

Comparison of disinfectant efficacy when using high-volume directed mist application of accelerated hydrogen peroxide and peroxymonosulfate disinfectants in a large animal hospital

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ABSTRACT

Effective decontamination of animal holding environments is critical for providing high quality patient care and maintaining a safe working environment. Disinfection of animal holding environments is a significant challenge during times of epidemic disease. This study considers a relatively new yet proven technology Accelerated Hydrogen Peroxide® (AHP®) in the battle against microbes, as an alternative to legacy disinfectant chemistries with known shortcomings.

BACKGROUND

Veterinary infection control is critical to providing high quality patient care as well as maintaining a safe working environment for personnel. The infection control program at the Colorado State University Veterinary Teaching Hospital (CSU-VTH) employs periodic environmental disinfection using high-volume directed mist application of disinfectant. Directed mist application of disinfectants can be an effective method to reduce the environmental burden of microorganisms, particularly in areas that are not easily cleaned through scrubbing with detergents and copious amounts of water.

STUDY

The purpose of this study was to compare the efficacy of two disinfectant solutions; 4.25% AHP at a 1:16 dilution

and single and double applications of 2% peroxymonosulfate solution (Virkon-S) for decontamination of a veterinary hospital environment. After cleaning and disinfection of the hospital environment, experimentally contaminated surfaces were placed throughout the hospital and collected after each disinfectant application, in turn. Disinfectant efficacy was evaluated by determining the percent reduction in colony forming units for *Pseudomonas aeruginosa*, *Salmonella enterica*, and *Staphylococcus aureus* before and after application of disinfectants.

RESULTS

Overall, reductions in average colony forming units (log₁₀) for contaminants were detected after all disinfectant applications. Reductions in bacterial counts on inoculated surfaces ranged from 0.8 to 2.5 logs, and varied among indicator organisms and disinfectant application. The reduction in colony forming units for *S. aureus* and *P. aeruginosa* was 1.5-2.5 logs and approximately 0.8-1.0 logs for *S. enterica*.

CONCLUSION

It was found that for the organisms evaluated, all disinfectants applied as a directed mist were effective at reducing colony forming units in a veterinary hospital environment. This suggests that AHP is a suitable chemistry alternative in high-volume directed mist

application to achieve efficient and thorough coverage of all potentially contaminated surfaces.

REFERENCE

N.T. Saklou et al. (2013). 94th Annual Meeting of the Conference of Research Workers in Animal Diseases, Chicago, 2013; the American College of Veterinary Internal Medicine Forum, Nashville, TN, 2014

