

## New protective undergarment yields health benefits

**At the training department of the fire brigade in Karlstad, a completely new type of protective gear was used this autumn; a protective undergarment that offers opportunities to significantly improve the long-term health of firefighters.**

"We just had a colleague who passed away from cancer shortly after retiring, so everyone here understands how crucial this is," says Tony Falk, team leader at the Karlstadsregionen Fire Brigade Association. For three weeks in November, he and two colleagues were responsible for the recurring further training of the region's part-time firefighters.

On a sparkling cold and sunny winter day in Karlstad, the newspaper's correspondent is present to learn more. At the fire brigade's training area just outside the city, there is full activity. The site previously housed regiment I2, but today it accommodates both the fire brigade and the police and ambulance services. From a small building, assembled from several containers, purified smoke billows up towards the bright blue sky.

For three weeks in late autumn, a total of 225 part-time firefighters from the six municipalities within the Karlstadsregionen Fire Brigade Association received their mandatory training here. Training that also gave them the opportunity to get to know each other by station. One of the training exercises involved observing the progression of fires and reading fire gases using thermal cameras. When the newspaper's reporter opens the door to the container where an exercise is underway, a wave of heat rushes out into the winter cold, and a faint smell of smoke quickly permeates the clothes.

Before the weeks of training, it was clear that the three instructors would be exposed to smoke and fire gases to a degree that their work does not usually entail.

Roger Hesselius, head of the training department at the fire brigade, had seen an advertisement for a new protective undergarment that, with its unique textile material, protects the skin from harmful fire gases. The undergarment has a protection factor of 1,000, compared to 15 in the standard clothing. Roger Hesselius took action and placed an order.

"Since we knew that the instructors would be in this smoke during an intensive period, and that we had room in the budget, I wanted them to have access to the garments," he says and continues:

"The training department has its own budget and thus the opportunity to develop the operations when the economy allows." Team leader Tony Falk used the protective undergarment during the training period and has also had it washed a few times in the special laundry facility on the premises, which according to all regulations carefully distinguishes between dirty/contaminated and clean laundry.

"The garment is easy to put on and is comfortable to work in," Tony notes, demonstrating the shirt with a collar, snug cuffs, and thumb grips at the sleeve ends.

"The T-shirt that I have closest to my body also hasn't absorbed any smoke smell, which, for me, is proof that the undergarment works!"

"Now the employer must wake up."

- Health statistics, both from the Nordic countries and the rest of the world, show a strong correlation between fire gases, primarily absorbed through the skin, and cancer. Unfortunately, the number of cancer diagnoses among firefighters is increasing," says Anders Cederberg, chairman of the Firefighters' Union and also chairman of the Firefighters' Cancer Fund.

He continues: "This is a real problem that we have pointed out to the employer on several occasions. But we don't get any response; it's as if they don't believe that this is a fact in Sweden as well."

He explains Swedish statistics showing that firefighters who have worked in the profession in recent years have a higher frequency of cancer diagnoses than those who were active professionals until the early 1980s. The reason is that fire gases have become more toxic.

"Now that we actually, with this new protective undergarment, have obtained a real opportunity to significantly reduce health risks, employers must wake up. It is the employer who has the responsibility for occupational safety," says Anders Cederberg.

The firefighter profession has been classified in category 1 by IARC (International Agency for Research on Cancer, a collaboration between the World Health Organization and the United Nations). This means an established link between certain cancer diagnoses and the profession.

"It is unusual for a profession to receive this risk classification today. In many professions, risks have been managed with the help of various machinery and equipment. So far, this hasn't been possible for firefighters. But with this new protective undergarment, we have made progress," says Anders Cederberg, concluding: "The hope is that all firefighters will have access to this undergarment. They deserve it!"

#### **Here's how the protective undergarment works:**

- Protects against cancer-causing toxins in fire gases (regular turnout gear only protects against heat and flames).
- The patented fabric filters out toxic particles and contains activated carbon that shields against carcinogenic gas while allowing moisture to pass through for maximum breathability.
- The garments – hood, shirt, and pants - are washable.
- A Swedish innovation developed from technology long used for military undergarments for protection against chemical warfare agents. Marketed by Swedish CPP Garments.
- The garments have been developed in collaboration with the Swedish Firefighters' Cancer Fund and active firefighters and have been tested by Chalmers University of Technology, Lund University, and IVL Swedish Environmental Research Institute.