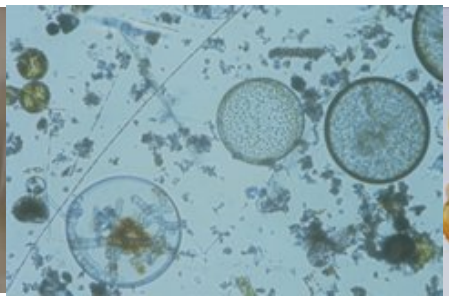
Travel report Mauritania Bivalve Molluscs October 2008

Marnix Poelman

Report C072/08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- Wageningen ***IMARES*** provides strategic and applied ecological investigation related to ecological and economic developments.

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Summary

Mauritania is working on the completion of a Food Safety Program for Bivalve Mollusks, in order to obtain an export approval by the Europe Union for the last 4 years (and before). For the second semester 2008 the FVO has programmed a veterinary inspection for the on bivalve mollusks, this however seems to be postponed to 2009. In order to prepare themselves for the veterinary inspection the competent authority of Mauritania (ONISPA) has requested Wageningen IMARES for a pre-inspection of the Mauritanian system. The pre-inspection was a follow up of inspection which was performed in April 2008; the second mission was performed in October 2008.

As a result of the mission several recommendations were given to technicians and personnel of ONISPA during the inspection. The other results were presented to the ONISPA staff during a final session. Great improvement has been demonstrated on the organization of the official inspection institute ONSIPA, some minor organizational points still need to be finalized. The official controls for Bivalve Mollusks however are not yet finalized and implemented, however implementation will be done on short notice. Legislation on the classification and assignment of production area is in final preparation.

At the moment of inspections the manual for bivalve mollusks was in continuous improvement. However, the manual does not include procedures for the zonation, classification, and assignment of production areas. Therefore a link between the monitoring program and data versus the legislation on production zones/areas is not properly organized. There is a need for optimalization of the procedures, and the performance of the procedures. In line with these findings, there is a lack of a clear report which describes the monitoring locations, and results and the final selection of production zones, based on currents, contamination sources, monitoring data etc. The description of this information should result in a final classification for heavy metals and microbiology. During the inspection a brains storm session as performed in order to assign the zonation of the production areas. The remaining task is to describe the choices of the zones in a report.

There is a lack of sufficient and reliable data to elucidate the variation of heavy metal content both geographically and in time. Therefore it is recommended to intensify the monitoring of heavy metals in both frequencies as well as in geographical spread (multiple samples per zone). Prior to the analyses of the heavy metals, there is a need for an evaluation of the results, sampling, analyses and other procedural issues in order to evaluate the current status in Mauritanian waters.

The quality on a laboratory level is in continuous improvement, procedures are written and implemented on a level of Nouadhibou and Nouakchott. The procedures should be further implemented and specific procedures and protocols on validation, calibration and control of the laboratory (and equipment) quality should be implemented.

1 Introduction

During the last four years Mauritania has been working on the completion of a Food Safety Program of Bivalve Mollusks, in order to obtain an export approval by the Europe Union. During the preparations for an inspection by the FVO (Food and Veterinary Office) no fisheries or production activities for Bivalve Mollusks occurred in Mauritania. The only fisheries during this period was assisted by both IMARES (former RIVO), IFREMER (France) and for ISO purposes by Capital et Qualité (France). By the end of 2006 an inspection of the FVO was foreseen to inspect the fisheries and bivalve mollusk regulation, and enforcement system, but this never took place. During the period of 2007-2008 the Mauritanian inspection services and the competent authorities, were obliged to continue the development, implementation and performance of the bivalve mollusk monitoring system, and the incorporation of the required control and inspection systems.
For 2008 the FVO has programmed a veterinary inspection for the on bivalve mollusks to Mauritania, however the exact date is not yet clear at this moment. In order to prepare themselves for the veterinary inspection the competent authority of Mauritania (ONISPA) requested Wageningen IMARES for a pre-inspection of the Mauritanian legislative, monitoring and laboratory system. This request was granted, and followed by a pre-inspection of the Mauritanian system in April 2008 (IMARES-report C0049/08). In follow up to the inspection Mauritania has developed a plan of action, in order to be able to comply with all the recommendations, which were stated in the report. With this in respect the Mauritanian Authorities once more invited Wageningen IMARES for a pre-inspection in October 2008, in order to monitor the advancements, and to recommend on the aspects, which should be worked out. The results of the second mission, which was performed from October 6-9th 2008 in Mauritania are briefly described in this report, a detailed description of the findings were given and discussed during the inspection. Minor but important short comes were also discussed during the mission and are not part of this report.

2 Assignment

The aim of the mission was to perform a pre-assessment on the status of the Bivalve Food Safety program in Mauritania. The pre-inspection was carried out in order to prepare Mauritania for the upcoming Food and Veterinary Office (FVO) inspection, planned for the second semester of 2008 or the beginning of 2009.

3 Methods

In order to obtain adequate inspection results, the inspection was carried out in accordance to the inspection routine of FVO. Due to a lack of precise FVO procedures, the inspection was carried out based on the experience of the visiting scientist (Marnix Poelman). The experience is based on the attendance of two FVO inspections in the Netherlands (2001 and 2005), in which the pre-inspector had involvement in the preparation and guidance the FVO inspection in the Netherlands. Besides that various contributions to the development of the Mauritanian Food Safety systems are part of the existing experience, including a pre-inspection, which was performed in April 2008. Also internal quality audits of Wageningen IMARES and involvements of the development of quality procedures within the institutes form a basis of experience.

The procedures of the inspection were at first to get informed on the procedures and work which was performed at ONISPA. The order of the procedures was to start at an organizational level, followed by the legislation, monitoring organization and performance, ISO-standard/procedures and laboratory procedures. Documents were presented and screened, and indistinctness was clarified by additional questions and documents. Information was in some cases cross checked with other colleagues within the laboratory.

4 Program

Sunday October 5th
Flight Amsterdam – Nouakchott

Monday October 6th

6:30 – 11:00	Travel from Nouakchott to Noadhibou
12:00 – 14:00	Installation and tour ONISPA (Office National d'Inspection Sanitaire des Produits de la Pêche et de l'aquaculture). Evaluation progress, and plan of action
15:30 - 18:30	Documentation of structure, organization, laboratories, ministry Documentation introduction Mollusk Bivalve Organization

Tuesday October 7th

9:30 – 18:30	Documentation Mollusk Bivalve monitoring and control, Organization Bivalve Mollusks, Mode of actions Results of Monitoring data, microbiology, biotoxins, metals etc.

Wednesday October 8th

9:30 - 18:00	Methods of Analyses Remaining Questions
18:30 – 20:00	Preparation of Presentation

Thursday October 9th

9:30 – 11:30	Presentation on Recommendations
16:30 - 18:00	Visit Inspection Laboratory Nouakchott (microbiology and metal analyses)
18:00 – 22:00	Travel from Nouadhibou to Nouakchott
23:00	Flight Nouakchott to Amsterdam (arrival Friday October 10th)

5 Results

Several ministries and organizations are concerned with Bivalve Food Safety . The ministry of fisheries is responsible for the implementation of official controls on bivalve mollusk (BM), and the licensing of production facilities. The official registration of the fishing vessels and production establishments is performed by the ministry (department DIPIS, Direction des Industries de Pêche et de l'inspection sanitaire). The regulations concerning fisheries, and food safety issues for fisheries are drawn up by the ministry and accorded by the Parliament.
ONISPA (Office National pour l' Inspection Sanitaire des Produits de Pêche et de l'Aquaculture) is the Competent Authority, assigned for the official inspections and control of Sanitary aspects (for both fisheries and Bivalve Mollusks, production areas and control of production) . ONISPA was installed in March 2007 via Decree 066-2007. This decree was modified in April 2008 (by Decree 117-2008), in order to implement the demands for bivalve mollusks, and to organize laboratory transfers from IMROP (Institute Mauritanian de Recherché Oceanographic and des Peches) in Nouadhibou and Nouakchott as part of ONSIPA. ONISPA is installed under direct supervision of the ministry and has a normalized working relationship with DIPIS. ONSIPA is under supervision of one director, and consists of several departments. ONISPA serves as the competent authority on fisheries product, and bivalve mollusks and aquaculture food safety.

Organisation ONISPA

The role of ONSIPA, and other governmental organizations within the governmental structure is clear by spoken words. The governmental structure could however not be presented in writing. The complete governmental structure is schematically depicted in the manuel de Procédures d'inspection et de control a qualité des produits de la peche, de l'aquaculture et des mollusques bivalve de Mauritanie. This manual is currently in revision and needs updating on the schematic overview as well, since at this moment ONISPA is not represented in the schemes.

The organogram of the organisation of ONSIPA is properly worked out. There is a proper description of the departments, which includes a description of the responsibilities of the department and the responsibilities of the personnel at key positions. The organisation has not yet come to a full completion, since not all positions have been filled out. Since the responsibilities need to be clear during the course of the completion it is required to either assign personnel on the key positions, or if this is more applicable assign temporal responsibilities to personnel in writing. This should then make the responsibilities and expectations of the personnel at key positions clear.

ONSIPA presents very informative trimestrial reports to the ministry, which describe the activities which were performed, an overview of inspections, samples and corrective actions which were taken. The reports result in an improved transparency of the organisation. Additionally there is an annual report, which describes the activities for public purposes, these reports were not assessed.

The overall impression is that there is a great improvement in the organisation of ONISPA.

Recommendations:
- Organisational structure on governmental level should be described
- The organization structure is clear and well described
- Lacking assignment of personal in the organization should be performed
    - Or temporal responsibilities should be addressed in writing

Official Controls

The procedures and manuscripts on the official controls for fisheries, molluscs and aquaculture were inspected; during this inspection focus was given on the procedures and legislation on bivalve molluscs. At the moment of inspection, the legislation on bivalve molluscs and the controls was in revision.

The legislation of the production, processing and the requirements for official controls were published in 2006. The legislation, which is related to bivalve mollusks, is defined in:

- Arrêté conjoint n° 2859 MPEM /MCAT/MSAS/SEPME portant désignation du laboratoire de l'IMROP comme laboratoire national de référence de chimie et microbiologie.
- Arrêté conjoint n° 2862 MPEM /MCAT/MSAS/SEPME relatif aux critères microbiologiques, chimiques et biotoxines marines applicables aux mollusques bivalves vivants et aux produits de la pêche et les méthodes d'analyse à utiliser.
- Arrêté conjoint n° 2863 MPEM /MCAT/MSAS/SEPME relatif aux règles d'hygiène applicables aux mollusques bivalves vivants, aux produits de la pêche et aux exploitants du secteur alimentaire

The legislation is currently updated for the creation of ONSIPA, and therefore needs (minor) revisions. The regulation for bivalve mollusks is copied from the EU legislation and therefore is complete for assignment of production areas, and bivalve mollusks food safety issues. The legislation be completed for bivalve mollusks, with this in respect unpublished regulation of classification and assignment of production area's could be presented. However, due to the lack of finalized procedures for modes of actions, classification and due to the lack of reports of synthesis of the monitoring results (see further) the implementation of the regulation is not performed at this stage. Therefore no official assignment of production areas was achieved.

There is a lack of decision schemes and implementation of direct actions for marine biotoxins and microbiology. The missing aspects were presented by IMARES in June 2008, next to that a mission of IFREMER and INRH was performed in June 2008, in order to advise on the Plan de Surveillance Contaminants Milieu Aquatique. In the course of October 2008 the report of the mission including it's recommendations will be presented. This report should provide the basis for the further development of the legislation.

In order to implement the legislation a workshop will be held in October (21-22nd), which will validate the legislation prior to official adaptation.

The manual on fisheries products is the document which forms the basis of the practical implementation of the legislation within the procedures of ONISPA. The document is currently in revision in order to include bivalve mollusk procedures. The document seems to be complete and effective (not entirely revised). The document should include the method of inspection of the establishments. The manual on Mollusk bivalves will include the procedures for the assignment, classification and opening/closures based on heavy metal results.

In November a workshop will be held on the validation of the manual on fisheries products, this will be followed by the implementation of the manual in December 2008.

- Continue with the new format for trimestrial reports
- Finalize and implement the legislation on classification and assignment of Production areas
- Revise the Manual for fisheries and bivalve inspection
    - Include enforcement non allowed fisheries activities
- Prepare assign of production areas (see Manual Bivalve mollusks)
- Prepare decision of close/open areas for metals (see Manual Bivalve mollusks)
- Prepare decision on classification (see Manual Bivalve mollusks)

Manual on Bivalve Mollusks

A manual of monitoring (Manuel du program de surveillance) is in use on a laboratory level in Nouadhibou. This document described the methods of sampling, frequencies, sample locations and descriptions of used method. The manual focuses on the monitoring of the potential production zones of microbiology (*E. coli*), marine biotoxins, phytoplankton and chemical components (heavy metals, hydrocarbons). The content of the Manual is recently revised; however there is no control of the editions, the manual is mainly used as a working document. In order to safeguard that every one utilizes the same version of the manual it is important to have a system for the version numbers of the document. In the revision stage this could be a temporal none official registration, which can be tracked. Since the document is already in place it is advised to officially implement at least one version, which is used as a baseline document. The further revisions could then be updated when required adaptations have been performed.

The document covers the sampling, methodologies etc. however there is no description on the procedures for the classification, and the assignment of production areas. A schematic overview of the classification procedure could be presented, however this was separated from the manual. The procedures for the classification and assignment of the production need to be described and incorporated in the Manual on Bivalve Mollusks. In line with this implementation the modes of action in case of exceeding of thresholds for heavy metals (Cd in particular); marine biotoxins and microbiology should be implemented in the procedures within the manual. Without specific procedures in case of food safety risks the manual of bivalve mollusks is not complete.

The manual included specific paragraphs, which describes the necessitation of reports of syntheses of the monitoring results, which form the basis for adequate classification, assignment of production areas, and zonation etc. These report(s) of synthesis are at this moment not available in finalized versions.

The main conclusion of the manual on Bivalve Mollusks is that there is no link between the legislation, and the monitoring, the linkage can be realized by describing the procedures from monitoring to legislation in the manual on bivalve mollusks.

<u>Recommendations</u>

- The document is in continuous improvement, it is recommended to guard the proper version of the working document
- Descriptions of the procedure for assigning production areas should be included
- Descriptions of the procedure for classification of production areas should be included
- Zonation, classification and assignment of production areas should be performed
- Schematic overview of corrective actions should be worked out and implemented
- Finalize the reports of synthesis on monitoring results and contamination sources

Zonation of Production areas

As described in the previous paragraph there is a clear need for the zonation of Production area for bivalve mollusc production. The zonation should be a result of a description of onshore, and off shore contamination sources on heavy metal, microbiology and organic contaminants in relation to currents. These aspects should be described in a synthesis, which should be combined with the monitoring results of the last couple of years. The information and data should be combined in order to describe the exact zonation for the production areas of bivalve molluscs. The data and description may be addressed in the report of synthesis.
After the definition of the zonation, a report should evaluate the data which is collected during monitoring, so that the production zones can be evaluated. At this moment the draft report only includes the evaluation of monitoring results, however no specific attention to zonation is given.
The report of synthesis requires a clear description of the zonation, which was discussed during the inspection mission. A brain storm session resulted in the proposal of the zonation as depicted in figure 1 for the Baie du Levriere. The coordinates for the zonation in the open ocean (*Venus* zones) are depicted in table 1.

Figure 1. Possible zonation for bivalve molluscs in the Baie du Levriere. The data is a result of a brainstorm session held in Nouadhibou during the inspection.

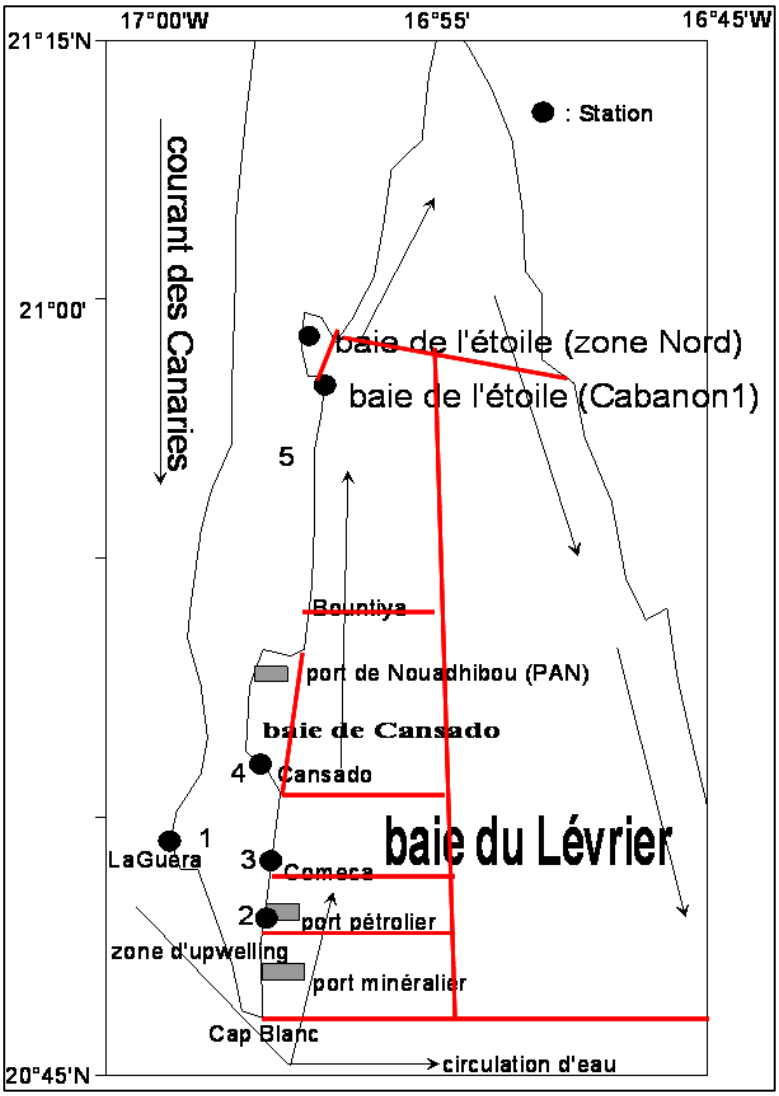

Table 1. Overview of Coordinates of production zones for praires at the Atlantic Ocean site in Mauritania. The data is a result of a brainstorm session held in Nouadhibou during the inspection.

Production area	**Coördinates location**	**Northern Coördinates**	**Western Coördinates**
M5	NW	20°32'8.07"N	17°12'18.74"W
M5	NE	20°32'8.07"N	16°57'5.26"W
M5	SE	20°18'4.85"N	16°57'5.26"W
M5	SW	20°18'4.85"N	17°12'18.74"W
M6	NW	20°18'4.85"N	17°27'36.44"W
M6	NE	20°18'4.85"N	16°57'5.26"W
M6	SE	19°52'11.63"N	17°12'18.74"W
M6	SW	19°52'11.63"N	17°27'36.44"W
M7	NW	20°18'4.85"N	17°12'18.74"W
M7	NE	20°18'4.85"N	16°57'5.26"W
M7	SE	20° 7'42.67"N	16°57'29.20"W
M7	SW	20° 7'42.67"N	17°12'18.74"W
M8	NW	20° 7'42.67"N	17°12'18.74"W
M8	NE	20° 7'42.67"N	16°57'29.20"W
M8	SE	19°52'11.63"N	16°57'5.26"W
M8	SW	19°52'11.63"N	17°12'18.74"W
M9*	NW	20°31'51.11"N	17°27'36.44"W
M9*	NE	20°32'8.07"N	17°12'18.74"W
M9*	SE	20°18'4.85"N	17°12'18.74"W
M9*	SW	20°18'4.85"N	17°27'36.44"W

* Data on classification should be collected during future monitoring prior to classification.

Updated information on the prevalence of *Venus rosalina* in the Mauritanian waters have resulted in the adaptation of a new zone (M9). This zone is at this stage not monitored and therefore a monitoring for the zone is advised. The draft report of synthesis takes into account a threshold value of 2 mg/kg for Cadmium, the Mauritanian and European limit is however set to 1 mg/kg Cadmium (w/w). Therefore a revision of the results is necessary. Further results of the monitoring will be discussed in the paragraph on heavy metals.

Recommendations:

- Incorporate zonation in synthesis report of results
- Describe the choice of zonation based on contamination sources and results.
    - Include zonation and description of zones as discussed in brain storm session
    - Include monitoring for Zone M9
- Redefine the zonation for microbiology
- Include designation of classification
    - Apply a classification based on heavy metals
    - Apply a classification of zones based on microbiology
- Revise heavy metal classification (EC: <1mg/kg)
- Include graphics on results (metals, microbiology and phytoplankton) in the report of synthesis for clarification.

ISO Procedures

Progress has been made on the compilation of the Quality manual, in order to comply with ISO-standards. The process is ongoing and should be continued. Since April 2008 many procedures have been written and officially implemented on a laboratory level. The quality procedures are where this is possible, implemented at the laboratory in Noaudhibou and Nouakchott. Therefore the quality is moving into a standardised way for all laboratories involved. The analyses which have been performed until the summer of 2008 do however not comply with these procedures; therefore it is advised to keep records of the used methods in relation to the data. Since it is an on going process not all procedures could be presented as final versions, however many procedures are currently in preparation and will be implemented after consensus is found.
The procedures have some important short comings, which should be prioritised during the following months. The shortcomings are especially found in quality assurance of methodology and calibration of equipment. During a visit in the laboratory it became clear that there is a general lack of calibration and control of the basic equipment (pipettes, balance, freezers etc.). Since metrology is a difficulty throughout the whole of North Africa, the calibration via external companies is hard to realize, and therefore deserve special attention a laboratory level. There is a need for a proper calibration protocol for the equipment. Along with this the use of control carts for the functioning of freezers, balances etc. should be implemented.
Regarding the used methodology, it was clear that some methods of analyses have finalized procedures, which are followed by the personnel. However, not for all methods a final version of the protocols could be presented, some important procedures are available in drafts.

The internal control, validation and intercalibration of all methods in general is not yet formalised by procedures. The quality control aspects are in some cases to a different extent incorporated in the procedures. However, there is a lack of procedures for in-house validations of new (and already used) methods. These procedures should describe, which demands are set for all methods in general (recovery, robustness, repeatability etc), and how to achieve these demands. The implementation of these internal validations should result in a report, which describes the findings of the validation.
In relation to the internal validation, all methods should be performed using blanks, and standards (and (spiked) reference samples). The results of the reference standards should be recorded on control carts within the laboratory. In case the results of the standard do not meet the set criteria, the analyses should be performed again (after trouble shooting). This should also be recorded. Where possible methods should be calibrated via intercalibration studies, which are provided by various organisations.

With respect to the organisation on a laboratory level, there was a clear draft organogram for the whole laboratory structure. The organogram should be completed, and descriptions of specific tasks and responsibilities should be described. At this moment the tasks are mainly based on positions, and responsibilities are not yet implemented. As a remark it was found that there is still a solitaire approach within the laboratory, the communication is increasing, however in some cases it is clear that issues are discussed for the first time. Therefore attention should be given to the information process on a laboratory level.

<u>Recommendations:</u>
- Finalize organogram of laboratory, including description of specific tasks.
- Continuation of the implementation of procedures
    - Procedures on calibration and control of apparatus (pipettes, balance, freezers, etc. etc.)
    - Quality Carts for all analyses with reference materials
    - Performance of control of function of apparatus (see above)
    - Protocol for internal validation of new methods
    - Document performed internal validations
    - Finalize Procedures of internal controls
    - Procedures on personnel qualifications
- Intercalibration studies should be performed for all analyses where possible
- Internal validation procedures for all applied methods, including a small report

Heavy metals

There is a lack of sufficient and reliable data to elucidate the variation of heavy metal content both geographically and in time. Analyses of heavy metals in Mauritanian shellfish (*Venus sp*) samples (sampled in the period of 2005-2006) have been performed in the Netherlands, using accredited methods. The results of these analyses have been reported in the mission report of the pre-inspection in Mauritania of April 2008 (Poelman, 2008). The results of the analyses performed (September 2008, Nouakchott) on Mauritanian shellfish samples in the period of 2007 and 2008 are currently revised, due to quality issues, by ONISPA and can therefore not be reported by Wageningen IMARES at this stage. The explanation of the quality issues can be found below.

Due to the lack of sufficient sample results it is recommended to intensify the monitoring of heavy metals in both frequencies as well as in geographical spread (multiple samples per zone) for the following period. Prior to the analyses of the heavy metals, there is a need for an evaluation of the results, sampling, analyses and other procedural issues in order to evaluate the current status of heavy metals in Mauritanian waters. Besides the evaluation of the procedures, it is recommended to perform a monitoring of oysters and mussels in the Baie du Levriere in order to obtain insight in the heavy metal content of the (newly installed) production zone for oysters.

On a laboratory level the heavy metal analyses were examined. At this moment the analyses are performed in Nouakchott, and an official implemented protocol was provided. The analyses are performed using AAS (Atomic Absorption Spectrometry). The methodology is running, and standards and reference materials are analyzed during analyses. However, the method makes use of a correction factor, which is a result of the difference in the result between the certified value of the reference material and the value found. This information is used to recalculate all results of analyses. There is a need to eliminate this approach, and to check the method of analyses or the quality of the reference sample. Suggestions on the possibilities were discussed in the laboratory. Using this corrective approach the method of analyses can not be accepted for official analyses at this stage, an improvement of the method is required. This improvement should also take into account the general quality remarks mentioned in the paragraph on ISO laboratory. Until that moment it could be considered to out source necessary analyses. It can be suggested to perform an additional training in a laboratory, which uses similar equipment, and procedures.

Further recommendations on heavy metal analyses, monitoring and plans of actions are expected to be described by Chafik and Martial in there mission report from June 2008.

<u>Recommendations</u>

- Intensify the monitoring of heavy to 1 time a month at multiple 2-4 locations per zone (geographically separated)
- Heavy metal analyses in Baie de Levrier
- Designate production areas based on advise
- Include monitoring for monitoring of oysters and mussels
- Revise Method and Quality based on QUASIMEME results, and application of correction factor
- Consider out sourcing of monthly samples of various locations
- Consider a practical period for placement at other laboratory

Phytoplankton and Microbiology

The monitoring on microbiological organisms (microbiology and phytoplankton) should be continued. The quality of the work in both microbiology and phytoplankton is sufficient. The procedures are clear and respected. At the moment of the mission the laboratory was in construction, therefore only theoretical inspection could be performed. The methods which are used meet AFNOR standards, and therefore comply to the regulations. The phytoplankton analyses are properly covered and procedures are according to protocols provided by IFREMER. The specification of species is registered since the summer of 2008, this should be continued. However, in order to keep the quality updated a placement/training in another laboratory is recommended (this is intended for October)

For *E. coli* and *Salmonella* it is advised to perform an intercalibration study amongst the laboratories in Nouakchott and Nouadhibou. At this moment only Noaukchott performs intercalibration studies, but the official controls are performed in Nouadhibou.

Recommendations:

- Continue monitoring of all production areas (also mussels and oysters) include zone M9
- Perform calibration study between NKT-NDB
- Prepare a report with graphs of the results for visual clarification
- Continue analyze (1 x month) and include species specification
- Consider a practical period at an external laboratory for Quality Control)

Marine Biotoxins and Organic Contaminants

Analyses on Marine Biotoxins were at the moment of the mission not performed, the last analyses were performed in 2007. Therefore an inspection of the procedures was performed. The methods used are compliant to the European legislation, and are also used by IFREMER (France). Protocols on the laboratory procedures were prepared and implemented, these protocols include the location and method of data storage. The traceability has therefore been improved. The method used seems to function well, based on the internal controls which are evaluated. However, there was no report on the internal validation available. The last results of QUASIMEME did reveal a miss match between the reference samples, and the results of analyses. The method should therefore be validated again, using reference material, a report should be drawn up. It is advised to make use of a calibration program, in order to demonstrate the functioning of the method. The results for this should be followed up, in case of inconsistency.

With respect to the animal assays for DSP and PSP the animal housing facilities, and it's animals were maintained on a low level. Due to the lack of an analyses program there were no analyses performed. The animal housing should at least be maintained according to the procedures which are in place. In case of continuation of the monitoring the housing should be adapted, with closed doors etc. The protocols are present for the DSP and PSP analyses, they were drawn up in accordance to the methodology used at IFREMER. Since the experience of the inspector does not cover the mouse bioassays, no advice could be given on the method of extraction, solvents etc. However, for the DSP analyses it is advised to incorporate a positive control at a certain frequency (1 per 3-6 months) in order to validate the adequacy of the method. For PSP analyses it is advised to repeat the validation process for the assessment of mouse units, and to write a protocol on this.

The monitoring for marine biotoxins should be functional during the inspection trial. Therefore it is recommended to start the procedures for monitoring during the following period.

The methodology for PAH and Organic Compounds is not running at the moment. The protocols are momentarily drawn up, and a placement in Morocco for educational purposes is performed. At this moment there is a need for the installation of the proper method, the equipment is available. However due to the complexity of the methods and the use of equipment (gradient) there is a need for additional knowledge. It is recommended to implement a standardised or proven method (for example the procedures of RIVO which were delivered in 2006 or EPA

(http://www.epa.gov/microbes/methmans.html#Organic%20Supp%20I)). For organic compounds (such as pesticides) RIVO-procedures were provided in 2006. Nonetheless, it is suggested to perform a placement for technical educational purposes on another laboratory (for some week).

For all methods used it is important to register and archive the methods and protocols which were used for the analyses of historical samples. This will improve the potential for inspections of the current method, and the method used for the data collection so far.

Recommendations:

- Continue monitoring in the production areas for marine biotoxins
- Use blanks for chemical analyses (ASP)
- Perform internal ASP-validation
- Continue with QUASIMEME ringtrial and follow up in case of inconsistency
- Include standards in the analyses method
- Register Quality control in control cart
- Include a positive control for DSP before sample analyze (after this 1 time per 6 months)
- Validation process of MUs before next analyses and prepare a protocol
- Continue quarterly sampling in all production areas for organic contaminants
- Prepare protocols based on the used method for PAHs and organic compounds
- Validate the method for PAHs and organic compounds according to procedure in protocol
- Consider training at other laboratory for PAHs and Organic Compounds
- Consider technician to train on gradient based analyses
- Archive old protocols, which were used for old samples

6 Quality Assurance

IMARES utilises an ISO 9001:2000 certified quality management system (certificate number: 08602-2004-AQ-ROT-RvA). This certificate is valid until 15 December 2009. The organisation has been certified since 27 February 2001. The certification was issued by DNV Certification B.V. The last certification inspection was held the 16-22 of May 2007. Furthermore, the chemical laboratory of the Environmental Division has NEN-AND-ISO/IEC 17025:2000 accreditation for test laboratories with number L097. This accreditation is valid until 27 March 2009 and was first issued on 27 March 1997. Accreditation was granted by the Council for Accreditation, with the last inspection being held on the 12th of June 2007.

7 References

Poelman, M. Pre-inspection Mauritania Bivalve Molluscs Food Safety April 20-24th 2008 (2008), Report C049/08. Wageningen IMARES, June 2008.

Justification

Rapport C072/08
Project Number: 439.42000.02

The scientific quality of this report has been peer reviewed by a colleague scientist and the head of the department of Wageningen IMARES.

Approved: Ir. H. van der Mheen
Head of department Aquaculture

Signature: 

Date: December 2008

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