Purpose:

To determine the sporidal efficacy of Sanosil S10 Disinfectant when used as a dry mist in conjunction with the Sanosil Halo Fogger.

Background:

Sanosil S10 is a relatively new EPA registered disinfectant for use on hard non-porous surfaces. The active ingredients of the formulation are 5% stabilized hydrogen peroxide and 0.01% Silver. This disinfectant is a rinse free formulation since the major active ingredient will decompose into water and oxygen over time. The spray formulation has been shown to be effective in killing many organisms including Staphylococcus aureus MRSA and Pseudomonas auriginosa as well as some viruses and fungi. Several studies in Europe with the same formulation and similar dry mist application apparatuses as the Halo Fogger have shown efficacy against an array of pathogens including: Clostridium difficile, Mycobacterium tuberculosis, Acinetobacter baumannii and Vancomycin-resistant Enterococci (1-7). In these applications, Sanosil is typically applied with a dry mist fogger that produces airborne micron sized droplets.
concentrate to achieve comparable efficacy results with other disinfectants using higher concentrations of hydrogen peroxide alone or other chemical formulations. To test this system’s efficacy, spores of Geobacillus stercorarius were chosen since they are commonly used as a challenge organism for sterilization validation studies and in periodic checks of sterilization cycles.

**Methods:**

Stainless steel coupons from Raven Laboratories, (Cat# 3A-6100ST), containing $1 \times 10^6$ spores of Geobacillus stercorarius were exposed to Sanosil S10 dry mist at 0, 10, 30 and 60 minutes before being immediately neutralized by submersion and vortexing for 1 minute in AOAC Letheen Broth, (BBL, Cat # 298238) with 0.1% Sodium Thiosulfate and 0.01% Catalase and 1ml of sterile 3mm glass beads. Cultures were immediately serially diluted in sterile distilled water to $10^5$ and plated in duplicate on Aerobic Count Plate Petrifilms, 3M Cat #6400 and incubated in sealed plastic bags at 60°C for 48 hours prior to enumeration.

Sanosil S10, Lot #10217D02HP, Sanosil International, was added to the Halo fogger according to the instructions of the owners’ manual. A room with dimensions of 15 X 12.5 X 8.5 (1593 cu ft) was used in the study. The timer on the fogger was set to the minimum time of 10 minutes. Sanosil S10 levels were monitored in the air by using a Polytron 7000 Transmitter from Drager equipped with a hydrogen peroxide sensor Cat #6809705. A Kestrel 4200 pocket air flow tracker was used to monitor % humidity and temperature. Upon completion of the fogging, a HEPA filter equipped air handler was remotely activated to evacuate the room.
Sanosil S10 Fogging Test

Figure 1. Test Room Set Up

Figure 2.
Monitoring levels of Sanosil S10 mist. Within a few minutes Sanosil levels as measured by hydrogen peroxide increased in the room to over 100 ppm and the humidity in the room increased approximately 15 percent. After the fogging stopped, the HEPA equipped air handler removed the hydrogen peroxide 10 fold in 20 minutes and below 5 ppm.
Figure 3.
*Geobacillus sterothemophilus* sporicidal efficacy of fogged Sanosil S10 Disinfectant.

**Conclusions:**
Previous studies have shown Sanosil S10 disinfectant to be effective against a range of organisms in a dry mist fogging application. However no attempt had been made to validate the sporicidal nature of the application. Sanosil S10 disinfectant can be used effectively in a dry mist application to kill spores of a standard, sterilization bio indicator strain. Here a 6 log kill of Geobacillus sterothemophilus spores was achieved in 30 minutes of contact time and only 1 cycle of fogging for 10 minutes. The room was evacuated of hydrogen peroxide to minimum detectable levels within 60 minutes.
References:

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