

UK Fire November issue feature submission: Decontamination

1,300 – 1,500 words.

Author: Brian Hesler, Consultant and Specialist Advisor at Draeger Safety UK and former Chief Fire Officer for the Northumberland Fire and Rescue Service.

Headline: Fighting Contamination

Subhead: This article discusses the importance of thoroughly and consistently decontaminating firefighter kit, how the Pandemic has thrown the subject into the spotlight and the ways we're using technology to drive best practice.

The equipment used by a firefighter, from personal protective equipment (PPE) to breathing apparatus and other respiratory protection equipment (RPE), is effectively a fire fighter's life insurance. As a result, they must be well-maintained, cleaned to the highest standards after every use and properly dried to ensure they are ready for re-use.

To this end, modern firefighter equipment workshops provide segregated 'clean' and 'dirty' areas to enable fire services to be provided with key phases of workshop activity including an appropriate drop off area for dirty/contaminated equipment, the decontamination/cleaning of the kit; maintenance for operational readiness; and uplift/dispatch of operationally ready items.

These thorough processes are evidence of a considerable cultural shift, that has taken us from firefighters wearing dirty kit as a badge of honour (often undertaken to prove their hard work and value) to understanding that clean and well-maintained kit, supported by detailed and robust hygiene processes that mitigate every contact with contaminants, are essential.

Understanding the risks

Today, there is a greater awareness around the risk of cancer, and Dräger's own research shows that 84% of firefighters are concerned about exposure to carcinogens. Indeed, cancer is highlighted in some scientific reports to be the leading cause of death within the service, and the International Association of Firefighters (IAFF) reports that nearly two out of three (61%) firefighter deaths between 2002 and 2017 were caused by the disease.

Our survey also found that more than two thirds (68%) of firefighters fear the impact of Covid-19 on their long-term health. And as such the Covid-19 Pandemic has further cemented the role of medical and safety technology manufacturers' in promoting the importance of having the necessary procedures to ensure equipment is clean and well-maintained. This was never-more pertinent than at the start of the pandemic, when we were inundated with enquiries on how much disinfectant was required, length of time kit should be submerged, and whether such cleaning could result in kit becoming irreparably damaged.

Now that the crisis has been ongoing for some time, we must ensure that none of the lessons learned are forgotten. To help share advancements in cleaning technology and processes, Dräger's 'Health for the Firefighter' campaign, aims to increase awareness surrounding the importance of clean, well maintained firefighter kit and equipment. It communicates the importance of detailed hygiene processes; from the handling and storage of masks and breathing apparatus equipment through to the subsequent cleaning of the kit after an incident has occurred.

Technological advancements

Modern mechanical washing systems now provide complete consistency in washing temperatures, the amount of detergent used, as well as the speed and temperature of drying. All this works together

to remove contaminants, disinfect and protect the longevity of the equipment. Dräger was the first company in the emergency services space to launch these dedicated workshop designs, cleaning solutions, and offer full logistical support and training for technical equipment after installation.

Financial gains can also be realised through improving the asset management of any equipment and effective software solutions can create inventory lists of all the machines, systems, equipment, units and vehicles that need to be maintained and tested in one central data pool. This in turn informs the individual fire service as to the lifecycle performance of products, when maintenance is required, location and state of operational readiness – ultimately creating efficiencies, furthering equipment longevity and improving safety of personnel.

Kit has also been advanced for ease of cleaning. Take Dräger's PSS® AirBoss, for example, where cleaning has been made simpler by designing smoother, non-absorbent, water-repellent surfaces to make equipment easier to wipe down and decontaminate. Reduced webbing material allows for faster drying and numerous attachment points mean kit can easily be dismantled for optimum cleaning – both mechanically and by hand.

Overall, recent scientific research into carcinogens and the pandemic has taught us that equipment needs to not only protect firefighters against a range of 'traditional' hazards - smoke, hazardous materials and fire itself, but also a series of new challenges, including bacteria, viruses and all other contaminants (including carcinogens). This means that every one of us has a duty to act differently and ensure equipment is cleaned, disinfected and maintained to the highest degree in the interests of everyone's safety and wellbeing.

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[Boxed out case study

County Durham and Darlington Fire and Rescue Service invest in Dräger mechanical cleaning systems to protect firefighter health

County Durham and Darlington Fire and Rescue Service (CDDFRS) has implemented Dräger's Cleaning Solution as part of its new state-of-the art decontamination facility, designed to ensure optimal cleaning and disinfection of firefighter equipment.

The initiative will not only help protect firefighters from harmful carcinogens and germs, but the innovative nature of the new decontamination and cleaning regime will also help improve the useful working life of the equipment the firefighters use.

Dräger's Cleaning Solution package includes Harstra's Wash 9DR and Wash 6DR mechanical cleaning machines plus additional self-contained breathing apparatus (SCBA) and associated equipment to enhance operational logistics.

The compact Wash 9DR stainless steel cleaning machine is an automatic solution for cleaning breathing masks that has low water and energy consumption. The Wash 6DR is a solution for cleaning higher volumes of complete breathing apparatus, including full face masks, compressed air breathing apparatus, helmets, and back plates (without the cylinder). In-built dosing pumps ensure consistency of cleaning, and the high-pressure 4-sided bayonet nozzles maintain water pressure during the cleaning process, preventing moisture from getting into equipment. Two compartments prevent cross-contamination and during washing the doors are electrically locked.

Modular in design and simple to use, the mechanical cleaning machines can be configured to suit specific workshop areas and capacity requirements, with washing and rinsing cycle options available in as low as 5, 10 and 22 minutes and featuring in-built water softening.

CDDFRS's new decontamination facility is part of a remodelling of the fire service's existing training facility, and now provides additional showering and changing areas for firefighters as well as distinct areas for washing, drying, and servicing equipment. New protocols have been introduced to minimise cross contamination of equipment and firefighters' exposure to combustion products from leaving an incident to shift end.

The decision to commission the facility is a part CDDFRS's commitment to its core values of pioneering innovation, prioritising firefighter wellbeing and safety, and driving improvements in managing contaminants. CDDFRS is part of a working group that brings together firefighters, fire chiefs, estates, governance, the FBU and public organisations to agree best practice.

Dan Wootton, Fire Officer for CDDFRS, says while mechanical washing of equipment is new to the UK fire services, in recent years the benefits have come to the fore: "Dutch fire services have invested in mechanical washing over recent years, leading to clear benefits in terms of disinfection and cleaning consistency, and an awareness of this is what drove us to move away from manual cleaning."

CDDFRS opted for Dräger because it was able to provide the right approved equipment for the service's needs (including capacity and wash cycle lengths) and critically was able to provide on-the-ground logistical support in installation and ongoing servicing and maintenance. Logistical support encompasses ensuring there is enough equipment ready for use at any one time, and – with firefighters being required to spend less time manually cleaning – advising on operational processes that maximise working capacity.

Liz Millward, Marketing Manager Emergency and Rescue Services at Draeger Safety UK, says in recent years there has been a welcomed cultural shift with greater awareness of firefighter long-term health:

"It is fantastic and testament to CDDFRS's culture that it is trailblazing proven advancements to cleaning and disinfection – for the sole purpose of furthering firefighter health and wellbeing."

CDDFRS implemented a staged introduction, by initially only utilising the new facility following training exercises. This gave crews the opportunity to feedback and hone the process with heavily exposed equipment to ensure a streamlined introduction to wider use.

"Other fire services are keen to see how it works and how well firefighters have adapted," adds Dan. "We have various video and online communication tools that we have used to ensure firefighters have been on board with changes at every step of the way.

"Overall, through our new facility we've been able to improve firefighter working conditions and support their health and wellbeing – and we're proud that this has been the driving force behind investment," he concludes.]

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