Commissioning the ABSL-3 Laboratory

Presented by

Michael C. Rosenberg P.E.

Stanley Consultants, Inc.
Commissioning

• Modern research animal facilities are sophisticated buildings with the potential for considerable start-up problems. Commissioning a facility provides an exercise that test building systems and assures they are working properly before moving valuable animals and programs into the facility.

• The Commissioning Authority should be brought into the project team early in the project.
Commissioning

- The Commissioning Authority should be part of the factory acceptance testing of major equipment.
- Consider assigning Test, Adjust, and Balance (TAB) contract to Commissioning Agent.
Primary Elements of the ABSL-3 Lab

- Safety Practices
- Safety Equipment (Primary Containment)
- Facility Requirements (Secondary Containment)
Biosafety in Microbiological and Biomedical Laboratories (BMBL)

- Provides guidelines for the safe use of hazardous agents.
- Fifth edition released in February 2007
BMBL – New Edition

• Greater emphasis on biosecurity than previous.
• Risk management section expanded.
• Each facility should have its own biosafety manual with end users having access (exposure control plans).
• Increased emphasis on documenting proficiency
BMBL – New Edition

• Appropriate medical surveillance with risk assessment done annually.

• Expanded information on secondary barriers.

• Increased information on emergency procedures and medical aid.

• New chapters or sections on biosecurity, occupational health, decontamination of contaminated surfaces, and biological toxins.
Safety Practices

• Policies and Procedures
• Training
• Access Limitations
Safety Equipment (Primary Containment)

- Protective Clothing
- Gloves
- Eye and Respiratory Protection
- Ventilated Caging
- Bio-Safety Cabinets
Facility Design (Secondary Barriers)

- Separated Areas
- Security
- Wall and Surface Design
- Ventilation
- Cage wash and Bedding Disposal
- Decontamination
Traditionally Commissioned Equipment

- HVAC
- Electrical
- Plumbing
- Life – Safety
- Security
Vivarium Equipment

- Caging Systems
- Bio-Safety Cabinets
- Cage, Bottle, Glass, Tunnel Washers
- Decontamination
- Animal Watering, Lighting, Monitoring
- Bedding Disposal and Dispensing
- Autoclaves
- Compressed Air, Vacuum Systems
Biohazard Caging

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Biohazard Caging

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Bio-Safety Cabinets

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Cage Wash Equipment
Decontamination Equipment
Animal Watering, Lighting, Monitoring

1. Access Control
2. Light Control and Monitoring
3. Watering System Control and Monitoring
4. Environmental Monitoring
5. Alarming
6. OPC
7. Reporting

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National Conference on Building Commissioning 2007
Bedding Disposal and Dispensing

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Security / Access Control

- Biohazard Suite entry is card access.
- Access to ABSL2 Suites is by card access.
- BSL3/ABSL3 entry is by Biometric reader (air locks, labs, and animal rooms).
Understanding Design Considerations “Basis of Design”

- Areas of Containment
- Methods of Containment
- Sealing Requirements
- Visual and Audible Displays
- Airflows and Pressure Relationships
- Integrated Controls
- Environmental Parameters
- Cleaning and Sterilization
Prefunctional Checklist

- Laboratory Envelope and Containment
- Equipment Installation and Startup
- Calibration of Sensors, Actuators, etc.
- Integrated Controls Communications
- Hardwire and Software Interlocks
- Test and Balance
- Documentation
Installation Observation

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Room Pressurization Monitoring
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Decontamination Control
Decontamination
Functional Testing and Verification

- Pressurization and Airflows
- Temperature and Humidity Control
- Damper and Valve Operations
- Sensor Calibrations
- Proper Alarming Parameters
- Interlocks
Functional Testing

- Alarm Reporting and Annunciation
- Security and Procedural Interlocks
- Decontamination Procedures
- Redundant Equipment Operation
- Equipment Failure Interlocks
- Operation Under Standby Power
Functional Testing

- Operation of Vacuum and Compressed Air Systems
- Operation of Autoclaves and Washers
- Operation of Bedding Systems
- Document Sequences of Operations
- Trend Monitoring Points
Problem Resolution / Retesting

- Detailed Documentation
- Team Communications
- Timely Resolution
- Retest if Necessary
- Document Closure
Training

• Maintenance Personnel
• Users
• Operations and Maintenance Manuals
• Record Drawings
Commissioning Report

• Executive Summary
• Final Control Parameters
• Documentation Back Up
• Warranty Follow-up
Thank You

Questions?