

Appendix B – Additional Information Regarding Biosafety Level 2

Biosafety requirements are designed to protect humans, animals (both aquatic and terrestrial), and the environment. Diagnostic laboratories receive clinical specimens where the infectious nature of the specimen is unknown. AFS-FHS Tier II Laboratories must establish standard procedure to ensure the safety of their employees and prevent the accidental release of infectious material. Universally accepted guidelines for placing aquatic pathogens that only infect aquatic species or for pathogens that overlap and cause disease in animals or humans do not exist. However, CDC-NIH biosafety guidelines for infectious agents have been adapted for working with animal pathogens by different groups. For the purpose of the AFS-FHS laboratory Quality Control Recognition process the following definitions will be used.

- **Biosafety**: prevention of exposure to hazardous disease agents or biological products that are capable of producing illness in human beings. These preventions can be adapted to protect specific groups of living organisms (i.e. fish, crustaceans, mollusks, corals, plants).
- **Biosecurity**: controlling the spread of disease agents or hazardous biological products to susceptible host.
- **Biocontainment**: preventing the release of a disease agent or hazardous biological product (key word is release).
- **Biosafety Levels**: are the combination of practices, safety equipment, and physical barriers.

Aquatic diagnostic laboratories work primarily with moderate-risk agents associated with aquatic animal disease of various severities. Specimens may also harbor unknown pathogens of moderate-risk that are associated with human disease.

- **Moderate Risk**: pathogens that regularly affect animals in a particular location, season, or in a particular species and where control programs that could limit spread are possible.

All AFS-FHS Tier 2 Laboratories must provide evidence that their established procedures meet or exceed biosafety level 2 recommendations (briefly outlined below).

- Standard Microbiological Practices are outlined in their quality management system (manual) and followed.
 - Access to the testing laboratory areas is restricted.
 - Biohazard warning sign are posted.
 - Precautions for sharps are in use.
 - Waste decontamination procedures are in place.
 - Medical surveillance or emergency responses are made available for employees
- Primary Barriers
 - Biological safety cabinets are used for all processing of specimens or agents that have potential for splashes or aerosols.
 - Laboratory coats, gloves, eye shields, and when needed respiratory protection.

- Safety manual should outline the proper procedure for donning and doffing of personal protective equipment.
 - Eye washes and/or safety showers should be available
- Secondary Barriers
 - Safety manual should outline specific process for decontamination of all waste, especially liquid waste.
 - Autoclave
 - Incineration
 - Chemical treated of liquid waste.

Resources and references for biosafety level 2 verification

- BSL2 Checklist (Appendix C)
- USDA/APHIS
 - Veterinary Medical Officer (VMO) for your area
 - <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/contact-us>
- <https://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2009-P.PDF>
- Palic, D., et al. (2015). Biocontainment Practices for Coral Disease Research. Diseases of Coral. C. M. Woodley, C. A. Downs, A. W. Bruckner, J. W. Porter and S. B. Galloway, Wiley-Blackwell: 442-488.
- Rusk, J. S. (2000) Biosafety Classification of Livestock and Poultry Pathogens, In C. Brown and C. Bolin, (Eds.). Emerging Disease of Animals, (pp. 13-22). Washington, DC: ASM Press.