F11

Decontamination of infrastructure and laboratory equipment in high-containment facilities by peracetic acid fumigation

J. Schinköthe[1], S. Reiche[1], M. Eschbaumer[2], S. Diederich[3], J.P. Teifke[1]

[1]Department of Experimental Animal Facilities and Biorisk Management, [2]Institute of Diagnostic Virology [3]Institute of Novel and Emerging Infectious Diseases, Friedrich-Loeffler-Institut, Greifswald - Insel Riems, Germany

Keywords: peracetic acid, decontamination, infrastructure

Background and objectives: Decontamination of high-containment infrastructure is a challenging procedure especially in research facilities where highly contagious viruses are handled. In this study, we adapted a peracetic-acid-based room decontamination method to effectively decontaminate certain microorganisms.
Materials and methods: Laboratory equipment was placed in a supply airlock (14m³) and decontaminated with a dry-fog generator that releases an ultrafine mist composed of 1.3% peracetic acid (PAA) and 6.6% H2O2 (by volume) in water. Germ carriers (GCs) with ≥106 Geobacillus stearothermophilus spores, either commercially available or self designed, as well as GCs with an air-dried preparation of 104.5-7.0 infectious units of porcine enterovirus or murine norovirus were placed inside the airlock and laboratory equipment during each run.
Results: PAA dry fogging resulted in the absence of growth of most commercially available spores as well in a 6-log level reduction of most virus GCs depending on the location and the accessibility of PAA dry fog. Self- designed GCs were more resistant to PAA dry fog than commercially GCs. No damage to the equipment and the surfaces was seen after nine runs.
Conclusion: PAA dry fogging is a robust method for inactivation of viruses and bacterial spores. It is not advisable to rely only on the widely used commercial spore carriers as biological indicators due to false negative results. Parallel testing of microorganisms that are actually handled in the facility or their surrogates should be considered.