# **Cleaning and Decontamination**

Breathing apparatus – Breathing masks – Turn out gear – Fire hoses – Tools – Vehicles

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Efficient Gentle Easy to use Practical Labour-saving Time-saving Eco-friendly Documented



### Soot and smoke gases are hazardous to health

Multiple scientific studies have shown that smoke gases and soot from fires can contain hundreds of harmful substances, depending on what is burning and under what conditions. These substances can be highly toxic, poisonous, carcinogenic, mutagenic, toxic to reproduction, disruptive to the endocrine system, corrosive and/or allergenic.



Through correct handling, all the way from the site of the fire to the cleaning of the equipment in order to remove hazardous substances – including carcinogenic substances such as polycyclic aromatic hydrocarbons (PAH) and dioxins – it is possible to reduce exposure and thus the associated health risks. It was against this background that in the spring of 2011, Lejon Kemi initiated a development project that resulted in a range of cleaning agents and methods designed for cleaning breathing apparatus, breathing masks, turn out gear, fire hoses, tools and vehicles, for example. The development work has been conducted in consultation with external parties including leading manufacturers of breathing apparatus, makers of PPE dishwashers and washing machines, external analysis laboratories, chemists, toxicologists and several fire brigades. After that the products where launch in 2018, they are used in december 2022 by hundreds of fire brigades in Sweden, Norway, Denmark, Iceland, Slovenia and Germany. Together with our partners, we can provide complete cleaning and decontamination solutions that comprise cleaning agents, dosage pumps, installation of dosage pumps and optimised dishwashing and laundry programmes, as well as information and training in safe and efficient cleaning and decontamination.

#### Breathing apparatus decontminated with Lejon Kemi cleaning products and dishwashing programmes



Sooty, contaminated breathing apparatus



Breathing apparatus pre-treated with FFE Cleaner and washed in a PPE dishwasher using FFE Cleaner for 20 min. at  $60^{\circ}$ C



Levels of 16 different PAH on unused, contaminated and pre-treated equipment, and in breathing apparatus washed in a PPE dishwasher

#### Breathing masks decontaminated Lejon Kemi FPG Wash, washing bags and a mask washing programme.



Sooty, contaminated breathing masks



Levels of PAH, in mg/dm<sup>2</sup>, on unused and contaminated full face masks before and after cleaning



Cleaning breathing masks in washing machines

- Breathing masks are placed in Lejon Kemi microfibre mesh laundry bags that protect the masks during washing and contribute to the cleaning effect.
- The masks are washed using the cleaning agent FPG Wash from Lejon Kemi. This agent has been specially developed for washing face masks and can be dosed automatically into washing machines using an external dosing pump.
- The masks are washed using the Lejon Kemi programme that is optimised for washing breathing masks. The mask washing programme is available for machines from Electrolux Professional, Miele Professional and Podab.
- Washing time approx. 60–80 minutes
- Washing temperature 50° C
- 4–5 rinses in plenty of water
- The breathing masks are dried at 50–55° C
- The mesh laundry bags are spun and dried at 60° C

Breathing masks machine washed using the Lejon Kemi method

Machine washing of breathing masks = Effective – Safe – Simple – Practical – Labour-saving

#### Cleaning result = Type and content of cleaning agent + Temperature + Time + Mechanical processing + Rinsing

#### Washing turn out gear with FPG Wash from Lejon Kemi and a specially developed washing programme



Levels of PAH, in ng/g, on contaminated fire protective clothing (turn out gear) before and after washing at 60° C

Lejon Kemi has developed a liquid washing detergent - FPG Wash - which is optimised for washing breathing masks and fire protective clothing (turn out gear). FPG Wash provides an excellent washing result when used with a specially developed washing programme for heavily soiled turn out gear. The modified washing programme washes at 60° C. It has a slightly longer washing cycle and rinses with a high volume of hot water (60° C). After washing, the turn out gear can be impregnated with Lejon Kemi SPC impregnant, which is based on polysiloxanes instead of per-fluorinated substances. The Lejon Kemi washing programme for turn out gear and fireresistant fabric gloves (textile) is available for washing machines from, for example, **Electrolux Professional and Miele** Professional.

#### Fire hoses cleaned in a hose washing machine after been soaked in hose detergent from Lejon Kemi



minutes in a bath of 60°C water containing a solution of 3–5% of Lejon Kemi's hose detergent, and then washed in a hose washing machine featuring brushes, high-pressure rinsing and, ideally, water at between 50°C and max. 60°C. The use of hot water is extremely important for effectively washing away soot, as well as oil- and grease-soluble dirt. Analyses performed by independent laboratories show that it is possible to achieve excellent cleaning results, where the content of, for example, polycyclic aromatic hydrocarbons (PAH) can be significantly reduced.

## Lejon Kemi

Lejon Kemi is a Swedish company that has specialised in surface- and cleaning chemistry. The company has more than 35 years of experience in product development and the manufacture of chem-technical products for degreasing, cleaning, washing, dishwashing and disinfection, primarily for professional users at state and municipal authorities and companies. All products are made mainly of rapidly biodegradable substances. Lejon Kemi's products for vehicle cleaning has been environmentally approved by Swedish Society for Nature Conservation (SSNC). Lejon Kemi is part of a network of business partners that manufacture, market and sell products developed by Lejon Kemi. Lejon Kemi's products are manufactured in Sweden at a factory distinguished by good capacity, high flexibility and a quality system that ensures high, uniform quality and full traceability throughout the production chain. The Lejon Kemi warehouse is located in Hallstavik, approx. 100 km north of Stockholm. Lejon Kemi has resellers (business partners) in Denmark, Iceland, Norway, Slovenia, Germany, UK and Sweden. Some of Lejon Kemi products are also sold by Interspiro AB (member of Ocenco group) in several countries under Interspiro's own brands to fire brigades that use Interspiro breathing apparatus.

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2022-12-15/i.L (ENG)