



# Working Safely in Biosafety Level 3 (BSL-3) Laboratories & Gaseous Decontamination with Formaldehyde

University of Malaya  
25<sup>th</sup>, 26<sup>th</sup> & 27<sup>th</sup> April 2011

**Presenter: Tony Della Porta**

**Course objectives:** Participants can demonstrate an understanding of the theory of working safely in BSL-3 laboratories.

**Methodology:** Participants will be directly involved in all aspects of the training by examining and assessing case studies of several laboratory-acquired infections. Active participation in the training will occur in small work groups and by group discussions. Each session will be supported by relevant materials and short training sessions that cover different aspects of good microbiological practices.

All participants will be supplied with a folder containing the course training notes and some relevant notes from AS/NZS 2243.3:2010 *Safety in Laboratories. Part 3: Microbiological aspects and containment facilities*.

**Course Assessment:** A Certificate of Attendance and a Certificate of Competency will be issued on 'Safe Work in BSL-3 Laboratories (Theoretical Aspects)' to participants who achieve an 80% pass rate for the written assessment and a Pass for their assignment. A Certificate of Attendance will be issued for those who did not meet these requirements.

## Course Program

### Day 1 – Monday 25<sup>th</sup> April 2011

Time	Topic
8.30-9.00	<b>Registration and tea/coffee</b>
9.00-9.30	<b>Welcome and introduction</b> Participants introduce each other
9.30-10.40	<b>Overview of BSL-3 laboratories</b> , design, testing and maintenance Introduction to Australian Standards, specifically AS/NZS 2243.3:2010 <i>Learning Outcomes:</i> Biocontainment laboratory design, construction and HEPAs, testing and maintenance of BSL-3 laboratories
10.40-11.00	MORNING TEA
11.00-11.45	<b>Introduction to Gaseous Decontamination</b> An introduction to gaseous decontamination methods, including hydrogen peroxide, formaldehyde, chlorine dioxide, ethylene oxide, peracetic acid, ozone and methyl bromide

- 11.45-12.30 **Formaldehyde**  
*This will cover aspects of decontamination using formaldehyde, including:*
- *Safety*
  - *Procedures*
  - *Detection*
  - *Validation; and*
  - *Uses*
- 12.30-1.10 LUNCH
- 1.10-2.30 **Safety Considerations including Respiratory Protection**  
This will cover different safety considerations associated with gaseous decontamination of biocontainment laboratories and types of respiratory protection and their uses.
- 2.30-3.10 **Laboratory-acquired infections:**  
**Case Study 1: Sabia virus incident**  
Summary description and methodology:  
Infection following centrifuge accident. Group presented with description of incident and each table (5-7 persons) to discuss issues. These will be posted on cards and then grouped under categories to be discussed by all.
- 3.10-3.20 AFTERNOON TEA
- 3.20-4.00 **Case Study 1 continued...**  
Report Back, discuss and consolidate major issues
- 4.00-5.00 **Set up Decontamination in BSL-3 Lab**  
**UM,- BSL-3 TB Lab**
- 5.00-5.05 **Wrap Up Day 1**

## Day 2 – Tuesday 26<sup>th</sup> April 2011

Time	Topic
7.30-8.30	<b>Set off ammonia neutralisation</b>
8.30-9.00	<b>Vent laboratory</b>
9.00-10.00	<b>Training Session 1:</b> <ul style="list-style-type: none"><li>• Safe use of centrifuges</li><li>• Aerosols &amp; Spills procedure</li><li>• Respiratory protection</li><li>• Reporting of incidents</li><li>• Management Issues</li></ul> <p><i>Learning outcomes:</i> Correct centrifuge use, response to spills, selection and use of respiratory protection, reporting of incidents, management issues including induction and training</p>
10.00-10.15	<b>Laboratory-acquired infections:</b> <b>Case Study 2: SARS Coronavirus incidents: Singapore and Taiwan</b> <i>Summary description and methodology:</i> Infection from poor laboratory techniques. Group presented with description of incident and each table (5-7 persons) to discuss issues. These will be posted on cards and then grouped under categories to be discussed by all.
10.15-10.30	MORNING TEA
10.30-11.30	<b>Pick up Spore Test Strips</b>
11.30-12.30	<b>Case Study 2 continued...</b>
12.30-1.15	LUNCH
1.15-2.10	<b>Training Session 2:</b> <ul style="list-style-type: none"><li>• Operation and use of Biological Safety Cabinets</li><li>• Disinfectants</li></ul> <p><i>Learning outcomes:</i> Knowledge of different types, operation and use of Biological Safety Cabinets (BSCs), disinfectants, treatment of waste</p>
2.10-3.10	<b>Risk Assessment of Project</b> (laboratory work) <i>Summary description and methodology:</i> Principles of risk assessment to identify hazards, assess risk of proposed work and ensure adequate controls are in place <b>prior</b> to starting work. Covers Inherent and Residual Risk, Likelihood and Consequence, Hierarchy of Controls. (This is not meant to be full training on Risk

Assessment.)

Training Session 3

- Examples of risk assessments applied to large animal experimentation.

3.10-3.30 AFTERNOON TEA

3.30-4.20 **Risk Assessment continued**  
*Learning outcomes:*  
Principles of risk assessments.

4.20-4.25 **Wrap up of day 2**

## Day 3 – Wednesday 27<sup>th</sup> April 2011

Time	Topic
9.00-10.00	<b>Tuberculosis:</b> Discussion of current issues relating to processing TB diagnostic samples
10.00-10.50	<b>Laboratory-acquired infections:</b> <b>Case Studies:</b> <ul style="list-style-type: none"><li>• Tularaemia</li><li>• Smallpox</li><li>• <i>B. anthracis</i></li><li>• SARS Coronavirus (Beijing)</li><li>• <i>E. coli</i> 0157:H7</li><li>• Brucellosis</li></ul> <p><i>Summary description and methodology:</i> Infection from handling diagnostic samples and working with agents (research). Cross-contamination of cultures; incomplete inactivation and inadequate innocuity testing. Each table (5-7 persons) will be presented with description of one of the incidents and asked to determine the issues. These will be posted on cards and then grouped under categories to be discussed by all.</p>
10.50-11.00	MORNING TEA
11.00-11.40	<b>Case Studies Continued ...</b>
11.40-12.00	<b>Spore Strips Reading</b>
12.00-12.30	<b>Training Session 3:</b> <ul style="list-style-type: none"><li>• Risk Groups of microorganisms including mode of transmission, infectious dose</li><li>• Signage</li></ul>
12.30-1.15	LUNCH
1.15-1.50	<b>Training Session 3 continued ...</b> <i>Learning outcomes:</i> Risk Groups and microorganisms, safety signs, lack/inadequacy/testing of inactivation of cultures, decontamination of room space.
1.50-2.20	<b>Discuss Decontamination</b>
2.20-4.00	<b>Assessment</b>
4.00-4.30	<b>Course Wrap Up</b> <b>Course Evaluation</b> <b>Hand out Certificates of Attendance</b>
<b>Post- Course Workplace Assignment</b>	<b>Carry out risk assessment on current work project and return to Bio2ic within 2 weeks; Pass or Fail only</b>

