CASE STUDY

BOSTON MARATHON CRISIS: VEHICLE BIOHAZARD REMEDIATION

Many bioremediation projects happen at structures such as homes and hotels, but what few people know is how frequently there are calls for non-structure biohazard clean-ups such as autos and machinery. Some of the more interesting challenges include industrial incidents, suicides or accidents in cars, and other vehicle contaminations. Proper remediation becomes complex to deliver in these tightly confined and complicated spaces.

Although the bulk of their work is in structural biohazard remediation, Aftermath crews are frequently asked to clean up vehicular and mechanical contaminations. Standard vehicles feature cloth-covered surfaces such as seat cushions or carpet floor mats, which must be removed and disposed of before the disinfection and disinfecting process can begin – which in some cases makes the cost of cleaning higher than the value of the vehicle.

Other vehicles, like squad cars used by law enforcement, are specially designed with non-porous surfaces that make them fairly simple to clean and disinfect. “In law enforcement, there is a frequent need to clean up biofluids like blood and saliva,” says Bill Ciaccio, Aftermath's Regional Supervisor. "Police vehicles are made with plastic surfaces, as opposed to cloth, which makes the cleaning process much quicker. But working in small, enclosed spaces can make proper disinfection difficult and time consuming.”

"Squad cars are a limited resource that officers need in order to serve the community,” Ciaccio continues. “Taking even a single squad out of service for an extended period of time can have a significant impact on the agency. At the same time, we want to do our job and deliver our full level of service and disinfection.”

Test, Clean and Test Again

Just as with structural remediation projects, vehicle cleaning involves a thorough, multi-step program to ensure the surfaces are free of bio and safe to use. On first inspection, a technician in full protective gear performs an ATP (adenosine triphosphate) test on affected surfaces before beginning the cleaning process. This procedure employs a hand-held device and swab to test the presence of ATP molecules, which indicate that cellular activity is taking place (all living organisms give off ATP as they use energy). ATP testing is used frequently for measuring contamination in food processing and hospital environments; Aftermath uses it to accurately detect the presence of blood-borne pathogens.

"We often use the ATP test when cleaning police vehicles, jail cells or other general areas of the station," says Paul Petherick, Aftermath's Northeast Growth and Quality Assurance Manager. "It ensures the area is safe for the workers and detainees."

Following the initial ATP test, the vehicle’s interior and contaminated exterior surfaces are manually wiped down with a proprietary degreasing agent that removes the visible signs of the biohazard material such as blood. Exterior surfaces such as handles are also treated and wiped down. Literally every surface inside the car is wiped down with the cleaning solution--every nook and cranny has to be cleaned of all surface dirt and material in order to facilitate proper disinfection. Finally, crews spray a disinfecting solution over every affected area, to ensure all bloodborne pathogens are destroyed. After the disinfecting spray cures (proper disinfection requires a minimum of 10 minutes

wet contact time), the crew wipes all surfaces manually a second time before adding a deodorizing stage for the comfort of the driver and passengers.

"It's a combination of precision muscle-work and science," says Ciaccio. "We developed our own line of cleaning agents that are engineered to disinfect against bloodborne pathogens." Remediation workers need to not only remove the obvious signs of bio-contamination such as blood pools, but also eliminate other potentially infectious, clear fluids that may not easily be seen and can be present in trauma situations.

To certify that all surfaces are truly clean, crews test surfaces with a product that reacts to the presence of contaminants -- it foams on contact with any bio material such as blood. At this point, a second ATP test is performed to ensure the surfaces are free of bacteria and safe for use. As with all remediation projects, vehicle biohazard situations can vary widely, from simple to complex. In the case of the Boston bombing, Aftermath performed the work pro bono as a means of supporting the city of Boston and its law enforcement partners. Following their standardized protocol, Aftermath teams cleaned, disinfected and deodorized 17 police wagons in a single day, so they could be redeployed for duty quickly.