ARDR OPINION

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It's in our interest: live FMD virus import

CSIRO's Australian Animal Health Laboratory (AAHL) opened on 1 April 1984 after intensive debate on whether it should be able to handle live foot-and-mouth disease virus (FMDV). Its construction was based on an extensive evaluation of the design strengths and weaknesses of overseas biocontainment facilities. The massive building is probably still the most secure biocontained laboratory structure in the world, built to handle extensive evaluation of FMDV vaccines in cattle and pigs for use if there was an outbreak of FMD in Australia. This most severe challenge would release enormous quantities of virus by the animals. Yet nearly 25 years later live FMDV is still not being handled at AAHL.

In 1983, a review by Professor Frank Fenner recommended not to allow the importation of the virus but to review the case after 5 years of operation of AAHL. That has now stretched out to more like 25 years. It is a positive step forward that the Beale Report "One biosecurity – a working partnership" has now recommended to permit such import.

In its Recommendation 59 the Beale report states:

"The import of positive control samples (including foot and mouth disease virus) for use in laboratory diagnostic research and capability building for exotic disease pathogens is vital and should be permitted under strict import permit conditions to laboratories such as the Australian Animal Health Laboratory."

Recently, Minister Tony Burke has suggested that an import may only be warranted in the case of a disease outbreak. However, this seems to defeat the very purpose of having live virus, which are needed for positive controls to verify new diagnostic technologies before the outbreak occurs. Are we to wait until the Australian livestock industries are seriously damaged and our export trade in animal products in free fall before live virus is imported?

> The question may be asked, do we still suffer 'colonial cringe' in believing we cannot have a facility that can contain the live virus?

One might suspect that the Government is unwilling to allow importation of live FMDV because it fears a backlash from the Australian farming community.

The main argument against importation of live FMDV into AAHL is that it could escape and cause an outbreak of foot-and-mouth disease. So what are the risks of this happening and how are these handled?

In the first possible scenario, the virus could escape from the laboratory through either the air handling system, through the sewage treatment plant or leak out through the building. In 2007, the virus did probably escape in Pirbright, UK, through broken ceramic sewage pipes and caused an outbreak of foot-and-mouth disease in the UK. However, the pipes dated back to 1926, had not been properly maintained and were outside the biocontainment area. By comparison, at AAHL the sewage treatment plant is within the biocontainment area, is properly maintained and the function of the treatment plant and work practices are reviewed twice yearly by an external independent committee, the AAHL Security Assessment Group (ASAG), which has a member of the National Farmers Federation as a representative. The high efficiency particulate air (HEPA) filter system at AAHL is also within the biocontainment area and again regularly tested and then reviewed by ASAG.

Indeed, AAHL is one of the most air tight biocontainment facilities in the world and has been subjected to leakage tests in line with AS/NZS2243.3 and been shown to far exceed the requirements of this standard. Further, AAHL is located in Geelong and in a zone free of animals susceptible to foot-and-mouth disease.

In a second possible scenario, the staff will take the virus out and infect animals. This scenario assumes staff carry FMDV by either being contaminated or infected. However, the virus does not infect humans, although it can be transmitted on clothing and carried in the nose for up to 24 hours after exposure.

AAHL staff change their clothes before entering the laboratory and then remove their laboratory clothes before exiting through a body shower. They are subjected to quarantine rules prohibiting them from keeping animals that can get foot-and mouth disease and contact with such animals for a proscribed time sufficient to ensure that they can no longer carry infectious virus.

What is the experience overseas? We have laboratories in Winnipeg in Canada, Lleystad in the Netherlands, Tubingen in Germany and many others safely handling the virus on the mainland. They have operated safely with far less biocontainment and security oversight than AAHL.

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The advantages for having live positive controls are that it provides the opportunity to develop and validate new diagnostic technology such as micro-array technology which could identify the type and sub-type of the FMDV. It also provides a clear indication of appropriate vaccines if required and the opportunity to develop new vaccine technology such as virus-like particles or carrier virus technology which does not contain the complete virus genome.

At present the vaccines are based on killed-virus vaccines as formalin-inactivated vaccines have previously been found to contain live virus and cause outbreaks of foot-and-mouth disease. Possession of live virus controls, such as equine influenza virus, have greatly assisted in the verification of diagnostic test results and the control, and eradication of disease.

Is foot-and-mouth disease less important to Australia than equine influenza? I just wonder why the Government is unwilling to give AAHL the tools that they need to better perform their role of protecting the Australian livestock industries.

I strongly support the recommendation of the Beale Review on importation of live foot-and-mouth disease virus in the interests of Australia.