is done in the whole month): the sampling will be carried out every week during harvest time, in compliance with EU requirements.

The details of BM production areas under the Sanitation Monitoring Program for BM production areas of Vietnam are shown in the Annex 7.

3. It should revise the MRL for Cadmium in bivalve mollusc to harmonize with CODEX standard.

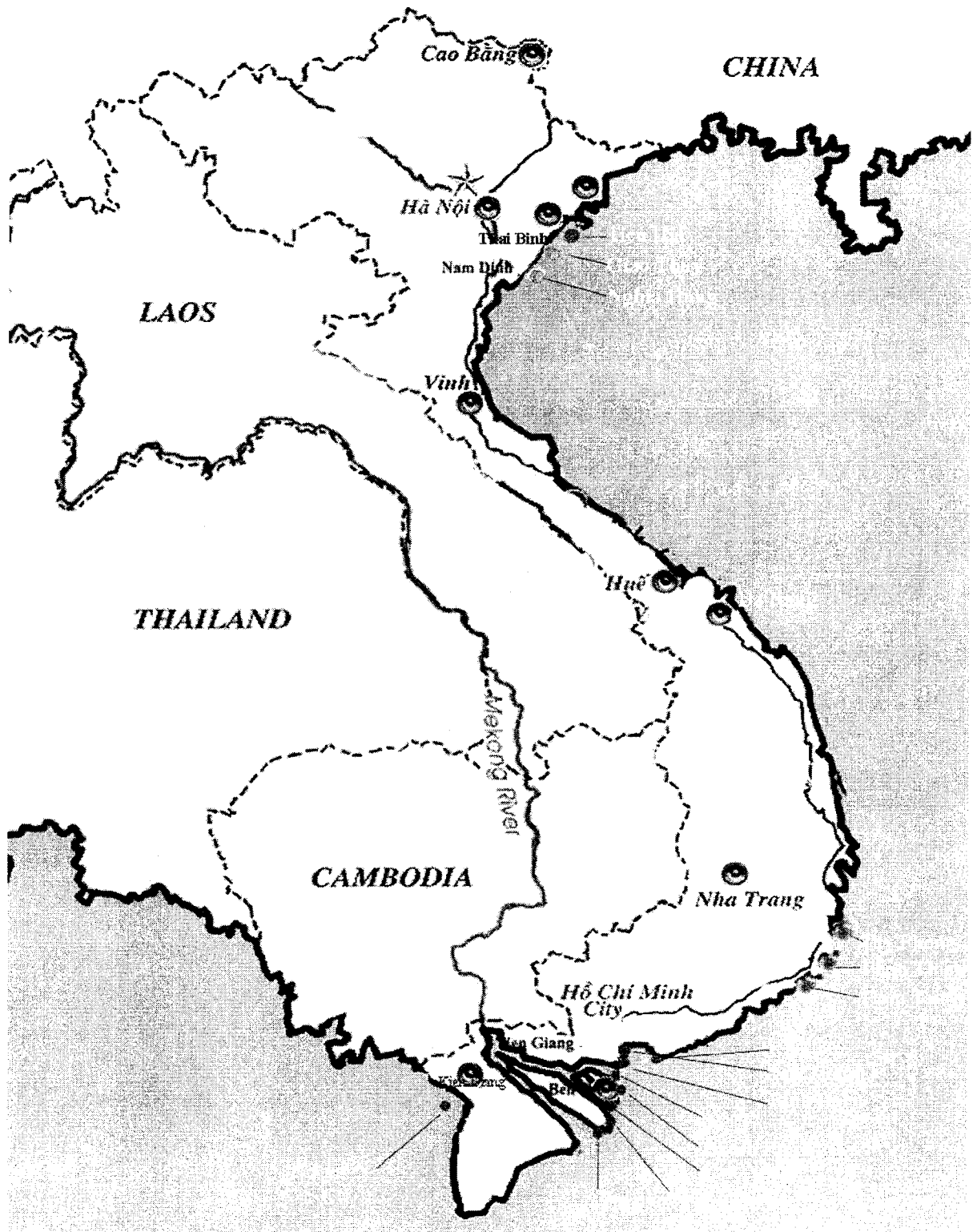
Cc:

- EC;
- Competent authorities of EU countries;
- Vietnam Embassies and Trade offices in EU countries;
- EU Delegation in Vietnam.



Tran Bich Nga

Annex 1. Locations of bivalve molluscs production areas



Annex 2. Results of algal toxins analysis (cell/litre)

Parameters	Number of analysis	Number of positive samples	Value of LOD	Areas detected with positive samples	MPLs	Number of samples with detection level exceeding MPLs
<i>Pseudonitzschia</i> spp.	1028	313	(+) to 151,000	Almost areas (except Tra Vinh)	100,000	3
<i>Dinophysis caudata</i>	1028	211	(+) to 5,159	Almost areas (except Tra Vinh)	500	15
<i>Protoceratium</i> spp.	1004	25	1 – 1,464	Binh Dai, Ba Tri, Thanh Phu & Ba Lua	-	0
<i>Protoperdinium</i> spp.	1004	487	(+) to 2,100	Almost areas (except areas of Tra Vinh, Thai Binh & Nam Dinh provinces)	-	0
<i>Alexandrium</i> spp.	1004	7	(+) to 16	Tan Thanh, Thanh Phu & Phan Thiet	200	0
<i>Gymnodinium catenatum</i>	186	37	(+) to 15	Ba Lua	-	0

Annex 3: Results of marine biotoxin analysis

Parameters	Analysis	Number of positive samples	Value of LOD	Areas detected with positive samples	MRLs	Number of samples with detection level exceeding MRLs
PSP (Neg- Pos)	875	0	0	Areas of Hochiminh City, Ben Tre, Binh Thuan and Kien Giang Provinces	Neg	0
Lipophylic (Neg- Pos)	1236	185	Pos	Tuy Phong, Phan Thiet, Tien Hai, Ba Lua, Thach Phu, Ba Tri, Binh Dai	Neg	185
ASP ($\mu\text{g/g}$)	899	5	3.7-5.5 ($\mu\text{g/g}$)	Areas of Hochiminh City, Ben Tre, Binh Thuan & Kien Giang Provinces	20	0

Annex 4: Results of microbiological analysis

Parameters	Analysis	Number of positive samples	Value of LOD	Areas detected with positive samples	MPLs	Number of samples with detection level exceeding MPLs
<i>E.coli</i> (MPN/100g)	824	674	<20 to >18,000	All areas	-	0
<i>Salmonella</i> /25g	824	13	POS	Tan Thanh, Can Gio, Ham Tan, Tuy Phong, Tien Hai, Giao Thuy, Nghia Hung	Neg	13

Annex 5: Results of pesticide residues analysis

Parameters	Analysis	Number of positive samples	Value of LOD	Areas, having positive samples	MRLs	Number of samples with detection level exceeding MRLs
Aldrin	75	0			0.2	0
Dieldrin	75	0			0.2	0
Endrin	75	0			0.05	0
Heptachlor	75	0			0.2	0
DDT	75	0			1	0
Chlodane	75	0			0.05	0
BHC	75	0			0.2	0
Lindane	75	0			2	0

Annex 6: Results of heavy metal analysis

Parameters	Analysis	Number of positive samples	Value of LOD	Areas detected with positive samples	MRLs	Number of samples with detection level exceeding MRLs
Pb	77	57	0.003 – 0.33	All areas	1.5	0
Hg	77	31	0.009 – 0.03	All areas	0.5	0
Cd	173	161	0.07 – 4.9	All areas	1	72

Annex 7**LIST OF EU APPROVED BIVALVE MOLLUSC PRODUCTION AREAS
UNDER THE SANITATION MONITORING PROGRAM
FOR BM PRODUCTION AREAS OF VIETNAM**

No.	Production areas	Approval No.	Province/City
1	Tien Hai	TH	Thai Binh
2	Giao Thuy	GT	Nam Dinh
3	Nghia Hung	NH	
4	Tan Thanh	GC	Tien Giang
5	Binh Dai	BD	Ben Tre
6	Ba Tri	BT	
7	Thanh Phu	TP	
8	Can Gio	CG	Ho Chi Minh City
9	Tuy Phong	TU	Binh Thuan
10	Phan Thiet	PT	
11	Ham Tan	HA	
12	Cau Ngang	CN	Tra Vinh
13	Hiep Thanh	HTh	
14	Duyen Hai	DH	
15	Ba Lua	BL	Kien Giang