



How UVC Cleaning Systems Technology Can Aid in Major Pathogen Outbreaks

Throughout each year there are numerous pathogen outbreaks in a variety of communities. The first steps in infection control strategies are reduction and elimination of the pathogen. Although there are traditional ways of controlling these outbreaks, there are still the possibilities of gaps in infection control in contamination areas, health care settings, and general public areas. However with the use of UVC disinfection technologies, pathogens such as bacteria, molds, protozoa, yeasts, and viruses can be easily eliminated. Therefore, UVC Cleaning Systems technology can be extremely effective in aiding during pathogen outbreaks in local communities.

UVC disinfection works by applying specific UV light dosage in an area. The UV light radiation targets DNA-based microorganisms, such as bacteria and viruses, by breaking down DNA. The fracturing of DNA causes disruption in cellular processes including normal functions such as infection and reproduction (UV Disinfection). UVC light waves continuously disinfect the air and surface areas, which deactivates and eventually kills the microorganisms.

UVC Cleaning Systems eradicates and inhibits numerous organisms and colonies at high rates. Our devices reach a UV intensity of 100,000 mw/cm² in 15 minutes of run time at 16 feet.

UV doses for 90% kill rate of most pathogens range from 2,000 to 8,000 μ W/cm² and larger parasites usually require a lower dosage for inactivation (Ultraviolet disinfection). For example, a



dosage of ultraviolet light at 6,600 mw/cm² causes a kill factor of influenza at 99% eradication, which means influenza can be reduced by 99% in approximately 16 seconds (1 second per 1') with UVC Cleaning Systems devices. Other organisms targeted include, Bacteriophage *E. coli*, *Salmonella typhosa* (typhoid fever), *Vibrio comma* (cholera), Poliovirus, Infectious Hepatitis, and many more (UV Irradiation Dosage Table).

$$\text{UV Dose} = \text{UV intensity (in } \mu\text{W/cm}^2\text{)} \times \text{time in seconds}$$

For example, each year outbreaks of the infection community-acquired methicillin-resistant *Staphylococcus aureus* (MRSA) arise in healthcare facilities, pediatric facilities such as schools and athletic teams, correctional facilities and more. MRSA is a skin and soft tissue infection that is difficult to treat and is highly contagious. In 2011, an estimate of 75,000 cases of MRSA occurred across the United States and studies show that one in three (33%) people carry staph in their nose, usually without any illness (CDC).

In the event of an outbreak, UVC Cleaning Systems equipment is effective on all surface areas and throughout air. UVC light kills pathogens and drug resistant pathogens on easily contaminated areas that usually contain large amounts of microorganisms that can be easily transported by contact (New CDC). The devices use easy-to-use, automated technology and are 100% green. Since there are no chemical operations, there is no contact with or disposal of possible infected items. Devices can be used to treat isolation areas in health clinics, local emergency response locations, vaccination clinics, materials going in and out of containment



areas in a disinfecting tent, large community outbreak areas (such as public transportation areas and bathrooms), and many more depending on the area of outbreak.

With the ongoing possibility of newly emerging viruses or pathogen variants, UVC eradication is a very effective way to reduce and disinfect these new resistant pathogens.

(Calliet).

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