

Vorigen[®], Inc.
Silver Ion Generator/Ultraviolet Light System
June 29, 2004

Discussion

Vorigen[®], Inc. has designed and manufactured a cutting-edge system for killing microorganisms and disinfecting water. This system weds ultraviolet light, which kills instantaneously, with Vorigen[®], Inc.'s patented silver-ion generator, which provides residual kill over a period of 5 to 7 days. This unparalleled instantaneous and long-term protection makes the Vorigen system stand out as the best-available water security and protection system on the market today.

The scientific literature provides ample documentation for the microbiocidal properties of ultraviolet light and silver ions. Ultraviolet light provides instant disinfection and silver ions provide long term residual destruction. The Vorigen[®], Inc. system is the first to combine ultraviolet light with a user-friendly, low-maintenance silver-ion generator. Studies conducted on both disinfection methods have documented their lethality for a broad range of waterborne bacteria, viruses, protozoa, spores, and fungi. Among the specific threats that ultraviolet light and silver ions can defeat are: Bacillus anthracis (Anthrax – a CDC Category A bioterrorism agent), Escherichia coli (E. coli), Salmonella species, Mycobacterium, and Legionella species (Legionnaires disease). These studies have demonstrated that low concentrations – few hundred parts per billion – of silver ions and ultraviolet light suffice to kill commonly found waterborne microorganisms.

Drinking Water

As a water protection and security system, the Vorigen[®], Inc. Silver Ion Generator/Ultraviolet Light system will increase water safety when installed in a drinking water supply such as the water-fountain system in an office building. The system will provide drinking water free of harmful waterborne microorganisms. Safer drinking water reduces the risk of detrimental health effects associated with waterborne microorganisms. In the event of external contamination of the water supply (waterborne microbial contaminants) the Vorigen[®], Inc. system will provide security and protection without the knowledge or reaction to the threat by the safety officer.

Biofilm

The biofilm found in hot-water systems operates as the “breeding ground” for bacteria. Many studies conducted in health-care environments have identified hot-water-system biofilm as a source of bacteria known to cause nosocomial infections. In the case of older installations, a consequential biofilm buildup can also interfere with the water distribution system. The Vorigen[®], Inc. Silver Ion Generator/Ultraviolet Light system eliminates biofilm in a hot-water supply system and reduces the likelihood of infections caused by waterborne bacteria. In addition to removing the host for bacteria growth, the elimination of water-system biofilm increases the operating life of equipment and provides an

inherently safer distribution system in the event of a biological attack. Extensive testing at the Campbell Health System facility in Weatherford, Texas has established the effectiveness of the Vorigen[®], Inc. Silver Ion Generator for the destruction and elimination of biofilm.

Decontamination

In the event of an anthrax attack, the Vorigen[®], Inc. Silver Ion Generator/Ultraviolet Light system will generate safe, clean water for personnel/equipment decontamination. The use of silver-ion-containing water during the decontamination process would not only provide “flushing and rinsing” it would also have the additional benefit of providing a disinfectant – silver ions – during the decontamination procedure. Also the water used for decontamination would have residual disinfection properties that would impede bacteria growth in the conveyance system. Medications containing silver play a prominent role in the care of wounds. Therefore; flushing and rinsing with water treated with silver ions would provide an immediate first line defense to infections. (should it prove necessary to decontaminate wounded or injured personnel) The run off of the silver ion treated water used to rinse and flush would continue to combat biological agents with active silver ions (5-7 days).

Summary

The Vorigen[®], Inc. Silver Ion Generator/Ultraviolet Light system can be used immediately for drinking-water protection, to control of biofilm in a water distribution system, and as a source of safe decontamination water. Its installation in a building/facility will provide immediate health benefits as well as water-system security and protection in the event of a bioterrorist attack. The current absence of any effective water-protection system means that a proactive approach to water security and protection is all that more vital. Vorigen[®], Inc. offers a product that will provide continuous security and protection for buildings/facilities water supply systems.