



## Fire Fighter Cancer Foundation: Technology Research and Education

### **The Sentinel: Air and Surface Cleaning Emerging Technology**

The Fire Fighter Cancer Foundation has partnered with Toxic Suppression to support emerging technology in the work to prevent firefighter cancer and illness through innovation. The technology presented in the Sentinel active air and surface cleaning device offers an innovative solution that can help the fire service with its drive for a healthier environment while performing to the highest ability through improved health and wellness.

As the fire service evolves into more advanced solutions and becomes more entwined with ever evolving technology driven at the well being of its firefighters, ionization technology can be seen at the forefront of some of those conversations. There is a myriad of technology available on the market based on some form of ionization technology. The Fire Fighter Cancer Foundation has been in search of and worked to educate on solutions such as ionization in the name of better health. The understanding of air quality and the technology supporting better air quality is important in the fire service. Technology integration such as ionization in occupied spaces should be used with caution and after education. Needlepoint Bipolar Ionization (NPBI) is recognized by the EPA to be used in occupied spaces to aid in the removal of bacteria, viral contaminants and for general disinfection of surfaces within a treated area. (<https://www.epa.gov/coronavirus/can-air-cleaning-devices-use-bipolar-ionization-including-portable-air-cleaners-and-duct> ) This emerging technology is newer than other more traditional technology for air and surface cleaning. The benefit seen thus far with this technology is that when regulated properly it allows for the efficiencies of older technology such as with the use of UV or Ozone but without the possible harmful side effects.

#### How it works...

NPBI uses the creation of positively charged and negatively charged ions to attack and remove biological and chemical contaminants from our air and surfaces. In the fire service this is extremely valuable for the reduction of concentration and time exposed to harmful contaminants in our buildings and vehicles. We are constantly exposed to potentially hazardous substances such as VOC's, viral contaminants, bacterial contaminants and other particulate matter. The benefit to the use of NPBI can be shown in the efficiencies from third party laboratory studies (<https://globalplasmasolutions.com/third-party-testing>) that explain a high percentage of the removal of substances like SARS-COV-2, Influenza, RSV, C-Diff, E.coli, MRSA, Staph., Influenza A & B, as well as the destruction/reduction of TVOC's. These efficiencies found in these reports all are achieved with a zero-ozone production and zero byproducts produced from any of the cleaning reactions. The EPA's certified list includes devices such as these on its approved list and UL certification for use in occupied spaces while not producing any harmful byproducts. With the possibility for the technology of NPBI to aid in the remediation of bacterial, viral and chemical hazards/contaminants, the protection of our personnel can be enhanced where an active system is working around the clock to remove contaminants where in the past, we were only able to accomplish this with active effort or participation by our people. The areas we can now cover on a constant basis include all areas of the station as well as the occupied areas of our vehicles.



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### **How can we deliver this technology to the front line?**

The Sentinel product offered by Toxic Suppression packages the NPBI technology into a scalable and deployable solution that can be fit into many different situations and environments. The devices are rated by CFM. They offer the Sentinel 100, 300, and 2500. The Sentinel 100 is designed for use in passenger vehicles, the Sentinel 300 is designed for ambulances or fire apparatus, and the Sentinel 2500 is designed for larger rooms and fixed facilities. With these three options for the deployment of NPBI technology we are now able to cover many areas of possible exposure and further bolster and solidify our current efforts of cleaning and decontamination. Another positive aspect of the system as it is designed in the Sentinel is that there are no revolving costs for the units. Once a department has purchased a technology, most of the time there has to be some maintenance built into the understanding of the purchase and support for continued use. This device touts no consumable components for the use of the NPBI technology. In this respect alone, the innovation for ease of continued use and maintenance places the Sentinel ahead in the market. The quality of the Sentinel and efficacy of the NPBI allows the fire service to better protect its personnel without possibly harmful side effects from past technology. This is a promising technology that has hopes of maintaining and improving the health of the fire service as innovation occurs in the future.

### **What's next?**

With the current delivery of the NPBI in the Sentinel product the sky's the limit as to how this can be allied to other aspects of the fire service in the name of hazard and contaminant mitigation. Toxic Suppression in partnership with the Fire Fighter Cancer Foundation are working toward more dynamic and protection minded solutions for the betterment of the fire service. Stay Current with both organizations at: <https://www.toxicsuppression.com/> and <https://www.ffcancer.org/>