

Cleaning and decontamination

of tools and protective clothing, etc. used by chimney sweeps



**Documented
Effective
Gentle
Simple
Practical
Time-saving
Eco-friendly**

Lejon Kemi

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Soot and smoke gases are hazardous to health

Multiple scientific studies have demonstrated that smoke, soot and tar from fires and fireplaces contain a variety of hazardous substances and carcinogens that can cause severe illnesses such as cancer, especially after repeated and/or long-term exposure to them. Awareness of the health risks of exposure to soot and smoke from fires has driven demand for safe and effective methods for handling, washing and cleaning protective clothing and other equipment used by fire-fighters and chimney sweeps.



Many of the hazardous substances to be found in soot and smoke are oil- and fat-soluble, including a number with a “tar-like” consistency. This makes them difficult to wash out, especially when they stem from various synthetic textiles, plastics, rubber, painted and varnished surfaces. In order to achieve the best possible results, it is extremely important that all parameters that can affect the results, such as type and content of cleaning agents (chemistry), cleaning temperature, cleaning time, mechanical treatment and rinsing, be optimised as far as possible without causing damage to the materials of the protective equipment, clothing, tools and so on that are being cleaned.

Result = Cleaning agent (chemical) + Cleaning time + Cleaning temperature + Mechanical processing + Rinsing

Washing protective clothing

Washing the protective clothing used by chimney sweeps in FFE Cleaner from Lejon Kemi – using a programme specially developed for washing fire-protective clothing at 60°C – can reduce levels of hazardous and carcinogenic contaminants considerably. Analyses of samples taken from protective clothing worn by chimney sweeps before and after washing revealed that the total content of 16 different polycyclic aromatic hydrocarbons (PAH) had decreased by at least 82% and that the content of carcinogenic PAH had been reduced by at least 94%. The content of a number of specific PAH had fallen to levels close to or below detection level for the analysis method applied: gas chromatography combined with mass spectrometry. The special programmes developed by Lejon Kemi for washing contaminated fire-protective clothing and protective clothing worn by chimney sweeps are available for washing machines from makers including: Electrolux Professional, Miele Professional and Girbau.



Photo 1. Soot-contaminated trousers, 100% polyester, sampled and analysed for 16 different PAH.



Photo 2. Sooty water resulting from washing clothes used by chimney sweeps at work.

Total content of PAH in contaminated work clothes used by chimney sweeps, before and after washing

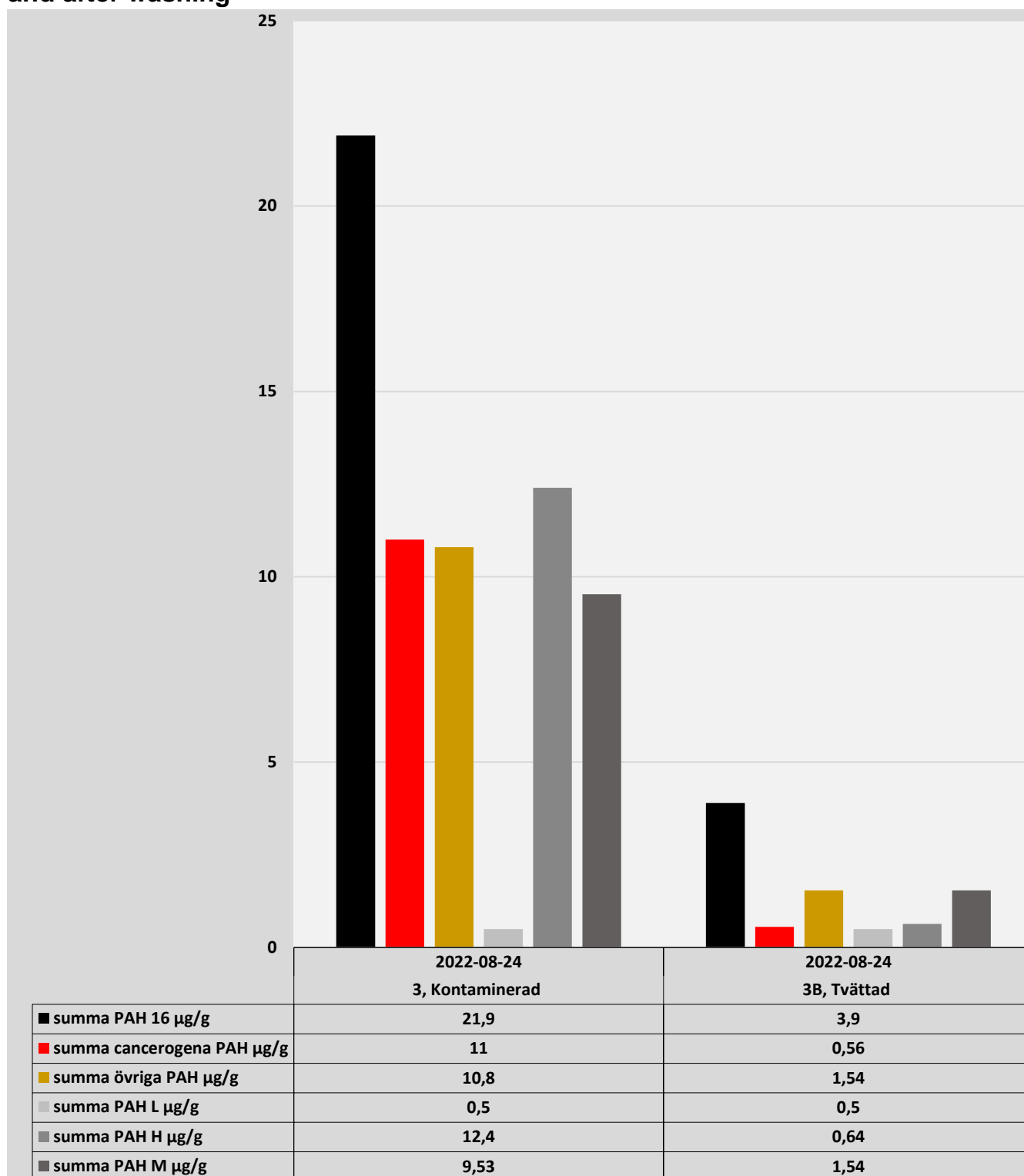


Diagram 1. Total content of 16 different PAH in µg/g in a sample from the outside of contaminated trousers, 100% polyester, before and after washing. The content of PAH was reduced by at least 82.2% after washing, while the content of carcinogenic PAH fell by at least 94.9% after washing. The content of PAH was extremely low after washing. In fact, the concentrations of 13 specific PAH after washing were below the level of detection for the analysis method used: gas chromatography combined with mass spectrometry.

Protective clothing worn by chimney sweeps was washed in FFE Cleaner from Lejon Kemi, using the washing programme developed by Lejon Kemi for fire-protective clothing (bunker gear), at a fire station in Norway, and samples from the washed clothing were analysed for PAH by an independent, accredited analysis laboratory using gas chromatography – mass spectrometry (GC–MS).

Chimney sweeps' tools cleaned with FFE Cleaner from Lejon Kemi



Tools after manual cleaning in a bucket, using a solution of FFE Cleaner from Lejon Kemi. This agent has been specially developed to dissolve tough oil- and fat-soluble dirt, tar and soot deposits from materials such as plastics, rubber, metals and painted and varnished surfaces. The equipment was left almost completely clean, and the beaker next to the tools contains the dirty, sooty water after the cleaning process. A solution of around 5% FFE Cleaner was used to clean the tools. Warm to hot water – although max. 60°C – significantly increases the cleaning effect and reduces the cleaning time.

Using appropriate protective clothing and avoiding, as far as possible, touching sooty tools and protective clothing (and breathing in such contaminants), as well as thoroughly cleaning tools, protective clothing and vehicles, can help significantly reduce exposure to hazardous and carcinogenic substances, and thus the associated risks to health.

Since the spring of 2011, Lejon Kemi has been working with the development of special agents and methods for cleaning/decontaminating equipment such as breathing apparatus, breathing masks, fire-resistant clothing, fire hoses and tools used by fire-fighters, to help remove hazardous and carcinogenic substances. The development work has been conducted in consultation and cooperation with external parties including leading manufacturers of breathing apparatus, makers of PPE dishwashers and washing machines, chemists, toxicologists, external, independent and accredited analysis laboratories and several fire brigades.

Five years after the launch in 2018, Lejon Kemi products were already being used by almost 500 fire brigades in countries including Denmark, Iceland, Norway, Slovenia and Sweden. The cleaning/washing agents and cleaning methods developed by Lejon Kemi for decontamination processes used by fire brigades have also proved excellent at cleaning and washing the tools and protective clothing worn by chimney sweeps.

Lejon Kemi

Lejon Kemi is a Swedish company that has specialised in surface science and cleaning chemistry. The company has more than 35 years of experience in product development and the manufacture of chemical-technical products for uses such as degreasing, cleaning, washing, dishwashing and disinfection, for professional users at state and municipal authorities and companies. Lejon Kemi is part of a network of partners that manufacture, market and sell products developed by Lejon Kemi.

Lejon Kemi's products are manufactured in Sweden at a factory distinguished by ample capacity, high flexibility and a quality assurance system that ensures high, uniform quality and full traceability throughout the production chain. All products are composed of rapidly biologically degradable substances based primarily on renewable ingredients. For example, the Lejon Kemi vehicle cleaning agent fulfils the environmental requirements of the Swedish Society for Nature Conservation (SSNC).

Lejon Kemi has offices in Stockholm and Oslo. The main Lejon Kemi warehouse is located in Hallstavik, approx. 100 km north of Stockholm. Lejon Kemi has resellers in countries including Denmark, Germany, Iceland, Norway, Slovenia, Sweden and the UK. A number of Lejon Kemi products are also sold to fire brigades by Interspiro, a member of the Ocenco Group, under Interspiro's own brand.

Together with our resellers and 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 about and training in safe and efficient cleaning.

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