

Using UV Light To Kill Viruses Before They Spread

As an airborne type of virus the flu poses serious problems for control. Although there are some types of filters, namely the HEPA or High Efficiency Particulate Air filters that can filter out up to 99.9% of the flu viruses, most building heating and air conditioning systems have nowhere near this level of filtration. The result is simply a blowing about or an ideal conduit for viruses to travel through heating and air conditioning systems, remaining virtually endlessly in the air, waiting for an unsuspecting victim.

One sure way to eliminate the spread of flu viruses in a building of any type is to kill the DNA/RNA found in the viruses nuclei. This can be done through the use of UV lights which operate to sterilize the nuclei, leading to eventual death. Even when still airborne a virus that has been exposed to UV light in the C band cannot reproduce or take over the human cell, preventing the spread of the disease through infection.

UV light itself actually works on both the outer protective component of the virus or other bacteria or contaminant as well as the DNA/RNA. The UV light breaks the bonds that hold the outer protective shell together, exposing the reproductive component, the DNA or RNA, to the damaging effects of the high intensity UV light. This all occurs with just one pass and since the virus is in the air it is fully exposed to the light, meaning there is literally no place that the light cannot access and destroy the virus.

UV light has been used in a variety of settings to eliminate bacteria, viruses and other contaminants. According to a recent June 2009 report to the EPA by Steven Welty, schools in the United States used UV lights in the 1930's and 1940's to reduce measles outbreaks. In addition hospitals, including Duke University, have been using these types of systems since the early 1930's to sterilize operating rooms and remove bacteria and viruses from the air.

Combining UV lights with high quality air filtration can result in a close to 100% elimination of the different types of viruses within the environment. A filter with a MERV rating of 13 combined with more than one set of UV lights will achieve almost 100% efficiency according to the research completed and presented in the Welty EPA report.



To further increase the efficiency of the combination of UV light and filters, additional options can be included in treating the air. Photocatalytic Oxidation allows the UV light to actually cause the release of hydroxyl radicals when it is directed on titanium di-oxide. These hydroxyl radicals then attack the individual nuclei of the viruses, resulting in total and immediate destruction. The same method can be used to create positive and negative ions that work in the same fashion. This addition to UV lights and filters, known as Bi-Polar Ionization, is another efficiency boost to an air sterilization process.

These systems for managing the spread of the flu are available and have a high rate of success in schools, hospitals and buildings. Increasing the air filtration rating to at least a MERV 13 and adding UV light systems to air conditioning coils will improve the rate of killing viruses to up to 99.9% with just a single pass. Adding newer technologies such as the B-Polar and Photocatalytic Oxidation systems to the UV lights and filters should also be considered as both a short and long term addition to your air sterilization and purifying system.