AN APPROACH FOR CONDUCTING ROOM-SCALE VAPOROUS HYDROGEN PEROXIDE (VHP®) DECONTAMINATION OF *BACILLUS ANTHRACIS* SPORES (ID #26)

William Richter, James Rogers, Morgan Shaw, Battelle Memorial Institute, Columbus, OH

Objective: The intentional release of *B. anthracis* spores in the U.S. Hart Senate Building and various mail-handling facilities in 2001 resulted in exhaustive clean-up efforts and increased public sensitivity to the threat of future attacks as well as the cost of remediation. Many studies have been conducted to determine the efficacy of various decontamination technologies against *B. anthracis* and surrogate spores using a bench-scale, or smaller, chamber. This study assessed an approach for evaluating the room-scale decontamination efficacy of vaporous hydrogen peroxide (VHP®) fumigation against *B. anthracis* Ames and *B. subtilis* spores deposited onto porous and non-porous indoor surface materials.

Method: *B. anthracis* and *B. subtilis* spores (1E+07-1E+08 CFU) were dried onto galvanized metal and ceiling tile coupons. The coupons were placed in a safety cabinet that permits introduction of room air. The safety cabinet containing the coupons was located in a 2727 cu. ft (77.2 cu. m) room and was exposed to VHP®. Relative humidity (14% to 87%) and temperature (22°C to 28°C) of the room were monitored during the VHP® exposure. Following decontamination, Bacillus spores were extracted, serially diluted, grown overnight, and enumerated.

Results: VHP exposure yielded log reductions in viable spores ranging from 6.1 to 7.7 and 6.8 to 7.0 on galvanized metal and ceiling tiles, respectively. Commercial biological indicators (containing approximately 1E+06 CFU), evaluated in parallel as a qualitative decontamination assessment, were completely inactivated by VHP® exposure. All chemical indicators were positive for the presence of VHP®.

Conclusion: These results demonstrate that this method is a viable approach to assess room-scale fumigant decontamination efficacy against biological Select Agents.

Outcome: Participants will be able to understand the use of this method as a viable approach to assess room-scale fumigant decontamination efficacy against biological Select Agents. Participants will become familiar with VHP® cycle development for room-scale decontamination.