



Workshop on the design and construction of laboratory biocontainment facilities for NSW DPI Elizabeth Macarthur Agricultural Institute, Camden

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Session 1

8.00 to 8.30 **Welcome and Introductions**

8:30 to 9:30 **Principles of biocontainment**
This presentation will cover primary and secondary barriers, aerosol containment, PCI (BSL-1) to PC4 (BSL-4) containment levels and practices, and international standards and guidelines. This presentation will also cover the causes of laboratory infections and how engineering controls assist in the prevention of these infections.

9.30 to 10:00 **Standards and Regulations: Australian regulations and standards and what an assessor looks for**
This talk will cover AS/NZS243.3, AS/NZS2982, OGTR and AQIS Regulations and what assessors often find wrong in facilities

10:00 to 10:15 **MORNING TEA**

Session 2

10.15 to 10.55 **Design principles – site factors, facility location, a first pass at budgeting and construction principles**
An introduction to the first decisions that are often made about these types of facilities and how to avoid common pitfalls. This session will include some suggestions of construction techniques and technologies that are appropriate for containment laboratories.

10.55 to 11.55 **Air handling systems**



The design and requirements of air handling systems for PC2, PC3 and PC4 and for biocontained animal facilities. This presentation will include details on air flow rates, conditioning, directional air flow, maintaining pressure zones, duct system design and HEPA filtration requirements.

11.55 to 12.55

Waste treatment principles and issues

This will cover the treatment waste and decontamination. It will cover autoclaves, disinfectants, sterilisation, and decontamination.

Liquid waste treatment

There are a number of alternative methods of dealing with potentially contaminated liquid waste. These vary greatly in cost, effectiveness against different risk organisms and volume capacity. This session will examine current technologies that are available. It will also introduce some new methods that are being considered in this growing industry

12.55 to 1.40

LUNCH

Session 3

1.40 to 2.40

Gaseous decontamination systems

This will cover the principles of gaseous decontamination of PC3 and PC4 facilities, including the use of formaldehyde, vaporised hydrogen peroxide, chlorine dioxide and mists of peracetic acid. It will cover the present state of play with formaldehyde and how it will be eventually replaced by hydrogen peroxide, and the need to plan for this change.

Solid and carcass waste treatment

Some waste includes a mixture of solids and liquids, such as animal waste material and infected carcasses. A number of alternative methods of dealing with this difficult waste material will be examined, with some recommendations concerning their particular advantages and limitations as well as spatial considerations for plant and infrastructure.

2.40 to 3.40

Risk assessment and workflow analysis

This will cover the processes of risk assessment of work that will be carried out in a facility yet to be designed and how we move to a preliminary design and identify the work flows.

3.40 to 3.55

AFTERNOON TEA



Session 4

3.55 to 4.55

Power, fire services, laboratory gases, communications, security

These services often receive less attention in the design of higher containment facilities. Although their functions are often similar to requirements of normal laboratory facilities, there are important installation differences as well as additional requirements for security, monitoring, control and indication. Future additions and changes are much easier if some thought is given to future change during the initial design phases of the facility.

Building monitoring and control systems

The principles of control systems for biocontainment facilities and where this technology is heading will be covered.

4.55 to 5.55

Animal, invertebrate and plant facilities

This will detail the requirements for both small and large animals, for plants and for invertebrates. The use of ventilated animal isolation cage systems will be discussed, with an assessment of the two main design strategies currently being distributed in Australia. The relationship between these systems and the main air handling and waste treatment requirements will also be discussed.

5.55 to 6.00

Closing Session