

VETBIONET

Veterinary Biocontained facility Network for excellence in animal infectiology research and experimentation

Deliverable D3.8
Updated guidelines for best practice and procedure exchange of aquatic animal infection facilities

Due date of deliverable: M55

Actual submission date: M72

Start date of the project: March 1st, 2017 **Duration:** 72 months

Organisation name of lead contractor: MS (MS left the consortia this report was produced by APHA as work package leader)

Revision: V1

Dissemination level	
Public	X
Confidential, only for members of the consortium (including Commission Services)	
Classified, as referred to in Commission Decision 2001/844/EC	

Table of contents:

1. Summary	3
2. Introduction.....	3
3. Results.....	4
4. Conclusions	5
5. Annex	6

1. Summary

WP3 focuses on the elements and principles of the CEN (European Committee for Standardization) workshop CWA 15793: 2011 agreement/standard applicable to farmed animal BSL3/BSL3+ facilities. The emphasis is on what is different and challenging about the management of farmed animal facilities, and the objective of D3.2 is to **define best practices and enable procedure exchange based on existing knowledge** within the consortium for aquatic animal infection facilities.

A first workshop was organised in 2018 to discuss and analyse construction specifications and operating practices in aquatic animal infection facilities with project partners and concerned members of the GOHLD (Group of High containment Laboratory Directors). This was reported in **D3.2: Outcome of workshop discussion - Biorisk management programme for facilities handling aquatic animals to achieve CWA 15793 standard**

Since the workshop, the CWA 15793 : 2011 has been incorporated into an ISO standard 35001 : 2019 Biorisk management for laboratories and other related organisations. A desk top exercise was undertaken to check that findings of the original workshop still stood. The exercise found that the findings were still relevant to the new standard and no changes were required.

The exercise also looked at the current state of literature/guidance available on biorisk management for aquatic animals and its relevance.

2. Introduction

The CEN Workshop Agreement (CWA 15793:2011) provides a management system approach for addressing laboratory biosafety and biosecurity. The bulk of the document is generic, such as commitment by top management and general lab safety, and is applicable to all biocontainment facilities. The workshop examined where aquatic animal infection facilities differ from standard facilities in terms of their requirements and to identify the steps needed to enable aquatic animal infection facilities and a report produced.

The intention from the original workshop was Marine Scotland would prepare a preliminary list of criteria as the basis for discussion at the European Association of Fish Pathologists meeting in 2019, this will allow for international panel for peer-review for the basis of

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°731014

containment guidance. Due to Marine Scotland leaving the consortia and the conference being cancelled due to COVID, the final deliverable took the format of a desk analysis to check results for the original workshop were compatible with the ISO management systems standards 35001: Biorisk management for laboratories and other related organisations which was introduced in 2019.

The exercise also looked at the current state of literature/guidance available on biorisk management for aquatic animals and its relevance

3. Results

The desk analysis found the workshop output compatible with the ISO management systems standards 35001:2019 Biorisk management for laboratories and other related organisations, and no additional material was needed to be produced.

The exercise also looked at the current state of literature/guidance available on biorisk management for aquatic animals and its relevance

The only specific published standard, produced by the Canadian Food Inspection Agency (CFIA) in 2010, [Containment Standards for Facilities Handling Aquatic Animal Pathogens – First Edition](#), has been archived and no subsequent edition produced.

The original intent of this document was for the control of imported aquatic pathogens into Canada, providing information on the physical and operational requirements that are required to help prevent inadvertent release of economically and environmentally significant aquatic pathogens. The concern about imported pathogens will go wider than the various fish viruses listed as notifiable by the World Organisation for Animal Health (Annex 1).

A lot of the basic guidance in the standard remains relevant to in-vivo research using aquatic animals, this includes factors to be assessed when undertaking a risk assessment for infectious work in aquatic animals, guidance on working practices and significant parts on facility design and construction. The document describes three levels of Aquatic Containment Levels; however, it does not indicate what organisms should be put in what level of containment. Also subsequent to its publication a significant part of the highest of the 3 levels described has not been proved relevant to in-vivo aquatic containment research, namely the requirement for inward airflow. This is now considered not to be relevant on risk assessment as pathogens of aquatic animals even if zoonotic are not considered to become aerosolised in the animal facility. A summary is given in the link below of zoonotic pathogens.

[Zoonoses Associated with Fish | Institutional Animal Care and Use Committee | Washington State University \(wsu.edu\)](#)

However there remains a lack of coherent widely available guidance on assessing fish pathogens for biosafety, although ANSES a partner in VetBioNet shared their opinion on the “Ranking of health hazards that are exotic or present in mainland France” produced for the French Ministry.

This looked at fish pathogens against 7 measures:

1. Diffusion potential
2. Economic Impact
3. Public Health Impact
4. Societal Impact
5. Impact on Ecosystems
6. Limits to the Effectiveness of Controls
7. Impact of Control Measure

Two viral diseases, nodavirus and koi herpesvirus (KHV) infections scored the highest mainly due to lack of effective control measures if released. There was then a “high” group of seven diseases which included 4 bacterial infections (flavobacteriosis due to *Flavobacterium psychrophilum*, *Edwardsiella tarda edwardsielosis*, streptococcosis and photobacteriosis due to *Photobacterium damsela* subsp. *piscicida*) and 3 viral infections (carp sleeping sickness (CEVD), viral hemorrhagic septicemia and infectious hematopoietic necrosis).

This report did not identify any need to increase the biosafety/containment required for animal facilities dealing with them.

4. Conclusions

Since the original workshop the CWA 15793 : 2011 has been incorporated into an ISO standard 35001 : 2019 Biorisk management for laboratories and other related organisations. A desk top exercise was undertaken to check that findings of the original workshop still stood. The exercise found that the findings were still relevant to the new standard and no changes were required.

The exercise also looked at the current state of literature/guidance available on biorisk management for aquatic animals and its relevance.

The only specific published standard, produced by the Canadian Food Inspection Agency (CFIA) in 2010, Containment Standards for Facilities Handling Aquatic Animal Pathogens – First Edition, has been archived and no subsequent edition produced

A lot of the basic guidance in the standard remains relevant to in-vivo research using aquatic animals, this includes factors to be assessed when undertaking a risk assessment for infectious work in aquatic animals, guidance on working practices and significant parts on facility design and construction. The document describes three levels of Aquatic Containment Levels; however it does not indicate what organisms should be put in what level of containment. Also subsequent to its publication a significant part of the highest of the 3 levels described has not been proved relevant to in-vivo aquatic containment research, namely the requirement for inward airflow. This is now considered not to be relevant on risk assessment as pathogens of aquatic animals even if zoonotic are not considered to become aerosolised in the animal facility.

However, there remains a lack of coherent widely available guidance on assessing fish pathogens for biosafety, although ANSES a partner in VetBioNet shared their internal risk assessment produced for the French Ministry for the aquaculture industry in France for members of the project.

5. Annex

Annex 1: World Organisation for Animal Health (founded as OIE) list of controlled Fish diseases

- Infection with *Aphanomyces invadens* (epizootic ulcerative syndrome)
- [Infection with epizootic haematopoietic necrosis virus](#)
- [Infection with Gyrodactylus salaris](#)
- [Infection with HPR-deleted or HPRO infectious salmon anaemia virus](#)
- [Infection with infectious haematopoietic necrosis](#)
- [Infection with koi herpesvirus](#)
- [Infection with red sea bream iridovirus](#)
- Infection with salmonid alphavirus
- [Infection with spring viraemia of carp virus](#)
- [Infection with viral haemorrhagic septicaemia virus](#)