



Report from last Firefighters' meeting – 15 June 2022

(working document)

Introduction

The aim of this brief is to bring light to the issues that firefighters are facing every day as part of their profession. Nanoparticles, carcinogenic, inadequate equipment, low staffing levels, working time and other similar issues will be tackled in this report by drawing on EPSU previous policy and position papers and mainly on a firefighter's network meeting that took place on 15 June 2022 in Brussels. //+ 2023 in Stockholm?

During beforementioned meeting Firefighters from France, Belgium, Italy, Poland, Sweden and the UK discussed the issue of carcinogenic contamination at the workplace and decontamination practice.

Asbestos and other dangerous carcinogens

Asbestos has been banned in 2005 but tonnes of this materials are still present in buildings across the EU. It causes between 30 000 and 90 000 deaths per year in the Union and is the main cause of lung cancer - which itself is the most common occupational cancer. Currently the EU is revising the Directive XX/YY which defines the occupational exposure levels of workers to asbestos and identifies measures to protect workers. On 14 June 2022, The European Commission presented its proposal of the revision to the Employment Committee of the European Parliament. EPSU attended the meeting with a delegation of firefighters, who expressed their support to the text voted a few months earlier by the European Parliament (XXYYZZ). The resolution recognises the risk faced by firefighters, lowers significantly the occupational level to 1000f/m³ (from 100.000f/m³) and puts forward a number of ambitious proposals to protect workers, including moving towards national registries of asbestos. Firefighters are exposed every time a building that contains asbestos burns, is damaged or falls, especially in longer and complex operations, or when the operation involve rescue to persons, where a breathing apparatus cannot be worn at all times.

The European Commission presented his proposal for a review of the directive [LINK] in which it did only reduce the occupational exposure limit to 10.000f/m³ and did not include any of the measures suggested by the European Parliament. This proposal was subsequently amended by the European Parliament in April 2023.

EPSU and its firefighters' network has continued to press to include the angle of protecting firefighters from exposure and contamination from asbestos and carcinogens and the Employment Committee of the European Parliament has organised a public hearing, within its process of revision of the directive on "working conditions of firefighters".

EPSU is calling for:

- firefighters to be specifically mentioned in the review of the directive as a group at risk,
- for the reduction of the exposure limit to asbestos to 1000 fibres/m³

- creation of asbestos registry to be fully accessible to firefighters and emergency services, that would ensure firefighters know in advance if the site of emergency has presence of asbestos but also to track, ex-post, exposure.
- Compulsory decontamination procedures to be negotiated by sectoral social partners
- Preventive legislation that would transpose the IARC- WHO classification of occupational exposure as a firefighter as carcinogenic to human (group 1)

In their meetings with Members of the European Parliament (MEPs) and during the hearing, the EPSU firefighters delegation discussed not only their exposure to asbestos but other growing issues such as their exposure to nanoparticles which are found in every new technology equipment and are carcinogenic. As part of the green transition implies more and more investment in new technologies such as electric cars it is crucial for firefighters to voice their concern and for policy makers to take them into account.

Moreover, climate change is having a strong impact on operations, which gets longer and larger, with severe consequences on working conditions. [add a line here from survey 2023- this part to be added during summer 2023 based on survey]

[add here what is included into final revision of directive]

What is the decontamination process and how is it implemented?

Decontamination is the action of deep cleaning anything that might have been in contact with contaminants. Contaminants are toxic particles that can affect the health and provoke serious illnesses such as cancers. Firefighters are exposed to contaminants daily, simply by performing their job. Many of the substances present in smoke, be it in forest fires, in house fires or car explosions and accidents, are carcinogens and they can penetrate the protective gears and the skin. Some of those contaminants have immediate effects such as carbon monoxide but some others can take years before having some effects on health. Asbestos, for example, is a very well-known example of contaminant of this second category: a worker exposed and contaminated today can show symptoms of a related disease even forty years later. Firefighters have at least two additional problems:

1- they cannot be sure of which contaminant they will encounter in any given operation and in which dosage

2- high temperatures and combustion or explosion can lead to a mix of substances that is impossible to control, especially during an emergency operation.

Moreover, contaminants can enter the body in multiple ways: via inhalation, ingestion or by skin absorption. This can happen directly during the operation or afterwards if what has been in contact with the contaminant has not been decontaminated properly. For these reasons, it is important to ensure that:

- (i) firefighters are wearing proper equipment covering most of their body,
- (ii) their equipment is decontaminated after every operation.

Additionally, firefighters should receive adequate clothing and equipment that would protect them from exposure and each firefighter should receive enough changes to ensure that contaminated clothing and equipment is not used multiple times after being contaminated. Unfortunately, as for the evidences presented below this is not the case for many firefighters and that have contributed to a spike of the risk of contamination both for firefighters and the general public. As a matter of fact, without decontamination, a firefighter become a vector of

further contamination, carrying contaminants to the next emergency, that may be someone house, a school...

Lack of means or awareness by workers, longer working hours due to increased large scale emergencies and staff shortages are some of the elements that exacerbate the risk of contamination. According to the UK firefighter contamination survey¹ led by Prof. Anna Stec, the most common malpractices are not wearing the respiratory protective equipment (up to 84% firefighters responded that they often/sometimes attend fires without RPE), eating or drinking in contaminated protective gear or not washing their hands before eating or drinking (82% eat while in PPE, 63% eat with sooty hands) and not changing workwear, therefore, spreading contamination upon return to the station (58% change workwear on return to the station).

Mixing dirty gears with clean ones or not properly decontaminate clothing and equipment is a crucial but underestimated problem. When dirty and contaminated gears are stored with clean ones or when they are simply washed without a proper decontamination process, contamination is spread since some contaminants remain at the surface of the fabric and can spread through contact. To avoid this from happening contaminated equipment needs to be stored separately and ideally in a hermetic compartment.

Additionally, contaminants can be hard to wash and a standard washing machine will not effectively remove them, on the contrary it will contaminate the washing machine itself and therefore clothing that will be later washed in the same machine as well as the water used that will enter the public sewage system. This is why it is important that dirty gears are washed in washing machines that are designated for this use only. However, the reality of the firefighters is much different as in several countries, they often have to wash part their clothing in their homes or if cleaning is externalised to a cleaning companies. Contract for such work are usually awarded to standard cleaning companies, that alongside firefighters' gears wash, for example, hotel bedsheets.

However, good practices are also present, the Brussels region (Belgium) a new decontamination protocol has been put into place. Firstly, a circular specifies that an inventory of the uniforms present during the intervention must be kept and that each firefighter must have a spare uniform. After an intervention, firefighters must dispose of their gear in a hermetic bag and it is recommended that firefighters wear a mask until their outfit has been disposed of in the bag and wear disposable gloves while taking off their equipment. All equipment should be stored in a hermetically closed box for the ride back to the station. Once back to the station, firefighters must take a shower and the clothes they were wearing on their way back should also be cleaned following a specific procedure. Inside the stations, clean and dirty areas are established in order to contain the contamination to only a part of the station.

The measures contained in the new protocol are very similar to the ones developed in many other countries by (or in collaboration with) national Unions. However, having a protocol on paper is not enough. These measures need to become everyday reality for all firefighters and this is not yet the case. Unions have developed a number of awareness raising material to support the dissemination of information on risks but also on how to behave before, during and after an operation to reduce the risk at a minimum.

¹ Stec, A. et al. (2020). *Minimising firefighters' exposure to toxic fire effluents*. University of Central Lancashire. Available at: [Minimising firefighters' exposure to toxic fire effluents | Fire Brigades Union \(fbu.org.uk\)](https://www.fbu.org.uk/minimising-firefighters-exposure-to-toxic-fire-effluents)

As an example, it was provided the protocol included in Ver.di's leaflet on cancer prevention and good practices to follow on the scene (Krebsvorbeugung für Feuerwehrleute, Einhaltung der Einsatzstellenhygiene). Among these recommendations to consider prior to fire:

- Training of uniform standards and procedures for all employees.
- correct fitting of protective equipment, everyone is responsible for their own safety
- Uniform provision of the necessary equipment for cleaning protective equipment, vehicles, etc.

During an operation:

- Wearing clean operational clothing
- Comply with the standard rules of engagement: wear full respiratory protection before first contact with smoke or hazardous substances (also during post-extinguishing work)
- Emergency vehicles are parked at a safe distance from the scene of the incident, with windows and doors closed (ventilation/air conditioning switched off)
- No pollutants must be allowed to enter the vehicle (observe wind direction).
- Only the necessary number of emergency personnel is sent to the scene of the damage.
- Food and drink may only be consumed after hands and face have been washed in an area designated for this purpose by the incident commander (not in the direct danger zone)
- Use measuring equipment during every operation
- Close any equipment rooms that are not needed after the equipment has been removed.

After an operation:

- Early start of the cleaning process
- Do not remove respiratory protection until after a ventilation phase. in the open air
- Soiled clothing must be packed airtight and transported separately. clean clothing should be put on at the scene of the incident.
- Used equipment (e.g. hoses, breathing apparatus, breathing apparatus, etc.) must be transported separately and replaced with new ones on the vehicle
- Equipment that is not available in large quantities (e.g. thermal imaging camera, radio equipment, hand lamps, etc.) is cleaned before being loaded onto the vehicle.
- The aim is to restore operational readiness as quickly as possible at the scene of the incident - rough cleaning beforehand, e.g. on a hygiene board.
- A shower must be taken at the station at the latest.
- The clothing worn under the fire protection clothing (outer clothing) must be centrally cleaned at the fire station. be cleaned centrally

The Fire Brigade Union from UK (FBU) have developed a similar checklist and started spreading it in each and every fire station. The same practice can be observed in many other unions across Europe, from Italy to Sweden, from France to Poland.

The Brussels Firefighters have also built a decontamination container: it allows firefighters to get completely decontaminated on site. The truck includes special baskets for contaminated clothes, an outside and an inside shower including an eye faucet. The container is also equipped with a ventilation system. Unfortunately, there is only one of those containers for all operations, making it impossible to use it every time. This decontamination process requires

firefighters to have enough spare jackets, pants, boots, PPE, etc. and to have the time to proceed to this decontamination after every operation. Firefighters from the UK and from Italy have highlighted that they often attend multiple fires in a row and have no time, nor do they have sufficient spare equipment, to change in between each intervention.

Poland has also taken a good step in the direction of good decontamination practice. There have been talks and exchanges around good practices since the early 2010's discussing good practices such as wearing dust masks and designating clean and dirty areas. This concept of different zones has been introduced to the official policies of the State Fire Service through education and best practices examples. This has led to the publication of a textbook on structural firefighting in 2020 and the promulgation by the National Fire Chief of the State Fire Service of the obligation to create a clean and dirty zone with changes having to come into force as of January 1st, 2023 / the obligation that every new station to be built to have clean and dirty area. This is a great step forward, however, very few new stations are to be built and those changes are hard to implement in old stations.

On the other hand, France has been working on the creation of a new hood to wear underneath the helmet to ensure that smoke and contaminants don't penetrate the skin from the scalp. This new hood also covers firefighters' shoulders and is made in a new material that is far more resistant and filters contaminants way better. The traditional hood is made of non-flammable cotton; this fabric doesn't filter contaminants and particles properly. This was highlighted by Italian firefighters who wore a white piece of fabric underneath their helmets for the duration of an operation. After the operation, you could clearly see that the piece of fabric had become black because of the smoke. This comes to show how much smoke and therefore contaminants penetrate underneath equipment and can infiltrate the body. If you can see this difference on a piece of fabric, you can imagine the damage caused inside the body of a firefighter. [maybe add photo from Raffaele's presentation]

Overall, there is a consensus amongst firefighters' unions (see Ver.di or FBU recommendations) on decontamination good practices. The emphasis is put on cleaning hands and face before drinking or eating during the operation, getting exposed as little as possible, getting cleaned as soon as possible after an intervention, changing gear, cleaning the equipment etc. However, a lot of those good practices can not be adopted because of a lack of spare equipment and understaffing issues.

EPSU affiliates have also started national campaigns at the national scale. Thus, FBU has launched a large-scale campaign titled "DECON". The campaign features references to research led by Anna Stec at the University of Central Lancashire, training tips and videos. "DECON" highlights that "firefighters are four times more likely to get cancer than the average working person. This has been linked to toxic contaminants released during fires. Get the facts and learn why contaminants should be taken seriously". Daily habits to be implemented before, during and after interventions are also featured. FBU is also inciting firefighters in the UK to join a Firefighters Cancer and Disease Registry in order to help researchers to study the long-term health risks of firefighting. In the same way, affiliates in Italy have launched a newsletter called "particella pazza" (mad particle) in order to engrain health and safety into the work culture.

Firefighting is carcinogenic

Firefighters live with the fear of being diagnosed with cancer as a result of their constant exposition to smoke, contaminants and carcinogenic particles. The link between being a

firefighter and having cancer has been clearly established by scientific studies. Verdi highlights a study from the International Cancer Research Agency (IARC) that declared in 2007 that working as a firefighter is classified as possibly carcinogenic (group 2-B). Overall, even though one would think that firefighters are a healthier group of the population, they are four times more likely to develop cancers than the general public and those cancers are diagnosed way earlier than the general public. When cancers are usually diagnosed between the age of 65 and 69 years old, they are diagnosed between the age of 45 and 49 years old for firefighters, that is twenty years earlier. A study led in the US and quoted by KSP NSZZ Solidarność shows that 60% of firefighters die of cancer [need source].

On 1 July 2022, the IARC-WHO has re-classified firefighters and “occupational exposure as a firefighter as carcinogenic to humans (Group 1), on the basis of sufficient evidence for cancer in humans.” Before that, firefighting was considered “possibly carcinogenic” now the link is clear: being a firefighter itself is carcinogenic. However, even though this scientific recognition is progress there are many measures that are yet to be taken. One of the measures that could/should happen is the existence of a personal registry in which each firefighter can keep track of their intervention and contamination. This obligation to document exposition to carcinogenic is already happening in Germany where the Ordinance on Hazardous Substances and the German Occupational Health and Safety Act require since 2005 that the employers fill out documentation on exposition. The documentation must contain information on the type, level and duration of exposure and must be kept for at least 40 years. On the other hand[1] , in the US a legislation requiring the CDC to set up a registry of firefighters external icon that will track links between their workplace exposures and cancer was signed in 2018. However, this is not a reality across Europe and EPSU demand to have mandatory asbestos registries and to make them accessible to emergency services as this would also help firefighters tracking their exposures in the past.

However, this would only cover exposure from asbestos. For this reason, what is needed is preventive legislation that would transpose the IARC-WHO classification into law. This type of legislation is already present in the United States of America, in Canada and in (Australia/New Zealand /check). This would allow automatic recognition of cancer as a professional disease.

[ADD HERE WHAT COMES OUT OF CMRD5 EP TEXT]

Scotland has taken a step in this direction by including the professions of people on death certificates. This allows us to highlight that many firefighters die due to cancer. But on the other hand, in the UK, firefighters have to prove that they got cancer while working. The legislation needs to be reversed, firefighters should not have to prove that they have cancer as a result of their professional activity when science shows that they are clearly at risk. Firefighters deserve the best preventive medical care, education, and support to reduce the risk of cancer. Following this mindset, the Polish union, KSP NSZZ Solidarność, launch the Pledge, an initiative aiming to raise awareness about cancer.

Another important aspect that firefighter union representatives are also calling for preventive screening. Those screenings would allow earlier detection of potential cancer and therefore better medical treatment. Screens ensure proper prevention of firefighters. Due to the pandemic, they have been reduced and it is important that they are brought back to full check ups.

Climate change

Firefighters are also increasingly exposed due to climate change. Climate change will, and already has, consequences such as extreme weather events and rising temperatures, droughts, floods, an increased amount of wildfires. Those human-induced natural catastrophes will have for consequences a higher workload and work-induced stress for emergency workers including firefighters. Firefighters will have to intervene at a more intense rhythm, being more and more exposed to contamination. The main concerns include firefighters suffering heat stress, injuries due to uneven terrain, smoke inhalation and flying firebrands. Furthermore, large wildfires or heath fires can temporarily drain the fire cover of a large area, resulting in increased response times for primary fires and rescues. Fire crews will be tired from the increase of incidents, sickness and injury levels may rise due to fatigue and equipment will be under more strain due to more frequent usage. In those conditions, firefighters won't have the time and/or means to follow a proper decontamination process. Where firefighters only have a limited number of jackets and outfits will not be able to change in between operations.

Green technologies: need for more research on their combustion and disposal

Moreover, the green transition is a growing issue for firefighters. Indeed, many of the new technologies developed to be more environmental friendly like batteries of electric cars or scooters, happen to be very toxic when in flames. They also contain nanoparticles, those particles already exist in forest fire smoke but the ones in new technologies are even smaller. When combusted, nanos can penetrate firefighter's organism through inhalation, ingestion or skin contact. Thus, nanoparticles travel even further than regular contaminants. Because of their size, when inhaled they can infiltrate the blood through the lung alveolus. They can reach other vital organs such as the brain or the heart and cause severe illnesses. The main issue, apart from the increase in quantities manufactured and therefore in potential exposure is the difficulty to measure and quantify the exposition to nanoparticles.

Many questions remain unanswered regarding the impact of nanoparticles, nanotechnologies and nano substances on health: what impact do nanos have on missions and interventions? what are the identifiable dangers? Moreover, firefighters are still struggling to figure out how to approach these new contaminants: which operational approach should be favoured? what are the limits of intervention? what PPE should be worn? how should exposure monitoring be organised? There are many questions regarding also decontamination in the context of nanoparticles: how to identify and evaluate as precisely as possible the presence and concentration of nanos? (reading the situation) and on the basis of which criteria (anticipation)? can there be permeation of nanoparticles into the layers of (e.g. firefighting clothing)? what filter system? depending on the intervention situation? how should the equipment be washed and maintained following exposition?

In addition to the issue of Nanos, new technology leads to new types of fires. The increased use of hybrid vehicles for instance has brought new challenges for fire and emergency service, mainly because of the toxicity of their components but also because firefighters did not receive from producers instructions on how to manage hybrid vehicles on fire. Firefighters do not have data, if existing, on how to treat a battery that explodes or burns. Standard fire extinguish procedures or products do not work or can be counter productive.

So far, the most effective method seems to immerse the vehicle in a basin of water. Which works for an electric scooter but how do you manage a hybrid car on fire in an underground

car park? New technologies and lithium batteries are very flammable and those fires are extremely toxic and very hard to put out. Some technology has been developed to help fight against those new fires such as flame retardant but flame retardant (PFAs) has turned out to also be toxic to firefighters. We now have firefighters fighting against toxic fires with toxic tools. Science is always a step forward and firefighters are a good few steps behind in figuring out how to adapt. This is not only an issue that concerns firefighters but also the general public in case of a big fire: those contaminants can spread through the air and affect the population.

The number of operations involving these products are increasing. How to ensure safe emergency responses? Are producer researching how to handle these products when they explode or burn? What about their safe disposal? More research and more communication with firefighters is urgently needed.

The potential negative impact of every product must be taken into account as much as its positive impact. The issue is that technologies develop very quickly and therefore it is difficult to evaluate their positive and negative impact. Asbestos for instance was initially used for its positive properties but turned out to be extremely toxic - we need to be careful not to reproduce the mistakes we've made with asbestos!

What can and should be done

Overall, there's a need to change the culture surrounding firefighters. Being a firefighter is seen as a risky job but it is actually even more dangerous than we think. Indeed, in addition to getting exposed to flames and the danger of getting burned, firefighters are also exposed to contaminants on a daily basis and at risk to become severely ill as a consequence. If proper decontamination practices are not followed they even risk contaminating their families. The risk of cancer and other severe illnesses should not be accepted. Firefighters are regular workers, emergency service workers, yes, but workers nonetheless. They are not heroes. They are not immune to cancer or contamination overall.

Changing culture starts with the way we talk about things. Firefighters stressed that there is a need to understand the difference between being exposed to contaminants and being contaminated. On the one hand, contamination is the accidental entry of toxic substances (contaminants) that alter the biochemical reactions in a living organism. On the other hand, exposure is the contact (occupational or not) with a dangerous toxic agent, generally outside an accidental situation. Therefore, firefighters are actually contaminated, not only exposed, sometimes even unknowingly, to contaminants.

There also is a need to change the mentality within firefighters. Having dirty gears after a fire is still seen as something to be proud of as it is supposed to highlight how much you worked and exposed yourself. To fight against this mentality, Unions are constantly organising training and information sessions and some stations have changed the colour of the gears to make them look lighter. This way, you can see more easily if your outfit is dirty and therefore if you are at risk. Firefighters also need to be more aware of good practices to have. Still, too many of them drink and eat on the operation site with dirty hands. This multiplies the risks of exposition. Every little detail, even cleaning your underwear, counts and firefighters need to be aware of it.

Finally, the risks to which firefighters are exposed are very badly evaluated and we need urgent change: preventive legislation for automatic recognition of cancer as an occupational disease, compulsory decontamination and constant screening. Science, with IARC WHO has taken a step forward by recognizing occupational exposure as carcinogenic but political

decisions and actions have to follow. Moreover, the main issue of firefighters is that they are being understaffed and underequipped, which means they are overworked and sometimes in unsafe conditions as they don't have clean equipment at their disposal. There is a need to invest more in firefighters and to launch a big recruitment campaign. The fewer firefighters there is, the more dangerous and tiring their work is, the less people want to join.