

# UNIVERSITY OF PITTSBURGH MEDICAL CENTER

## University Hospital Test For Effective Sporicidal Disinfectant

### Study Objective:

**Searching for an effective and non-abrasive surface disinfectant with sporicidal efficacy.**

**Background:** Effective surface cleaning is an important and essential task in the healthcare industries. Historically 10% sodium hypochlorite, has effectively being used to clean and disinfect all areas of the patient care environments including patients' room, treatment areas/equipments, electronic equipments and surface areas in the administrative offices. Although, sodium hypochlorite is very effective, it has an abrasive nature and strong unpleasant smell. A new developmental surface cleaning disinfectant (active ingredient: 0.2% chlorine dioxide) with a new delivery system appears to have a broad spectrum non-abrasive surface cleaning and disinfecting activity against varieties of environmental organisms.

**Methods:** Three separate experiment phases were set up to observe the disinfectant and cleaning actions of this new commercial product (with 2 developmental formulations). 1) Time kill curve (5 and 10 minutes) using  $10^6$  *C. difficile* spores. 2) Contaminating measured surface areas with pure culture of either *Staphylococcus aureus* (MRSA) or *Pseudomonas aeruginosa*, and then decontaminating them with the new agent. Contaminated surfaces allowed to dry for 10 minutes and subsequently sprayed with the investigational agent (SNiPER®). Swab samples collected, inoculated on BSA culture medium, incubated at 37°C and observed for growth. In phase 2 we studied and compared killing action of this disinfectant to sodium hypochlorite (Chlorine bleach). Sixty cultures were obtained; 20 with each of the products (10 for each organism), and 20 negative control. 3) In order to examine the chlorine dioxide disinfecting action of the SNiPER on mixed environmental organisms that are present on the surface areas in the hospital, a blind field study was added to the protocol. Four patients' rooms and 4 administrative offices (total of 20 sites) were randomly selected for the study. Samples were collected for culture before and after exposure to 10 min of the experimental chlorine dioxide product. All cultures were incubated and observed for growth at 37°C.

**Results:** Experimental (SNiPER) agent effectively removed and disinfected surface areas that were contaminated with pure pathogens (MRSA or *Ps. aeruginosa*). The results also indicated that the (SNiPER) developmental formulation agent #2 effectively inactivated *C. difficile* spores, both in 5 and 10 min interval, similar to 10 minute exposure to 10% chlorine bleach. In the blind field study, in 8 out of 20 sites, there was rare growth of organisms after disinfecting with chlorine dioxide containing agent.

**Conclusion:** Disinfecting Surfactant of SNiPER containing chlorine dioxide is an odorless, non-abrasive and effective disinfectant and sporicidal agent that may be used to disinfect surface areas in the healthcare settings.

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