A Review of Testing and Performance Certification of Modular and Mobile BSL 3 Laboratories

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Testing for Laboratory Performance

These charts are a primer for everyone to learn the importance of laboratory performance and its potential effects on overall laboratory environment. The need for laboratory performance (L/P) testing and certification is not new. However, the awareness of such testing methods is often confusing for laboratory users and can lead to misinformation.

Testing across adjacencies using common equipment.

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This test setup (as shown) provides:
- Differential pressure
- Test ports
- HVAC systems
- Test exhaust
- Test doors
- Testable leakage
- Testable entrances
- Testable door seals
- Other

The testing setup shown above is a simple test using common equipment. The test is designed to show the differential pressure across different areas of the laboratory. The test setup includes test ports, HVAC systems, test exhaust, test doors, testable leakage, testable entrances, testable door seals, and other components.

Results:
These results show the differential pressure across different areas of the laboratory. The test results indicate that the laboratory environment is properly controlled, and the doors are sealed properly to prevent airflow from one area to another.

Conclusions:
Additional testing methods are powerful for the determination of the "Level of Confidence" needed with any BSL 3 Laboratories, as well as other laboratories, located in widely varying situations. These issues become more apparent in the project scope and missions assigned to mobile and modular BSL3 projects.

As operational needs become identified and more pronounced, the ability to test and quantify these needs provides more "tools in the toolbox" with the processes and determinations for developing proper operational facilities. It is important to realize that modular and mobile laboratories have additional challenges, above those generally found in a fixed laboratory.

As issues and items become better identified, relative to this type of modern laboratory, stakeholders must develop an awareness to many of the nuances which have and can be observed and planned for. By carefully approaching the different locations, needs, user criteria, as well as providing "viable risk based supplemental and operational criteria", mobile and modular laboratories will provide a leading role [testability rendering a high operational confidence level] within the unique geographical terrains and the developing and continual biological safety challenges.

Additionally, "lessons learned" are better implemented, the balance between the "state of the art" technology and what will and does work (through repetitive, adaptive and viable test methodologies) will provide proper biosafety safely with many of the existing and developing programs.