Cefas

European Union Reference Laboratory for monitoring bacteriological and viral contamination of bivalve molluscs

Report of the 10th workshop of NRLs for monitoring bacteriological and viral contamination of bivalve molluscs.

Weymouth, UK, 10th – 12th May, 2011.

Contents

Forward

This document comprises relevant information arising from the 10th workshop of National Reference Laboratories for monitoring bacteriological and viral contamination of bivalve molluscs held at the EURL in Weymouth, UK on 10-12th May 2011. It includes the workshop agenda, delegate contact information, workshop minutes, lists of associated papers, and the resolutions agreed by the meeting. All supplementary supporting information identified in this report can be accessed in full via the information centre of the website of the European Union Reference Laboratory www.crlcefas.org or may be supplied on request by the EURL. All requests should be made to the EURL co-ordinator.

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AGENDA

10th Workshop of Microbiological NRLs, 10 - 12 May 2011

Venue: **Centre for Environment, Fisheries and Aquaculture Science (Cefas)**
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Day 1 - Tuesday 10 May 9:30 – 18:00

1 Introductory meeting

1.1 Welcome, introductions and apologies.

1.2 Domestic arrangements including reclaim of expenses (papers WS10/01, WS10/02).

1.3 Actions arising from the 9th workshop 2010 (paper WS10/03).

1.4 Agreement of the agenda (paper WS10/04).

1.5 EURL work programme 2011 (EURL) (paper WS10/05).

2 Official Controls – Microbiological monitoring

2.1 Comparison of bivalve molluscs harvesting area classifications under EC Regulation 854/2004 across EU Member States finalised version 7 – (paper WS10/06) – (EURL).

2.2 Equivalence of Codex and EU *E. coli* standards recommendations (paper WS10/07, WS10/7a) (EURL).

2.3 Update on Good Practice Guide – (EURL).

2.4 Intensive purification of Class C bivalve molluscs – (All).

Coffee/tea (11:00 am)

2.5 Equivalence of EU and US legislation for the sanitary production of live bivalve molluscs for human consumption (paper WS10/08) – (EURL).

2.6 Impact of chronic microbial pollution on shellfish – (EURL).

2.7 Progress with the application of sanitary surveys in the UK (NRL UK).

2.8 Update on the current position with respect to application of sanitary surveys in EU Member States (paper WS10/09) (EURL) (Update from all NRLs with production areas).

2.9 Options for active management (EURL) (All).

Lunch (1:00 pm)

2.10 Validation of a rapid plate count method for enumeration of *E. coli* in bivalve molluscs. – (paper WS10/10) (NRL The Netherlands).

2.11 Checking of impedance calibration using bivalve shellfish from contaminated harvesting areas – (NRL France).

2.12 Recommendations for adoption of ISO TS 16649-3 as a full ISO standard (EURL).

3 Official Controls - Proficiency Testing

3.1 *E. coli* and *Salmonella* spp.

1. NRLs participation and performance assessment in the EURL/HPA Shellfish EQA scheme for *E. coli* and *Salmonella* (RT40) (paper WS10/11) (EURL).
2. NRLs participation and performance assessment in the whole animal distribution for *E. coli* and *Salmonella* (RT37) (paper WS10/12) (EURL).

Coffee/tea (3:30 pm)

3. Update on performance of Official Control Laboratories performance in proficiency testing (All).
4. Performance assessment of French official laboratories in proficiency testing (NRL France).
5. An update on the UK NRL approach to proficiency testing (NRL UK).
6. Analysis of NRL performance in ongoing proficiency testing (EURL).

Day 2 - Wednesday 13 May 9:00 - 18:00

4 *Vibrio* spp.

4.1 Tracking vibrio infections in a changing environment (EURL).

4.2 Developments at Codex control measures for *Vibrio parahaemolyticus* and *V. vulnificus* in molluscan shellfish (tbc).

4.3 Molecular characterisation of *Vibrio parahaemolyticus* isolated in Italy (NRL Italy- Ancona).

4.4 Rapid methods for detecting and enumerating *Vibrio* spp. in bivalve shellfish matrices (EURL).

4.5 *Activities of the AFNOR working group on Vibrio spp. WG for the revision of the ISO TS 21872 (title to be confirmed - NRL France).*

4.6 *Vibrio* spp ring trial 2011 - RT38, Rationale and intended results (paper WS10/13) (EURL).

Coffee/tea (11:30 am)

5 Norovirus and hepatitis A virus

5.1 Evaluation of norovirus GI and GII circulation in shellfish and clinical samples in Italy (NRL Italy, Rome).

5.2 Quantification of noroviruses in field and outbreak related shellfish samples (NRL Denmark).

Lunch (1:00 pm)

5 Norovirus and hepatitis A virus (cont.)

5.3 Reports on norovirus and hepatitis A virus outbreaks/cases associated with consumption of bivalve shellfish 2010 (All).

5.4 Progress towards virus controls

1. Virus risk management in an Irish harvest area (NRL Ireland).

2. EFSA mandates on viruses in foods (EURL).

3. Quantitative (or qualitative) data on hepatitis A virus in bivalve shellfish (All).

Coffee/tea (3:30 pm

5.5 Norovirus and hepatitis A virus proficiency testing.

1. The development and use of reference materials for norovirus and hepatitis A (paper WS10/14) (EURL).

2. Proficiency testing for viruses (RT39) –NRL participation and performance assessment (paper WS10/15) (EURL).

3. Proficiency testing for viruses (RT39) – methods and quantification (EURL).

5.6 Update on the progress of CEN validation (M/381) (WS10/16) (EURL).

Day 3 - Thursday 13 May 9:30 - 12:30

6 Requirements for EU research, knowledge gaps and future research proposals (EURL).

7 Agreement of Workshop resolutions.

8 Date and venue for next meeting (tentative).

9 Any other business.

Meeting close

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Minutes of the 10th Workshop of Microbiological NRLs for Bivalve Molluscs, Cefas, Weymouth, 10th – 12th May, 2011.

Attendees

David Lees (DNL) (chair)	EURL Director	Cefas, UK.
Rachel Hartnell (RH)	EURL Coordinator	Cefas, UK.
Louise Stockley (LS)	EURL	Cefas, UK.
Samantha Arnell (SA)	EURL	Cefas, UK.
Johann Ladstaetter (JL)	NRL Austria	Austrian Agency for Health and Food Safety, Wien.
Sarah Denayer (SD)	NRL Belgium and Luxembourg	Scientific Institute of Public Health, Brussels.
Vanya Chikiova (VC)	NRL Bulgaria	Pencho Slaveikov, Sofia.
Anna Charlotte Schultz (ACS)	NRL Denmark	Institute of Food Safety and Nutrition, Soborg.
Martial Catherine (MC)	NRL France	Institut Français de Recherche pour L'Exploitation de la Mer (IFREMER)
Soizick Le Guyader (SG)	NRL France	Institut Français de Recherche pour L'Exploitation de la Mer (IFREMER)
Sylvain Parnaudeau (SP)	NRL France	Institut Français de Recherche pour L'Exploitation de la Mer (IFREMER), Nantes.
Dominique Hervio-Heath (DH)	NRL France	Institut Français de Recherche pour L'Exploitation de la Mer (IFREMER), Nantes.
Reimar Johne (RJ)	NRL Germany	Federal Institute for Risk Assessment, Berlin.
Efthimios Karamanos	NRL Greece	Institute of Food Hygiene of Athens, Athens.
Erzsebet Adrian (EA)	NRL Hungary	Central Agricultural Office, Food & Feed Directorate, Budapest.
Bill Doré (BD)	NRL Ireland	Marine Institute, Galway.
Luciana Croci (LC)	NRL Italy	Istituto Superiore di Sanità (ISS) Rome.
Elena Rocchegiani (ER)	NRL Italy	Centro di Referenza Nazionale per il controllo microbiologico e chimico dei molluschi bivalve vivi, Ancona
Francesca Leoni	NRL Italy	Centro di Referenza Nazionale per il controllo microbiologico e chimico dei molluschi bivalve vivi, Ancona
Gita Tupe	NRL Latvia	National Diagnostic Centre of Food & Veterinary Service (FVS), Riga.
Irene Pol (IP)	NRL Netherlands	National Institute of Public Health and the Environment (RIVM), Bilthoven.
Ewelina Bigoraj (EB)	NRL Poland	National Veterinary Research Institute, Pulawy.
Magdalena Lopatek (ML)	NRL Poland	National Veterinary Research Institute, Pulawy.
Sonia Pedro (SP)	NRL Portugal	Instituto de Investigacao das Pescas e do Mar (IPIMAR), Lisbon.
Alina Popescu (AP)	NRL Romania	Institute of Diagnosis and Animal Health, Buharest.
Miriam Filipova (MF)	NRL Slovakia	State Veterinary and Food Institute, Dolny Kubin.
Andrej Kirbis (AK)	NRL Slovenia	National Veterinary Laboratory, Ljubljana.
Cristina Acebal (CA)	NRL Spain	Agencia Espanola de Seguridad Alimentaria, Majadahonda, Madrid.
Covadonga Salgado	INTECMAR	Peirao de Vilaxoan S/N 36611 Vilagarcía de Arousa (Pontevedra).
Magnus Simonsson (MS)	NRL Sweden	National Food Administration, Uppsala.
Ron Lee (RL)	NRL UK	Cefas, Weymouth.
James Lowther (JL)	NRL UK	Cefas, Weymouth.
Eddy Listes (EL)	Croatia	Hrvatski veterinarski institute Veterinarski zavod Split Poljička cesta 33 21000 Split.
Irene Listes (IL)	Croatia	Hrvatski veterinarski institute Veterinarski zavod Split Poljička cesta 33 21000 Split.
Franklin Georgsson (FG)	EFTA Iceland	Matis, Reykjavik.
Liv Marrit Rorvik (LMR)	EFTA Norway	The Norwegian School of Veterinary Science, Oslo.
Mette Myrmel (MM)	EFTA Norway	The Norwegian School of Veterinary Science, Oslo.

Observers Simon Kershaw (SK) Cefas, James Lowther (JL) UK NRK, Craig Baker-Austin (CB-A) Cefas.
Apologies

Paolo Caricato DG SANCO, European Commission.
Representatives from NRLs in The Czech Republic, Lithuania did not attend the workshop

Note. All presentations can be viewed in the Information Centre of the EURL website under the Workshops section www.crlcefas.org

Acronyms

CA	Competent Authority	ISO	International Standard Organisation
CEN	Comité Européen de Normalisation	EQA	External Quality Assessment
CPA	Cumulative Performance Assessment	RMP	Routine Monitoring Point
CCFH	Codex Committee of Food Hygiene	MLST	Multi-Loci Sequence Typing
EFTA	European Free Trade Association	MS	Member State
DG Sanco	Directorate General for Food and Consumers	LBM	Live Bivalve Molluscs
EFSA	European Food Safety Authority	NSSP	National Shellfish Sanitation Program
EU	European Union	NoV	Norovirus
EURL	European Union Reference Laboratory	NRL	National Reference Laboratory
FDA	Food and Drug Administration	OCL	Official Control laboratory
HPA	Health Protection Agency	IRMM	Institute for Reference Materials and Measurement
FAO	Food and Agriculture Organisation	PT	Proficiency Testing
PFGE	Pulse Field Gel Electrophoresis	TAG	Technical Advisory Group
FBO	Food Business Operator	SC9	Sub Committee 9 (Food Microbiology)
GPG	Good Practice Guide	SS	Sanitary Survey
HACCP	Hazard Analysis and Critical Control Points	US	United States
HAV	Hepatitis A Virus	WHO	World Health Organisation
		WP	Work Programme

1 Welcome meeting

Action

1.1 Welcome and introduction

DNL opened the meeting and invited all NRL representatives to introduce themselves and their organisations. RH described the reasons for delays that had occurred last year with respect to reimbursement of expenses. Procedures had been put in place by the EURL to help to avoid future problems; these were explained to delegates. The fact that it was delegates responsibility to send all relevant expense receipts (not available during the workshop) to SA within two weeks was reinforced.

The agenda for the two and a half day workshop (paper WS10/04) was accepted by delegates.

1.2 Actions arising from the 9th workshop

The resolutions and report from the 9th workshop (Ancona 2010) were reviewed (paper WS10/03). All actions had been completed; major findings are summarised below or covered separately through agenda items.

- It had been agreed previously by the workshop that the Bactrac 4300 impedance method, as validated by NRL France and accepted by the EURL as an alternative method for *E. coli* enumeration for official control analysis, should have formal recognition within EU food hygiene law. Text had been prepared potentially for inclusion in an amending Regulation. This would be discussed further with PC at a meeting following the workshop. The EURL would inform NRLs of progress in due course. EURL

- Progress with respect to the implementation and content of the Water

Framework Directive was discussed, the workshop agreed that it was extremely important to maintain microbiological water quality standards following full introduction of the directive in 2012.

1.3 EURL work programme 2011 - EURL

RH presented the main themes of the EURL WP agreed with DG Sanco in August 2010. The WP for 2011 included provision of advice to DG Sanco and NRLs, representation of the network on scientific committees/working groups (e.g. EFSA, ISO and CEN), provision of proficiency testing and assistance with development of alternative methods (paper WS10/05). Delegates were informed that the EURL website (www.crlcefas.org) was an important source of information for NRLs and other stakeholders.

2 Official Control - Microbiological monitoring

2.1 Comparison of bivalve molluscs harvesting area classifications under Commission Regulation (EC) No. 854/2004 across EU Member States - EURL

Information provided by NRLs on classified production areas within MSs was set out in paper WS10/06 and presented to the group for comment. DNL summarised the main issues that NRLs had experienced with respect to obtaining the relevant information. It was noted that differences existed with respect to the type of information provided e.g. some MS had provided official classification data; some provided classifications based upon absolute compliance with legislation for class A areas, not all MSs classify areas as prohibited but rather assign no classification status. Following discussion, it was confirmed that the paper should contain the official classification statistics. All NRLs were asked to check the accuracy of information in this respect and to inform the EURL of any amendments within 3 weeks of the workshop. The finalised paper would be circulated to DG Sanco and published on the EURL website as an open access document. It was suggested that classification data from EFTA countries should be included. Iceland and Norway were asked to provide relevant information. It was agreed that this was a useful exercise but that this was not a regulatory reporting requirement thus the paper would not be updated annually.

All NRLs

EURL

NRL Norway and Iceland

2.2 Equivalence of Codex and EU *E.coli* standards recommendations - EURL

RH presented further developments with respect to proposals on the harmonisation of the 3 class plan for the microbiological *E. coli* criterion for live bivalve molluscs contained in Codex STAN 292_2008 (n=5, c=1, m=230, M=700 *E. coli*/MPN/100g) (paper WS10/07a) and the analogous 2 class plan in EU legislation (n=1, c=0 m=230 *E. coli*/MPN/100g. EURL presented two scenarios representing statistical equivalence of the two approaches and, in collaboration with 5 NRLs, considered the practical implications for monitoring. On the basis of the analysis the EURL recommended that EU criterion for end product should be harmonised through adoption of the Codex 3 class plan. NRLs agreed that this was considered scientifically preferable particularly for the detection of non-conforming batches and would bring EU requirements in this respect in line with the approach adopted for other food commodities **(Resolution 1)**..

It was noted that the adoption of Codex STAN 292_2008 into Regulation 2073/2005 would have consequential implications for classification and monitoring. The EURL identified that straightforward adoption of the Codex approach would increase sampling five-fold for monitoring programmes. As an alternative a recommendation for application of the Codex approach over time where no samples exceeded the upper limit and 80% were ≤230 *E. coli*/MPN/100g had been considered. Following discussion most NRLs agreed with the Codex approach applied over time **(Resolution 2)**. A number of amendments were noted with respect to the EURL draft paper. It was agreed that these should be made prior to further distribution. In addition NRL UK

EURL

recommended that the EURL should undertake modelling to estimate *Salmonella* spp. compliance, and examine the correlation between end product and monitoring EURL compliance **(Resolution 3)**. These data should be included in the next draft of the document.

2.3 Update of the Good Practice Guide - EURL

RL informed the workshop that an updated issue of the GPG had been published in August 2010 (issue 4) and was available on the EURL website. RL outlined the amendments; these included the addition of an executive summary, updated section to conform with changes in legislation, changes to stipulated sample transportation conditions and the inclusion of semi-quantitative approaches to analysis of sanitary surveys. In addition, definition of geometric means had been transferred to an annex. The updated version can be downloaded at www.crlcefas.org it was no longer necessary to access the document via the Information Centre.

RL reported on a FAO initiative to examine *Salmonella* in bivalve molluscs and aquaculture products. Following discussion it was clear that there were some inconsistencies amongst MS and autonomous regions with respect to *Salmonella* testing. NRLs Denmark, Italy and Spain reported *Salmonella* spp. monitoring in harvesting areas. It was further noted that in some areas results of *Salmonella* monitoring was utilised to close (and open) class A and B areas. NRLs were reminded of the previous Commissions opinion stating that it was not necessary to monitor *Salmonella* spp. in production areas **(Resolution 4)**.

2.4 Intensive purification of Class C bivalve molluscs – Spain

CS (INTECMAR) presented an intensive purification study performed on both naturally and artificially contaminated shellfish species in Galicia, Spain. The intent of the study was to generate data to demonstrate efficacy of intensive purification (increased duration) to ensure safety of product harvested from class C areas. Prior to the introduction of the new hygiene package in 2006 intensive purification had been used in this context for some product in the region, due primarily, it was stated, to the absence of relay areas in Galicia. In brief, mussel and clams originating from variously polluted class C areas were depurated under commercial and experimental conditions. The pre and post *E. coli* and NoV levels were analysed and the data presented. For the most part, for naturally contaminated shellfish, *E. coli* levels reached levels ≤230 *E. coli*/MPN/100g after 3 days (95% of samples) however NoV levels did not show consistent decrease over time. For artificially amended samples data indicated *E. coli* clearance to class A criterion within 1 and 7 days depending on species. NoV was not eliminated following 7 days of depuration. NRLs agreed that the data presented did not support intensive purification of class C shellfish as an adequate public health protection measure. **(Resolution 5)**.

2.5 Equivalence of EU and US legislation for the sanitary production of live bivalve molluscs for human consumption

RL presented an update on the ongoing EU/US equivalency negotiations (paper WS10/08). The major differences in classification approaches between the EU and US systems were identified (*E. coli* levels in shellfish *vs* faecal coliform levels in seawater). Preliminary findings indicated that the EU class A production areas were considered more stringent than the US approved category. Whereas the US Restricted Standard was more rigorous than EU class B. Currently FDA have suspended all EU exports to the US pending audits of the MSs and further discussion. The EURL stated that they would continue to support DG Sanco through provision of advice on the negotiations with the US FDA on trade. It was noted that the GDP had been provided to the FDA by the EU as the reference document with respect to EU sanitary controls on LBM production **(Resolution 6).**

2.6 Impact of chronic microbial pollution on shellfish

SK presented an ongoing UK Department of Environment, Food and Rural Affairs (Defra) funded project looking at the impact of continuous sewage discharges on the microbiological quality of shellfisheries. The object of the work was to obtain a better understanding of the accumulation and removal kinetics of various shellfish species exposed to continuous low level faecal contamination. SK described the replicated experimental phase of the work programme and anticipated outcomes. It was noted that data may be useful in providing information for the EU/US equivalency negotiations. The project was due to completion in March 2012 and further progress would be reported in due course.

2.7 Progress with the application of sanitary surveys in the UK

RL (UK NRL) provided a progress report with respect to application of sanitary surveys across the UK. The approach to application of SS in the UK was based upon the good practice guide. Each step of the surveying approach was controlled by a standardised protocol. Various information sources were described and the rationale for recommendations for worse case or differential impact RMPs outlined. Quality assurance parameters were introduced these included use of standard protocols, maintenance and calibration of field equipment, use of UKAS accredited laboratories and cross validation of third party data. To date the progress was very good with 28 surveys covering 140 beds/sites covered in England and Wales, 89 surveys covering 163 beds in Scotland and 4 surveys covering 28 beds in Northern Ireland completed. SS reports were provided to stakeholders and plans to publish on the Internet were under development. Reviews of completed survey reports would be undertaken every 6 years, unless supplementary bacteriological surveys were undertaken, significant changes were identified or new species identified in the same area. BD asked for comment on the use and effectiveness of pollution reduction plans under the Shellfish Waters Directive (79/923/EEC). RL noted that in the UK Defra was keen to promote its use but stated that it was often difficult to extract pertinent information from these reports.

2.8 Update on the current position with respect to application of sanitary surveys in EU Member States

The progress on the application of SS within MSs was reviewed. NRLs reported any changes to workshop paper WS10/09. The EURL requested that NRLs provided information (not available on the day) within three weeks of the workshop. NRLs were reminded of current Commission opinion that SSs should be performed on reclassified and new shellfish areas **(Resolution 8).**

All NRLs with production areas

2.9 Options for active management

Approaches to active management of shellfish harvesting areas were introduced**. (Resolution 7)**.

2.9.1 Predictive closures – Essentially predictive closures are based on events such as rainfall that can be used to trigger management actions (closures, harvesting restrictions) in an anticipated and controllable way. Whilst not formalised across the EU in the same way as those foreseen in the US NSSP, NRLs UK, France, Ireland and Spain identified that their classification systems included seasonal classifications. Seasonal classifications could be considered as predictive restrictions/closures and had been identified as such by the recent US audit team. NRL Denmark informed the workshop that a guidance document had been produced which identified such closures however it was noted that this was not a formalised document.

2.9.2 Prohibition zones around point sources - In several MSs NRLs reported various requirements for closure zones around sewage discharges and/or exclusion of harbours from classification. In some countries these were formalised and applied to the whole country whereas in others procedures were less prescriptive and applied on a regional basis. In the UK the zones around sewage discharges are excluded from the fishery based upon the outcome of the sanitary survey and dealt with on a site by site basis. In Denmark all harbours were prohibited, within Italy regional legislation fixed prohibition zones around sewage discharge pipes. NRL Italy agreed to check the legislation to clarify the size of zones. In France the NRL reported that harbours were prohibited, prohibition zones were in place around point source discharges and further distance to harvest requirements based upon the outcome of sanitary surveys. NRL France agreed to check national requirements for recommended sizes of exclusion zones. It was noted that the GPG identifies exclusion zones for Class A areas.

2.9.3 Actions in response to pathogen monitoring - Several NRLs reported on management actions following (norovirus) outbreak(s). It was noted that there was no legal basis for these actions and that no harmonised criteria for their application existed. NRLs Ireland, The Netherlands, France, Norway and UK gave examples of relevant actions:

- NRL Ireland – In a small number of areas in Southern Eire long term voluntary closures were in place despite full compliance with *E. coli* criteria following outbreaks. Voluntary closures on the basis of virus results (following outbreaks) and management action such as extended depuration and relay had been implemented- not formalised.
- NRL The Netherlands – Following a norovirus outbreak recorded in France associated with LBM produced in The Netherlands both *E. coli* and norovirus follow-up testing had been undertaken.
- NRL France – In France norovirus monitoring had been implemented in an area following an outbreak, areas was closed on the basis of norovirus results, reopening criterion was absence of virus. It was reported that one area had been closed for 3 months using this strategy. It was noted that there was no legal basis for this approach and it was taken on a case by case decision by the Competent Authority
- NRL Norway – In Norway an outbreak (norovirus) had triggered a closure, testing had given norovirus positive results, on the instruction of the local authority an adjacent area had been tested for virus and had also returned positive results. This area had also been closed.
- NRL UK – It was reported that an outbreak had triggered testing which revealed norovirus positive results, ongoing monitoring of the area gave low level positive results. The Competent Authority carried out a risk assessment and approved reopening when the operator had adopted additional virus control measures in their HACCP plan.

A number of virus control measures were identified by NRLs, these included selective purchasing based upon arbitrary (but fixed) virus levels and absence of illness reports, use of extended depuration times and increased depuration temperatures during “at risk” periods, actions (withdraw from sale, relay etc) informed by virus testing. It was noted that management actions were driven primarily by the FBO and the requirements of third country importers. The workshop noted that this was an area of increasing importance.

2.10 Validation of rapid plate count method for enumeration of *E.coli* in bivalve molluscs

IP (NRL The Netherlands) presented the final results of the validation study of *E. coli*

using ISO 16649-2 (TBX plate count method) against the *E. coli* reference method ISO 16649-3. The study had been overseen by MicroVal. Thirteen laboratories participated in the interlaboratory study element of the validation which had tested the equivalence of the two methods on a series of mainly artificially contaminated mussels. Following consultation with the EURL it was recommended that further data were generated by the expert laboratory on naturally contaminated shellfish. This was to generate additional results to check the ability of the two methods to recover marine stressed cells. Results indicated a slight downward bias for TBX method but this was not statistically significant, the TBX method showed a higher repeatability and reproducibility when compared to the reference method. Following completion of the study MicroVal have certified the validation of this method. The EURL has also accepted the results as satisfactory. Mechanisms for more formal acceptance of the TBX method as an alternative to the reference method were discussed. The workshop agreed that it should be treated in the same way as the impedance method in this regard **(Resolution 9)**.

2.11 Checking of impedance calibration using bivalve shellfish from contaminated harvesting areas

NRL France (MC) reported on additional calibration work performed on the BacTrac 4300 impedance method. This work was initiated after the French national PT programme had revealed a number of unsatisfactory results from laboratories using species (or shellfish type) specific impedance calibration curves generated in the original 2006 validation study. Results from the additional work demonstrated that a single adjusted calibration curve could be used for all species.

2.12 Recommendations for adoption of ISO 16649-3 as a full ISO standard

The EURL noted the work being undertaken at ISO on the revision of ISO TS 16649-3. A proposal to revise the technical specification to a full standard had been adopted thus preventing it's withdraw as a published ISO method. The EURL would circulate the proposed changes to the scope after the next ISO SC9 plenary meeting in June. EURL

3 Official Controls – Proficiency Testing

3.1 *E.coli* and *Salmonella* spp.

3.1.1 An update on the UK NRL approach to proficiency testing

RL presented an overview of the procedures performed by the UK NRL relating to OCL PT, ongoing assessment and audit. In the UK all OCL testing LBM for classification purposes were required to participate in both HPA/Cefas shellfish EQA scheme and UK NRL proficiency testing initiatives. The OCL performance was reviewed after each distribution, two reports were provided to the CA annually on performance. Particular attention was paid to the occurrence of void tube combinations with an expected incidence of <1%, higher incidence was indicative of persistent problems with the test. The NRL provided support for laboratories experiencing problems that included onsite audit. A protocol for addressing underperformance had been developed by the NRL.

3.1.2. Performance assessment of French Official Laboratories in proficiency testing

MC (NRL France) presented results from the comprehensive French national PT scheme for enumeration of *E. coli* in live oysters. Samples comprised bioaccumulated (with fresh sewage) *Crassostrea gigas,* each laboratory (n=39) received 5 samples to be tested in duplicate*.* The introduction of scoring for *E. coli* analysis enabled performance assessments based upon the laboratories ability to achieve satisfactory percentage (>80%) over cumulative biannual distributions to be undertaken by the NRL. This approach had identified a number of systematic errors which had provoked follow-up actions by the NRL. *Salmonella* PT had been carried out amongst 28 laboratories, results were satisfactory for 27 laboratories, one laboratory failed to return

results. The audit procedure for underperforming laboratories was described; this was now documented in the NRLs quality system. In brief, the follow up procedures comprised investigation of staff competence and training, checks on laboratory protocols, reagents and equipment.

3.1.3 Update on performance of Official Control Laboratories performance in proficiency testing

NRLs were asked to provide information on OCLs participation, performance and follow-up. Following discussion, the EURL agreed to produce a summary report of the information provided and circulate or comment. NRL Spain agreed to present on the OCLs PT results at the next workshop **(Resolution 11).** NRL Spain

3.1.4 NRL participation and performance assessment in the EURL/HPA Shellfish EQA scheme for *E.coli* and *Salmonella* spp.

The EURL (LS) presented the results reported by NRLs for the EURL/HPA EQA for *E. coli* and *Salmonella* scheme RT40 (paper WS10/11). Twenty-one NRLs participated in 1 or more distributions during 2010 with 16 NRLs returning results for all 3 distributions. Of those 10 achieved a maximum CPA of 100% for both *E. coli* and *Salmonella* spp. detection. Only 1 NRL obtained CPA of <70% (poor performance criterion) for *Salmonella* spp. detection. The laboratory received notification and troubleshooting advice from the EURL. For *E. coli,* whilst laboratories had performed well (CPA>70%) scores had been deducted due to the use of incorrect MPN tables. NRLs were reminded that 5x3 MPN tables from latest version of ISO 7218 should be used for interpretation of confirmed positive tube combinations. Performance assessment of datasets generated over the last 3 years, indicated that all 21 NRLs achieved >70% for *E. coli* analysis. On the basis of this apparent satisfactory performance NRLs requested that the frequency of participation in PT could be reduced. The EURL agreed to elaborate criteria for demonstration of satisfactory performance, to enable those laboratories that choose to, to reduce participation frequency from 3 to 2 annual distributions **(Resolution 12)**. EURL

3.1.5 NRL participation and performance assessment in the whole animal distribution for *E.coli* and *Salmonella* spp.

The EURL presented results of the whole animal ring trial (RT37), 32 laboratories (17 NRLs) had participated in the distribution (paper WS10/12). Thirty-one laboratories (97%) returned two replicate results within the expected range for *E. coli* and anticipated result for *Salmonella* spp.. One laboratory reported both replicate results between +3 and +5 SD of participants' median. Two laboratories reported MPN results that were not consistent with 5 x 3 MPN tables in ISO 7218 or 5 x 3 MPN tables previously supplied by the EURL. All laboratories subject to performance assessments on three year datasets (i.e. those that had sufficient participation frequency to carry out the analysis) achieved a CPA of >70%. NRLs noted that analysis of matrix material assists in accreditation and requested a continuation of this scheme (**Resolution 13**). It was resolved that where MSs use accepted methods for official controls in addition or as alternatives to the reference method the NRL should be competent in all methods used for official control analysis. **(Resolutions 14 and 15)**. EURL

3.1.5 Analysis of NRL performance in ongoing proficiency testing

The EURL gave a brief presentation on examples of statistical trend analysis that can be performed on PT results. The importance of periodic review of PT results was stressed.

4.*Vibrio* spp.

4.1 Tracking vibrio infections in a changing environment

CB-A presented data on the potential effects of climate change surface seawater

temperatures and salinity with respect to the incidence of *Vibrio* spp. infections across Europe. Historic data on a climatic anomaly across Northern Europe in 2006 that resulted in abnormally high surface seawater temperatures was presented. Retrospective investigation had revealed usually high incidence of *Vibrio* infection specifically *V. vulnificus* in the region, with around 50 cases were reported in the Baltic sea and Eastern North Sea area. It was suggested that using this type of information predictive models that could be constructed that could enable proactive risk management to reduce the risk from *Vibrio* spp. to the public.

4.2 Developments at Codex on control measures for *Vibrio parahaemolyticus* and *V. vulnificus* in molluscan shellfish

DHH (NRL France) gave an update on the progress at Codex on the control measures for *V. parahaemolyticus* and *V. vulnificus*. Two relevant documents were in preparation: a code of practice for pathogenic *Vibrio* spp. in seafood and an annex specifically dealing with control measures for *V. parahaemolyticus* and *V. vulnificus* in molluscan shellfish. Following presentation of the draft documents FAO/WHO had been mandated by the CCFH to validate the risk assessment model proposed by the US, to recommend methods and to examine growth rates and generation times of *V. parahaemolyticus* and *V. vulnificus* in a wider range of bivalve species. To date the expert working group had observed that the original model built using data generated predominantly from the Gulf Coast States of the US was not appropriate for use globally. Consequently, other models were under consideration and it was important to support new studies to generate additional data from diverse geographical locations and in a range of species. to these validate models. Additionally it was noted that a wide range of methods were in use which provided differing types of information and had differing precision characteristics. The expert working group had agreed to provide recommendations on test methods and to facilitate mechanisms to compare data generated using different methodologies to enable comparison between studies.

4.3 Molecular characterisation of *Vibrio parahaemolyticus* isolated in Italy

FL (NRL Italy) presented on the work carried out in on Italian strains of *V. parahaemolyticus* from both clinical cases and the environment. MLST and PFGE were used to characterise strains. In brief, it was reported that MLST provided a robust transferrable method for typing *V. parahaemolyticus*; clinical strains were confirmed as part of the ST-3 O3:K6 clonal complex; serologically identical strains from clinical and environmental sources were genetically dissimilar and the population of thermostable direct related haemolysin positive strains isolated from the environment between 2002 and 2009 were genetically homogeneous.

4.4 Rapid methods for detecting and enumerating *Vibrio* spp. in bivalve shellfish matrices

The EURL (CB-A) described a semi-quantitative real-time PCR method for the determination of *V. parahaemolyticus* and *V. vulnificus* directly in LBM. The approach targets the dissected digestive glands, using an analogous approach to that developed through CEN TAG4 on viruses. The advantages of this approach were described-speed; results could be obtained after 3 hours *cf* to the standard bacteriological method which takes up to 5 days; ability to detect pathogenicity traits and the potential for direct quantitation from the sample without the requirement for enrichment. To date the methodology had been applied to spiked, bioaccumulated and a very limited number of naturally contaminated samples in UK and France. Further data were required to more fully evaluate this approach.

4.5 Activities of the AFNOR working group on *Vibrio* spp.

DHH (NRL France) presented data generated by members of the AFNOR expert group on the revision of the current ISO standards for detection of vibrios in foods (ISO TS

21872-1 and 2). Data were presented supporting the introduction of PCR based methods for screening 6 and 18 hour enrichments.

4.6 *Vibrio* spp. ring trial 2011 – Rationale and intended results

The EURL presented the outcome of the *Vibrio* ring trial RT38 and the subsequent recommendations. The rationale of RT38 was to generate additional data from multiple laboratories on the inclusion of PCR for isolate identification to assist in the revision of ISO TS 21872-1 and 2. Fourteen laboratories used both biochemical and requested PCR primer sets and running conditions stated in the EURL protocol. It was reported that PCR based identifications of isolated *Vibrio* spp. produced less ambiguous results than did biochemical methods (using primarily commercial galleries) and primer sets targeting *toxR* genomic region of *V. parahaemolyticus* yielded more consistent results than other primer sets. It was noted that these data supported the inclusion of PCR based approaches in the revision of the ISO 21872 series but it was noted that the provision for biochemical identification should be retained to facilitate use of the method by end users without access to PCR equipment **(Resolution 16)**.

5 Norovirus and hepatitis A virus

5.1 Evaluation of norovirus GI and GII circulation in shellfish and clinical samples in Italy

LC (NRL Italy) presented data from a study investigating the circulation of NoV GI and GII in Italy. Prevalence of GI and GII from human cases and shellfish collected from Italian production areas and local markets were compared over a 8 year period. A total of 1698 clinical specimens and 1793 shellfish samples were analysed in a large collaborative study between IZS Adria, Ancona, Brescia, Roma, Sassari and University "Federico II" Napoli. In accordance with other published studies the authors showed that NoV circulation in clinical samples and in shellfish followed different dynamics with respect to prevalence. GII was found more frequently in human cases but not in so often in shellfish, whereas GI was commonly detected in LBM, often together with GII.

5.2 Quantification of noroviruses in field and outbreak related shellfish samples

ACS (NRL Denmark) presented data from a field studies (surveillance) and outbreak-related testing of shellfish for *E. coli*, *Salmonella* spp., NoV and HAV. From surveillance testing NoV was detected in around 20% of samples from areas where outbreaks had never been reported. Levels were low with GI mean copies/animal of 271 & GII mean copies/animal of 12. All samples were negative for HAV. Mean levels of NoV in outbreak related shellfish were generally higher than those in non-outbreak related samples. It was suggested that these type of data may help risk assessors to estimate health risks associated with differing contamination levels.

5.3 Virus risk management in an Irish harvesting area

BD (NRL Ireland) gave an update on the efficacy of virus management strategies which had been introduced last year by an operator in Carlingford Lough. The approach utilised a combination of relay and depuration (for ≥4 days at ≥15°C) where ongoing monitoring yielded norovirus levels in oysters that exceeded 1000 NoV copies/g. Data were presented indicating that extended depuration at water temperatures between 15-17°C reduced NoV levels to below the limit of quantitation of the assay (reported as 100 genome copies/g). It was however acknowledged that safe levels were difficult to demonstrate. The requirement for advice and guidance for FBO whose responsibility it was to produce safe product was identified. The benefits of these practical proactive approaches were highlighted. BD presented data ranked by hypothetical compliance levels (not detected, <100, 100-200, 200-500, 500-1000, 1000- 10,000 and >10,000 genome copies/g). The overall and seasonal impacts of these classification criteria were noted. In addition, data were presented illustrating the differential results obtained from real-time qRT-PCR and plaque assay determination of FRNA (GA) bacteriophage

in oysters; up to 3 $\log_{10}$ differences in measured quantities were observed.

5.4 UK-wide surveillance project for norovirus in oysters – preliminary data

JL (UK NRL) presented a summary of a study undertaken in the UK to assess the prevalence of NoV in oysters. The work was funded by the UK Food Standard Agency and covered 39 sites, selected to provide a wide range of geographical areas and risk profiles (based upon a number of risk factors). Samples of Pacific and native oysters had been taken over the period May 2009 to April 2011. A full report would be available in due course.

5.5 Reports on norovirus and hepatitis A virus outbreaks/cases associated with consumptions of bivalve shellfish 2010/11

The EURL requested information from each NRL on outbreaks that have been associated to the consumption of shellfish. Norway reported 4 outbreaks (source of oysters: France 1, Netherlands 3). Denmark had experienced 2 outbreaks both of which had originated from French shellfish. Sweden had reported 2 outbreaks (French oysters 1, Swedish mussels 1). The UK had had 10 outbreaks (informally) of which 1 only outbreak had an accompanying clinical sample provided. France reported several RASFF alerts associated many with oysters.

5.6 EFSA mandates on viruses in foods

DNL gave an update on the progress at EFSA on work on food-borne viruses and NoV in oysters. EFSA had requested the BIOHAZ Panel to carry out a review of available information in scientific literature on food-borne viruses relating to all aspects of the shellfish production, to identify control options and assess their potential impacts on prevention or reduction of infections and finally to consider food safety criteria. In addition, in a separate mandate FSA Ireland had requested EFSA to provide scientific opinion on the use of real-time PCR for detection of NoV in shellfish, with a view to identifying appropriate levels of NoV that did not pose a risk to consumers. There was also a requirement to identify treatment regimes that can reduce levels in oysters. EFSA reports were not yet completed but once released would be circulated to NRLs to **(Resolution 18)**. EURL

5.7 Quantitative (or qualitative) data on hepatitis A virus in bivalve shellfish

The EURL requested information from NRLs on experiences any associated with HAV. Following discussion it was evident that a lack of data existed with respect to HAV in Community product. SD (NRL Belgium) noted however that they had tested 120 imported mussel samples of which 1 was positive for HAV (<1%).

5.8 Norovirus and hepatitis A virus proficiency testing

5.8.1 The development and use of reference materials for norovirus and hepatitis A virus

RH (EURL) gave a presentation on the development of NoV reference materials in collaboration with the UK HPA and IRMM, Geel. These were in the form of both LENTICULES and freeze-dried shellfish matrix. Homogeneity, stability and shelf-life tests had been performed to show viability as reference material. Material would shortly be available through the HPA (paper WS10/14). The workshop highlighted the need for standard material for the production of calibration curves in order to ensure consistency of virus quantitation. This will be pursued by the EURL in conjunction with others **(Resolution 19).** EURL

5.8.2 Proficiency testing for viruses – NRL participation and performance assessment

A summary of participants' performance in the EURL virus PT RT39 (paper WS10/15) was given by LS. A variety of samples were distributed to 27 laboratories. This

distribution included LENTICULES, whole oysters and freeze-dried oysters. Performance was substantially improved for LENTICULES than for shellfish matrices. Forty-three percent of participating laboratories obtained 100% for all samples. The false positive reporting rates for GI, GII and HAV were 2%, 8% and 6% respectively. The false negative reporting rates for GI, GII and HAV were 28%, 24% and 8% respectively. Eight laboratories returned quantitative real-time PCR data. On-going performance assessment was performed on 10 laboratories with all achieving a CPAs of >70%.

5.8.3 Proficiency testing for viruses – Methods and quantification

The performance of methods used in the virus PT RT39 was given by JL (representing the EURL). From the information provided by laboratories it was evident that a number of different methods were being used. The assessment was complicated as insufficient detail on methodology had been received from a number of laboratories, this would be followed up after the workshop. However, laboratories using CEN methodology tended to have better results than those using non-CEN based methodology. It was noted that performance was encouraging but further development is needed to focus more on quantitative methodology and accuracy. The EURL agreed to include matrix samples in the next distribution **(Resolution 20).** EURL

5.9 Update on the CEN validation

JL (representing the EURL) gave an update on the progress on the CEN Mandate M/381 (paper WS10/16). Within the CEN mandate there are 15 work items for which 3 elements relate to viruses and vibrios. Funding for the validation work is around €3 million with the virus element budgeted at €660 and vibrio €340. It was highlighted that CEN would not pay for this work in full until the work was completed- completion was considered to be the publication of the standards, i.e. not the completion of practical validation studies). It was identified that this funding mechanism may cause financial problems for some institutions. The EURL confirmed that it be unable to subsidise interlaboratory studies. The whole project will take over 6 years to complete. Further information would be made available to the network as it became available. It was expected that the technical specifications for the virus methods and the revisions of the vibrio ones to be published in advance of the full validated standards. **(Resolution 21)**. EURL

Date and venue of next meeting

The next workshop would provisionally be held in Ljubljana, Slovenia on 24th, 25th and 26th April 2012 **(Resolution 22)**.

Resolutions of the 10th workshop of Microbiological NRLs for Bivalve Molluscs, 10-12th May 2011

Official controls

1. The workshop considered the EURL recommendations with respect to harmonisation of Codex Stan (292-2008) and EU hygiene regulations. The adoption of the Codex 3CP (n=5, c=1, m=230, M=700 *E. coli* MPN/100g) for products placed on the market was scientifically justified and should be supported.

2. The consequences of the above were considered for harvesting area monitoring in relation to class A designation. Generally, NRLs supported the adoption of the Codex criteria for monitoring of class A harvesting areas applied over time where, within a specified review period, no sample can exceed 700 MPN *E. coli*/100g and 80% of samples must be ≤ 230 MPN *E. coli*/100g.

3. The EURL agreed to conduct modelling to estimate *Salmonella* spp. compliance and the correlation between end products and monitoring compliance using the Codex criteria. To amend the paper (WS10/07) and circulate for comment prior submission to the Commission.

4. The workshop noted that practices regarding *Salmonella* spp. monitoring in Class A areas varied across Member States. The EURL advised NRLs of the Commission opinion that monitoring for *Salmonella* spp. in LBM production areas was not foreseen in the legislation.

5. The NRLs discussed a proposal regarding intensive purification of Class C LBM. The workshop agreed that, on the basis of data presented, monitoring of all batches for *E. coli* post purification would generally secure compliance with the microbiological criteria for *E. coli* (Commission Regulation (EC) No. 2073/2005). However, the data on virus removal did not demonstrate confidence in adequate control of this risk. NRLs considered that the potential public health risks associated with purification of Class C LBM were significantly greater than for purification of Class B LBMs.

6. The EURL reported on the continuing negotiations with the US FDA on trade of LBM and the initial audit of the UK. It was noted that the Good Practice Guide (http:/www.crlcefas) had been forwarded to the FDA as a reference document.

7. In response to EURL request for information several NRLs reported additional risk control measures in LBM production areas including: seasonal classifications; prohibition of harbours; prohibition zones around sewage discharges and management actions based upon virus monitoring. It was noted that these controls were not harmonised.

8. The EURL noted the legal requirement for sanitary surveys contained within Commission Regulation (EC) No. 854/2004 and informed NRLs of the Commission opinion that this requirement applied to all newly classified LBM harvesting areas (since 2006) and to any area where the classification had changed (since 2006). NRLs provided updated information on sanitary survey coverage within their MS. The EURL agreed to circulate a summary report for comment. The finalised report would be placed on the website (public domain).

9. The workshop noted the successful validation of both impedance and TBX methods for *E. coli* enumeration in LBM. The EURL proposed to discuss formal incorporation of these alternative methods into EU legislation with the Commission.

10. The EURL noted the responsibilities of NRLs under Article 33 of Commission Regulation (EC) 882/2004. It was identified that it was the responsibility of Competent Authorities to designate Official Control laboratories (Article 12, Regulation (EC) No 882/2004).

11. NRLs provided updated information on proficiency testing amongst Official Control laboratories in their MS. The EURL agreed to circulate a summary report for comment. NRL Spain agreed to present information on proficiency testing among Spanish Official Control laboratories at the 11th workshop.

12. The workshop noted the excellent performance of NRLs in PT for *E. coli* and *Salmonella* spp. Some NRLs requested a reduction in PT frequency. The EURL agreed that a minimum frequency of 2 distributions per year for satisfactorily performing laboratories was adequate, and would develop criteria for identifying satisfactory performance.

13. Several NRLs requested continuation of the whole animal (matrix) distribution to assist in requirements for ISO 17025 accreditation. The workshop agreed a continuing PT programme of PT distributions for *E. coli* and *Salmonella* spp. comprising EQA (of which participation in 2 distributions is mandatory) and a whole animal distribution (optional).

14. The workshop noted that official control laboratories should undertake proficiency testing using the method of analysis used for official controls.

15. NRLs agreed that in Member States where alternative methods for *E. coli* enumeration in LBM were used for official controls, the NRL should be competent in these methods and should take part in proficiency testing using these methods.

Vibrios

16. The workshop supported the introduction of molecular based identification for *V. vulnificus*, *V. cholerae* and toxigenic/non-toxigenic isolates of *V. parahaemolyticus* in order to enable rapid, less ambiguous identifications in the revision of ISO TS 21872-1 and 2. However, the need to retain the option for biochemical characterisation was noted.

Virus

17. Several NRLs presented data on norovirus from LBM production areas. In several Member States where studies had been undertaken the relatively high prevalence of norovirus was noted. It was noted that comparable data for hepatitis A virus was lacking.

18. The workshop noted the progress of EFSA working groups on food borne viruses and norovirus in oysters. The EURL agreed to circulate reports on publication and proposed discussion at the next workshop.

19. The workshop noted the need for standards for NoV and HAV to underpin accurate quantitation. The EURL agreed to explore possibilities for making these more widely available.

20. The workshop noted encouraging performance in virus proficiency testing. Further developments should focus on uptake of fully quantitative methodology and accuracy of quantitation. The EURL agreed to organise further proficiency testing distributions using matrix samples.

21. The workshop noted the agreement of EU funding for the validation of virus and *Vibrio* methods under mandate M/381. However, the extended nature of the funding model (78 months) was considered problematical for some laboratories. The EURL would communicate the terms of the validation studies to enable laboratories to confirm their ability to participate.

Date and time of next meeting

22. The next workshop would provisionally be held in Ljubljana, Slovenia on 24th, 25th and 26th April 2012.

Cefas
European Union Reference laboratory for monitoring bacteriological and viral contamination of bivalve molluscs

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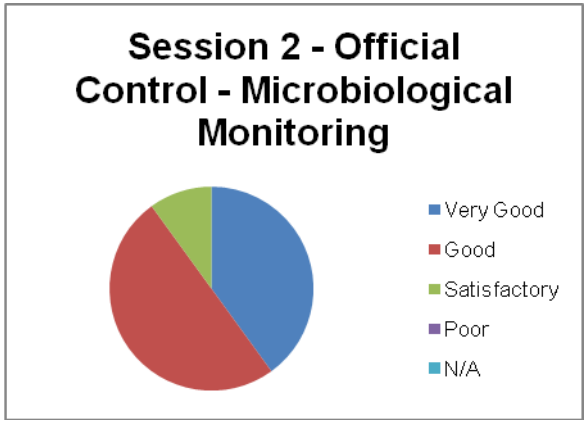
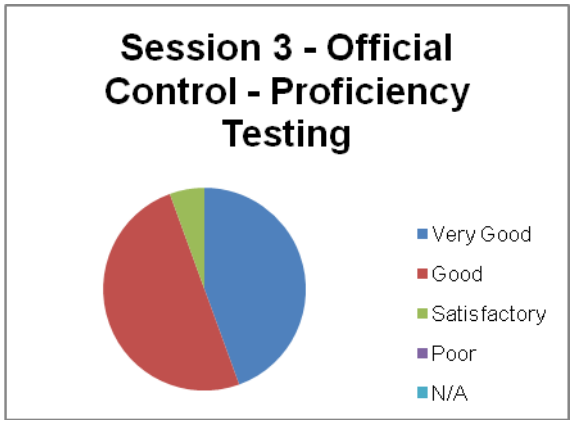
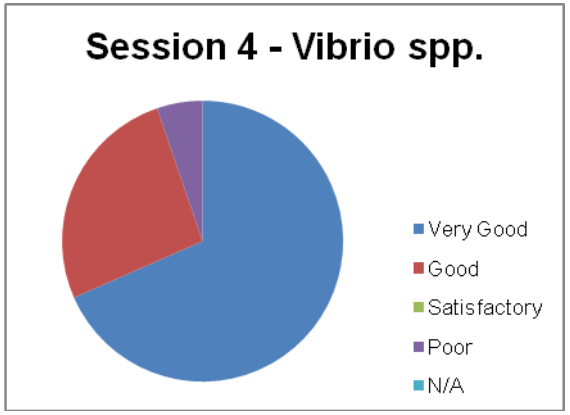
List of papers for 10th Workshop of Microbiological NRL's

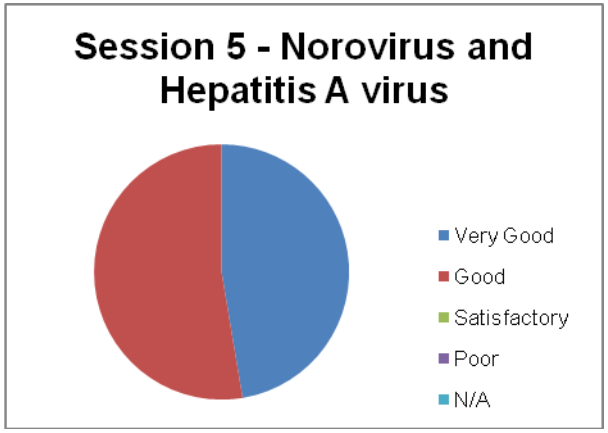
WS10/00	List of papers
WS10/01	Instructions on how to complete your expenses claim form
WS10/02	Expenses claim form
WS10/02A	Delegates List
WS10/03	Report on the 9th Workshop of National Reference Laboratories for Monitoring Bacteriological and Viral Contamination of Bivalve Molluscs
WS10/04	Agenda
WS10/05	Work Programme 2011
WS10/06	Comparison of bivalve molluscs harvesting area classifications under EC Regulation 854/2004 across EU Member States finalised version 7
WS10/07 & 7A	Equivalence of Codex and EU *E. coli* standards recommendations
WS10/08	Equivalence of EU and US legislation for the sanitary production of live bivalve molluscs for human consumption
WS10/09	Update on the current position with respect to application of sanitary surveys in EU Member States
WS10/10	Validation of a rapid plate count method for enumeration of *E. coli* in bivalve molluscs
WS10/11	NRLs participation and performance assessment in the EURL/HPA Shellfish EQA scheme for *E. coli* and *Salmonella* (RT40)
WS10/12	NRLs participation and performance assessment in the whole animal distribution for *E. coli* and *Salmonella* (RT37)
WS10/13	*Vibrio* spp ring trial 2011 - RT38, Rationale and intended results
WS10/14	The development and use of reference materials for norovirus and hepatitis A
WS10/15	Proficiency testing for viruses (RT39) – NRL participation and performance assessment
WS10/16	Update on the progress of CEN validation (M/381)

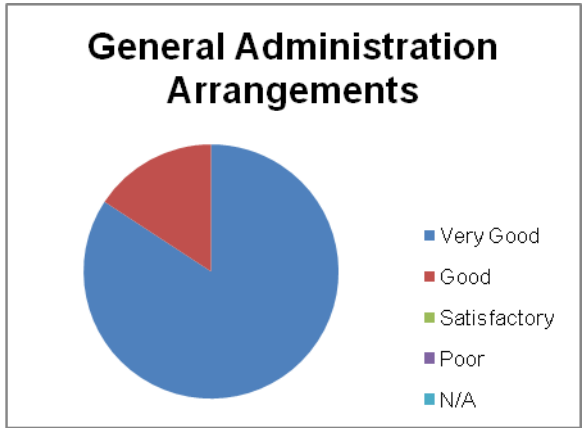
Confidential Participant Feedback Results

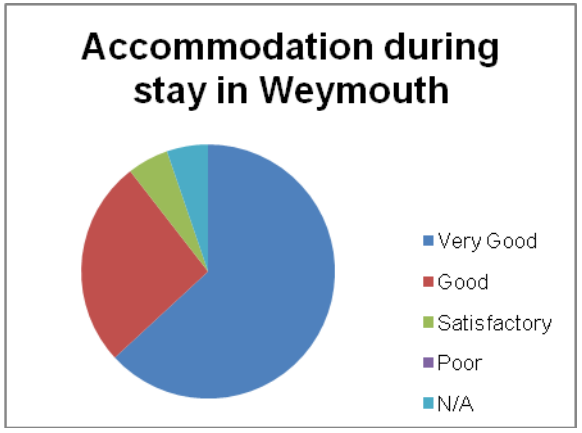












32 confidential feedback questionnaires were handed out and a total of 19 returned.

Comments:

1. a. Nice group.
   b. Interesting exchanges of information.
   c. Program may be sent more in advance.

2. a. Less topics would be better to get enough time for more details and discussion (scientific aspects).
   b. To get the program at least a week earlier.

3. a. 2.5 days is Ok, although we ran a bit behind schedule.

4. a. Not very easy to come to Weymouth.
   b. Nice meeting with good discussion, especially with technician of the laboratory.

Workshop declaration

This technical report is submitted in accordance with the requirements of Commission Regulation (EC) No1754/2006 laying down detailed rules for the granting of Community financial assistance to Community reference laboratories for feed and food and the animal health sector, following the workshop of National Reference Laboratories for bacteriological and viral contamination of bivalve molluscs held in Weymouth 10-12th May 2011.

Dr David Lees 6th July 2011
EURL Director

Dr Rachel Hartnell 6th July 2011
EURL Co-ordinator

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