

# HYDRA: A PUBLIC PRIVATE PARTNERSHIP TO LIMIT THE SPREAD OF INFECTIOUS DISEASES TO PUBLIC SAFETY EMPLOYEES



5/21/2015

## Combating the invisible threat

The Winter Park Police Department, in cooperation with AeroClave, LLC, has installed a highly automated decontamination system that allows for routine and emergent high-level disinfection of jail cells, booking areas, police vehicles, evidence processing rooms, K9 kennels and gymnasium. The system is highly integrated with existing HVAC and access control systems within the Winter Park Public Safety complex.



From top left: 1) Drop-in style hub replaces a ceiling tile in the gymnasium; 2) Touchscreen controller on the hallway wall; 3) Drop-in hub in Evidence Processing Room; 4) Warning light outside a treatment area; 5) Pole-mounted hub hung from the rafters in the Vehicle Bay; 6) AeroClave control room with equipment; 7) Wall-mounted hub in the K9 Kennel.

# Hydra: A Public Private partnership to limit the spread of infectious diseases to public safety employees

## Combating the invisible threat

### ABSTRACT

The Winter Park Police Department has, like many agencies worldwide, identified an increasing threat level to their officer's health and personal safety during their daily tour of duty. From increased awareness of biological hazards being sent by mail, casual exposure to the annual influenza virus and the more recent resurgence of the Ebola virus, these dangers have never been more clearly emphasized as a real threat in the workplace. In an effort to better protect the health of officers, civilian employees and the public they serve, the Winter Park Police Department partnered with a local leader in biological threat neutralization. This local business, AeroClave, already serves the needs of the federal government and military, but had yet to offer a solution to members of the local government and the public safety employee. The Winter Park Police Department and AeroClave were able to enter into a partnership to further develop and retrofit AeroClave's proprietary Hydra system in to the Winter Park Public Safety Building and provide portable units for use in the field. These new systems allow Winter Park to secure the long awaited solution to safely eliminate biological threats encountered in the workplace. As a result of this partnership, the Winter Park Police Department and their members have come to rely on the newfound comfort and assurance of health safety in the workplace.

The decontamination process has been built into a monthly maintenance program as well as being utilized any time a biological contaminant has been brought into a vehicle or work area by an arrestee or other carrier exhibiting signs of illness or even a cold. In an effort to share this technology, the Department has made it available to local agencies by granting access so they may utilize the system to decontaminate their equipment and vehicles. By extending the use of the system beyond our agency to other local law enforcement in Central Florida, the Winter Park Police Department has provided a safer environment for our neighboring agencies.

**T**he law enforcement public servant performs his/her daily duties in all types of environments regardless of the weather or conditions. Likewise, the people the officer meets vary as much as the weather. In our global society it is just as likely that an officer would encounter someone from the most disease ridden corner of the planet as he would a board member of the local Rotary Club. For many years public safety professionals have been aware of the “universal precautions” that are required while dealing with certain members in society who have contracted diseases or are suffering everything from minor to major illnesses. Regardless of the efforts and precautions taken, the exposure to these risks seems most concerning when it is realized that this unseen threat can be quite deadly to our members. Even more disheartening is the thought that a member could unknowingly contract or carry home a contagion to a loved one who never should have been placed in harm’s way.



Vehicle Decontamination Area (Inset: Pole Mounted Hub)

Recent international health fears and outbreaks have drawn public attention to health threats, which heightens concern for everyone’s safety. As law enforcement officers, we are all acutely aware of many of the inherent dangers of the profession, i.e., violent armed criminals, illegal drug labs, remote traffic stops or serving high risk warrants. Chief Brett Railey of the Winter Park Police Department, however, was also concerned with those threats to his personnel that often are less obvious but no less harmful. In this age of emerging “superbugs” we must also consider the health risks officers face on a daily basis while on patrol and in the perceived safety of the public safety building(s) or police station. As a profession, Law Enforcement must consider:

1. What infectious disease does the prisoner have who just vomited in the back of a patrol car or in the holding cell?
2. What organisms are lurking in the air or on the surfaces of the blood-spattered crime scene?
3. Have the gyms, provided to promote officer wellness, now become sanctuaries for MRSA and other harmful pathogens to spread?
4. And last, but certainly not least, are we properly prepared for emerging health threats like avian flu, MERS or even the dreaded Ebola virus?



RDS 3110 portable decontamination unit fogging the gymnasium

Until now the availability of effective decontamination equipment and processes in the public safety

workplace has been limited. Many times resources in place are nothing more than a topical cleansing that may not eliminate the true health threat that exists. An agency's personnel represent the largest investment within the organization. Protecting them should be the top priority and responsibility of any chief or department head.



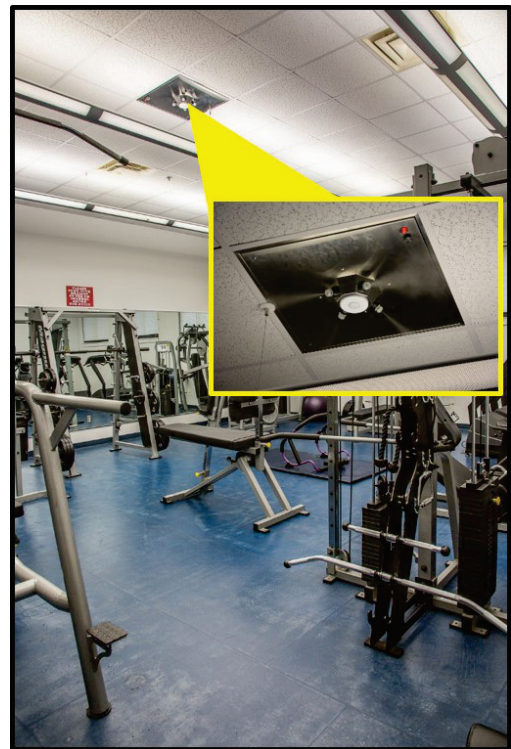
Treating patrol car with the AeroClave Portable Applicator

In Winter Park it all began with a not-so-uncommon occurrence. One of our detainees vomited and defecated in the holding cell, then smeared his waste all over the interior of the cell. After following normal biohazard procedures for initial cleanup, further consideration revealed the question, "Just because it looks clean, is it truly clean? What if this detainee had Hepatitis C or some other contagious disease?" The Chief pursued this concern and consulted with Fire Department officials about the matter since they deal with biohazards on a daily basis. They brought over their portable sterilization unit made by AeroClave, a local company that builds large-scale sterilization equipment for aircraft, vehicles, hospitals, etc. The system works by finely aerosolizing an EPA-approved disinfectant that kills even the hardest organisms (including MRSA, E.coli, Norovirus,

Hepatitis B & C, influenza, HIV, staph, strep and most other disease causing bacteria). Within 30 minutes the portable device had been deployed and had cleansed the entire cell to a level of surgical sterility, a process verified by the use of strips called biologic indicators. There was no residue or wipe down required.

It didn't take long to recognize the potential benefits of this type of equipment. (As a side note, we had been using AeroClave's drive-in vehicle sterilization facility for a number of years with great results; we just didn't know they had developed such small, portable devices.)

AeroClave's founder, Dr. Ronald Brown, met with the Winter Park Command Staff to discuss how their equipment could help protect department personnel from all the biologic threats we face. In addition to the portable devices that can be deployed at crime scenes, he told the staff they were developing a concept to build the AeroClave technology directly into a facility. High risk areas could then be treated on either a scheduled or ad-hoc basis (and could even be initiated remotely using a smart phone or tablet device). We sat down with the City's Building and Facilities Management folks to discuss



Hydra System drop-in ceiling hub in the gymnasium (Inset: Hub)

the feasibility of retrofitting the Winter Park Public Safety facility. Chief Railey was pleased to learn that AeroClave was just as interested in the project. Working together, a plan for construction quickly developed. The Winter Park Police Department would be the country's first public safety facility with a built-in vehicle bay, work zone and equipment decontamination capabilities.

Given tight budget years and fiscal limitations, drug forfeiture funds were identified as the most sensible funding source to pay for the system. Since those funds are limited, there was a need to scale the system to be both practical and affordable. A review of how work areas are used and their corresponding potential for contaminant introduction guided the system to be installed in the following areas:

- Evidence lab and processing area
- Adult and juvenile cells with associated booking areas
- K-9 kennels
- The vehicle processing bay
- Temporary evidence storage
- SWAT locker room
- Fitness/weight room



Hydra System touchscreen controller outside treatment area

The “guts” of the system were constructed to facilitate growth and future expansion as needed. The

system was housed in an unused storage room off the sally port. From this control room, low pressure air and fluid lines were routed above the ceiling grid which then branched off to the various rooms to terminate at different dispensing heads mounted in the ceiling or on the wall. Numerous safety features (including warning lights, buzzers, motion sensors and integration of the access control system door locks) prevent accidental entry into the area during treatment. The system is controlled by touchscreen terminals located throughout the building near each decontamination zone. The screens, in addition to controlling the process, also show the status of each room and the progress of each cycle. An additional screen was located in the 911 Communications Center so personnel could monitor the status of the system at any time. Because the system operates on its own network, it can be controlled remotely with no fear of internal network intrusion or security issues.

After the installation of the Hydra system was complete, a series of validation runs using biologic indicators insured the system was operating to specification. The system automatically notifies AeroClave whenever service or fluid is required, so they can respond and perform normal maintenance on the system.

The system has been operational for the past six months and the staff are very pleased with the results. Currently, fine-tuning of the system protocols and operational procedures for use are

being refined, i.e., what areas are done routinely and what necessitates an off-schedule decontamination cycle. The number of authorized users has been identified and limited to Department supervisory personnel. As familiarity and efficiency with the process grows among staff, the Department plans on expanding user access.

Use of the portable systems allow for Crime Scene Technicians to decontaminate a crime scene allowing technicians to do their work in a safe environment. Portable systems also provide the Winter Park Police Department the opportunity to decontaminate an offsite location (City Hall or other City facilities) that may be subject to a biological threat.

Ongoing operational costs are well within projections and are in line with previous cleaning expenses, so there has not been a substantial budget impact (although it is understood we are now achieving far better results in cleaning efficacy). Given this cost benefit, the Winter Park Police Department has been able to share this technology with local departments who are allowed to run their vehicles through decontamination when they have a need. Because there are so many variables involved, it may be difficult to quantify the actual reduction in department illness in the short term. However, the officers feel better protected against all the unseen biologic threats they face each day. More importantly members take comfort in knowing they are less likely to carry an illness or contagion home to their family at the end of their duty shift. This new advancement positively contributes to the health and morale of our police force.

Citizens expect law enforcement to respond when they call for help and provide services. Now Winter Park members can meet their needs for police services and do so without exposing them to unnecessary biological hazards or risk. By integrating AeroClave technology into the Department's operations, Chief Railey believes we are better prepared to respond no matter what man or Mother Nature throws our way.

The ancient Chinese philosopher Sun Tzu stated, "Opportunities multiply as they are seized." The Winter Park Police Department seized the opportunity to partner with AeroClave to further explore their decontamination products/systems. Now the Winter Park Public Safety building is outfitted to better protect their members, workplace and equipment from the unseen health threats present in society. The result of this partnership secured a new standard in providing a safer work environment for our public safety employees and the community we serve. With these processes implemented and in place we can now help prevent the spread of contaminants among our members and the public while providing extraordinary police services to Winter Park and the Central Florida area.



### **About the Winter Park Police Department**

The Winter Park Police Department provides police services to the more than 28,000 residents of the City of Winter Park, Florida. Winter Park is one of ten municipalities located in Orange County, just north of Orlando. The Department is a 7-day, 24-hour State accredited provider of very comprehensive law enforcement services. The Department is comprised of four major Divisions: Administrative, Community Services, Investigations, and Operations. These major divisions incorporate 23 individual Units and 16 Sections of responsibility. The Department complies with the standards, directives and mandates of the Florida Police Standards and Training Commission, the Commission for Florida Law Enforcement Accreditation, the national Commission on Accreditation for Law Enforcement Agencies and the laws and ordinances of the Florida State Statutes and the City of Winter Park, Florida Code of Ordinances. Brett C. Railey has served as Chief since 2010. For more information please visit [www.wppd.org](http://www.wppd.org).

### **About AeroClave, LLC**

AeroClave, LLC, a privately held company based in Winter Park, Florida, was founded in 2003 by Ronald D. Brown, M.D., a career emergency physician and EMS Medical Director with over 35 years of clinical experience. Spurred by the global SARS crisis in 2002, Dr. Brown founded the company with a goal of developing safe and cost-effective technologies to prevent the global spread of infectious disease on aircraft units and other public conveyances. AeroClave has developed a robust family of products that provide high level disinfection and sterilization for police, fire/EMS, hospitals, athletic and life science facilities. In addition, AeroClave has developed, in cooperation with the United States Department of Defense, the world's only approved whole aircraft sterilization system. To learn more about AeroClave's products and services, please visit [www.aeroclave.com](http://www.aeroclave.com)

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