



# Good preventive behaviour

Avoid getting cancer  
being a firefighter

**FOA**

**KØBENHAVNS  
BRANDVÆSEN**



**Falck**

BEREDSKABS  
STYRELSEN



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# Preface

Already back in 2006 the first international study on fire-fighting vs. cancer came out. The study was made by The International Agency for Research on Cancer [IARC].

The study drew attention to the possibility of an increased occurrence of three different types of cancer affecting firefighters – testicular cancer, prostate cancer and non-Hodgkin’s Lymphoma. A few fire brigades started taking measures which would prevent cancer from developing during firefighting.

By the end of 2012, we – as participants in this field, we chose to refocus on the risks of developing cancer. We refocused, because it is important to us that everything possible is being done to minimize the risk of exposure, which later on will lead to cancer while working as a firefighter.

We want to ensure that we don’t have to do a new study in 20 years, and to find out how many firefighters have been exposed to cancer during the elapsed time, and

also having to find – yet again - reasons to argue the possible link between firefighting and the risk of developing cancer.

In your hand you have a description on how to “do” best practice before, during and after your training and responding to a fire call. The descriptions are based on a mapping made of preventive behaviour in the Danish fire emergency services. Best practice is the best in all scenarios. There are no limitations – no economic or structural terms and conditions.

The descriptions on best practice are primarily used to inspire you to take action at your local station house. The pamphlet also contains recommendations on best behaviour by management as well as personnel in the workplace, a behaviour that can prevent impacts of hazardous exposures.

Enjoy reading and have a great day!

# Fire and cancer - what we know

International studies show that the impacts firefighters are exposed to on a daily basis potentially have a carcinogenic effect.

The risk factors with a potential carcinogenic effect are:

- Smoke and fumes from fire
- Diesel fumes
- Building materials
- Working night shift – disruption of your daily rhythm

The particles containing a carcinogenic effect are damaging well after responding to a fire call. Many of the particles will still be on the turnout gear and fire extinguishing equipment. The impact will not only happen through inhalation, but also through your skin and lack of good hygiene after being on-scene.

Typically, the cancer can't be detected until 20-50 years after the exposure. The lengthy period from exposure to actually being able to detect any signs of cancer makes it difficult to connect firefighting and the development of

cancer to one another. More often than not, cancer is not caused only by one single factor, but several factors.

Today we know the cause of 30-50% of all cancer diseases. However, that still makes 50% unknown. At the same time it is estimated that 4-5% of all cases of cancer is caused by your daily work environment.

Studies also show that there is an increased risk of three particular cancers when it comes to firefighters - they are:

- Testicular cancer
- Prostate cancer
- Non-Hodgkin's Lymphoma

However, you can't prove with certainty, whether or not these are caused by working as a firefighter or other unknown factors in or outside the work environment. The so-called traditional lifestyle factors, e.g. smoking and alcohol have not been proven or suspected as a cause of these three specific types of cancer.

# Good preventive behaviour – how so?

Good preventive behaviour is basically all about taking the necessary steps before, during and after responding to a fire call in regards to minimizing the exposure to hazardous smoke and fumes.

This means minimizing exposure entirely. From work space to management as well as the fire crew itself. It means having a behaviour where actions taken by management and personnel are solely focused on prevention. The preventive behaviour already starts during training and exercising the routines. It starts at the local station houses before responding to a fire call and it is all about the culture concerning health and safety.

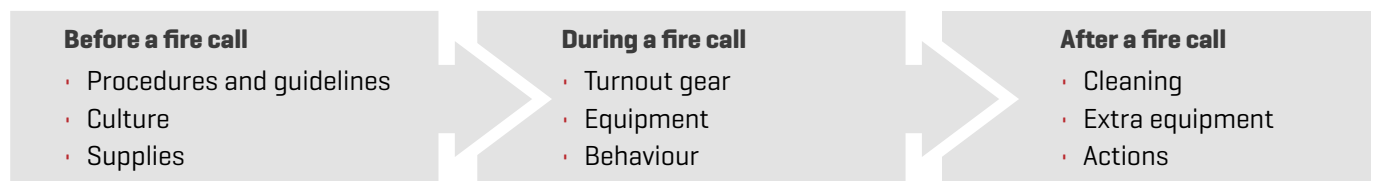
In the Danish Working Environment Act it is described how the employer must ensure, that both health and safety conditions are fully acceptable. The employer must ensure that all employees have the same necessary training and instructions on how to do their job without the risk of exposure to toxic fumes. On the other hand,

the employee must contribute to the same safe environment, so the job can be conducted in an acceptable healthy and safe manner.

Preventive behaviour is also about changing views, actions and cultures that already exist in relation to firefighting. It is about not getting into a fire engine with your filthy turnout gear on and driving back to the station house or home to your family. It is also about following through on a fire call from beginning to end, perhaps even finding out that the process starts before the alarm goes off. It doesn't end until you are back at the station house - washed off and in clean clothes.

It is about the possibilities to change the behaviour and operations within the firefighting process and the scooping of the station house and on-scene – for a better hygiene, equipment and clothing. The descriptions on best practice on the following pages are categorized into before, during and after a fire call.

## Best practice



# Before responding to a fire call

Best practice before a fire call is very much about how the culture, equipment and procedures are set in a perfect world – if the scope and possibilities are present.

## **Procedures and guidelines**

Clear guidelines and procedures for minimizing exposure have been developed at the station house, thus to ensure a commonality in fire calls and to make sure that everyone knows how to respond in any given situation. It has been taken into consideration, if there is a difference in the use of materials and people's behaviour – whether it is a big or small fire. All new employees are getting the proper procedure and guidelines training.

## **Culture**

The scope for carrying out a safe and healthy fire call must be present prior to the incident. This means the following has been discussed at the station house:

- How turnout gear should be used during the fire call
- That it is legit to remind each other to wear protective gear – both during the fire call and handling re-flashes

- That you are responsible for your own safety
- That the incident commander/fire officer is in charge of safety and a role model in regards to the fire call. This also applies to the use of equipment and behaviour on-scene.
- That management signals the importance of the aforementioned and that the entire unit is expected to keep a high level of safety and hygiene during fire calls.

## **Equipment**

The necessary equipment is available at the station house, thus enabling proper cleaning of fire suits, fire engines, turnout gear etc. protective gear which prevents inhaling particles during a fire call is mandatory – both while fighting fires as well as handling re-flashes.

Fire personnel have more than one fireman suit. Hot water soluble laundry bags for used fireman suits are available. It has been taken into consideration what equipment is necessary for the crew to clean themselves on-scene after a fire call – e.g. additional purification capacity.

# Before

When we're out there,  
remember the importance  
of reminding each other of  
wearing protective gear



Shared suits!



You are not allowed  
inside wearing that  
filthy fire suit



# During a response to a fire call

Best practice during a fire call is primarily about using the correct gear, how do the incident commander/fire officer and the crew react according to the latest rules and regulations as well as the given situation. Clear-cut guidelines and agreements within the responding unit are very important. Same thing goes for knowing exactly what the correct thing to do is in the situation.

## **Clothing**

Clean fireman suits are used during a fire call. Before the crew leaves the scene, the filthy turnout gear is disposed of and they change into clean clothing. The filthy fireman suit is put in hot water soluble laundry bags.

## **Equipment**

The firemen who risk exposure to smoke or works in a smoke-filled environment bring full respiratory protection gear before first contact with smoke. The protective gear is used as long they are in contact with smoke, dust, gasses or fumes – this includes handling re-flashes also. The management at the scene will assess when a change to another suitable protective gear is possible.

Fire engines on-scene will be placed at a safe distance to minimize exposure to toxics. Windows and doors on the fire engines are kept closed during the fire call.

## **Behaviour**

Only the necessary manpower for the firefighting is sent into the fire. All additional personnel stay at a safe distance to the scene. Fire engines and equipment are placed as far away as possible from the smoke plume. The incident commander is responsible for organizing and carrying out the firefighting, as well as making sure that the crew is exposed to as little smoke and particles as possible. The incident commander must assess, as early as possible, the need for re-establishment, e.g. additional purification capacity.

All manpower pays attention to each other, smoke and exposure to particles. If/when you eat while being on-scene, regular hand hygiene is a must before eating. If you take a break during the fire call and take off your respiratory protection gear, you must find a place away from the scene and regular hygiene must be complied with.

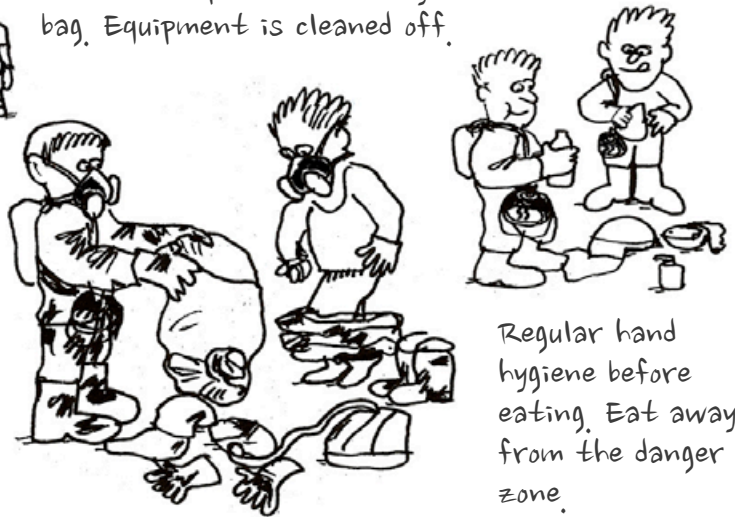


# During



All windows and doors are kept closed.  
Wear suit and mask at all times!

When re-flashes have been handled, the fireman suit can be put in a laundry bag. Equipment is cleaned off.



Regular hand hygiene before eating. Eat away from the danger zone.

# After responding to a fire call

After responding to a fire call, there are several factors which can help minimizing the exposure. It is equally important to be aware of those acts and behaviours, which will reduce the exposure after the fire call. Best practice in this situation is more than anything about the cleaning process, the opportunity to use clean equipment and the actions the crew takes back at the station house.

## **Cleaning**

Cleaning yourself off after a fire call is essential for exposure of carcinogenic agents. On-scene you must change into clean clothing and the filthy fireman suits are put in hot water soluble laundry bags. Immediately after returning to the station house, the filthy fireman suits are cleaned according to the supplier's guidelines.

All individual equipment is cleaned before being put back into the fire engines. Fire hoses and other equipment are

cleaned accordingly, when returning to the station house. All storage of equipment during the transport back to the station house, as well as on-scene will be separated from all clean equipment. You must wear filter masks and gloves when taking off your filthy fireman suit and while cleaning all equipment. Filthy equipment is **not** put next to the crew inside the fire engine cabin, and filthy gear is stored separately from areas and rooms where the crew walks.

## **Additional equipment**

By return to the station house, clean turnout gear and equipment is provided for and used at the next fire call.

## **Operations**

Filtering masks and gloves are used when handling filthy equipment. Furthermore, ensure that filthy fireman suits and similar items are not in contact with clean suits and clean equipment.

# After

Shower!

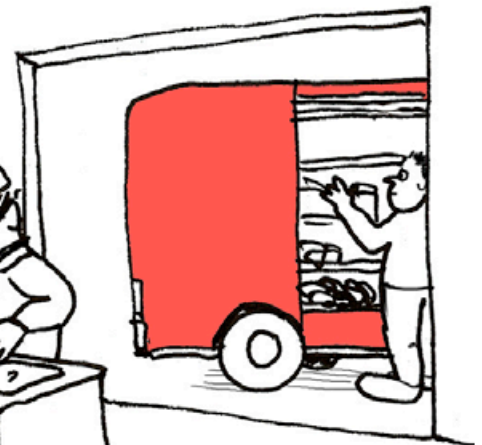


Cage containing suits in laundry bags.

Masks and gloves in the storage room.



Equipment is cleaned off, checked thoroughly and packed.



# Recommendations to having a good preventive behaviour As a workplace

## **Before responding to a fire call**

- Make sure to have the necessary equipment, incl. hot water soluble laundry bags, disposable gloves, wipes, paper towels and filter masks with the appropriate level of protection
- Make the proper cleaning facilities available – both in terms of crew and equipment
- Make sure that the unit talk among themselves about minimizing the exposure to hazardous particles
- Involve all relevant units in minimizing the impact
- Make sure that the work environment organization is working on including the risk of cancer into the specific chemical risk assessments in the workplace, which have clear-cut local guidelines and procedures to prevent cancer

## **During a response to a fire call**

- Be in control of the logistics, e.g. additional purification capacity needs to be available on-scene
- Make sure that you know who is doing what and when at all times
- Make sure to be supportive of the decisions made by the incident commander during the fire call, e.g. crew replacement etc.

## **After responding to a fire call**

- If the fire suits are cleaned by an external company, make sure a proper agreement has been entered concerning the cleaning process
- Make shower and changing facilities available to the crew

# Recommendations to having a good preventive behaviour As management

## **Before responding a fire call**

- Prioritize purchasing the necessary equipment into the budget plan
- Put safety and protection on the agenda for management and staff meetings
- In collaboration with the unit – make sure that clear-cut guidelines and procedures for minimizing exposure at fire calls are present
- Include good preventive behaviour into training and exercises
- In collaboration with the incident commander/fire officer – review the local guidelines and instructions, take prevention of the cancer risk into account

## **During a response to a fire call**

- As incident commander/fire officer – assess the level of risk

- As incident commander/fire officer – make sure that the crew is using the correct equipment and has the correct behaviour during the entire fire call
- As a incident commander/fire officer – make sure that complete respiratory protection gear is used before first contact with smoke and is being used throughout the entire fire call – including handling re-flashes
- As incident commander/fire officer – make sure that all necessary equipment is available
- Make sure that all fire engines are placed at a safe distance away from smoke and particles on-scene
- Acknowledge – as soon as possible – a re-establishment need, e.g. purification capacity

## **After responding to a fire call**

- As fire officer – make sure that the used fire engines and equipment are cleaned and checked for a new fire call

# Recommendations to having a good preventive behaviour

## As a crew

### **Before responding to a fire call**

- Familiarize yourself with the rules and guidelines for fire calls
- Talk among yourselves at the station houses about, how you can protect yourselves and each other at fire calls
- Make sure that new employees know how things are done in your crew
- Talk to management about the scope and equipment that are necessary to fulfil a fire call in a safe and healthy manner
- Make sure your clothing and equipment is clean and ready for a fire call
- Make sure you are mentally and physically ready to be included in the crew

### **During a response a fire call**

- Use protective gear during the fire call – also while handling re-flashes
- Use filter masks and disposable gloves when you dispose of your filthy fire suit into a hot water soluble bag and clean the equipment on scene

- Never get inside your fire engine wearing a filthy fireman suit or equipment
- Make an agreement that it is legit to inform each other in case you forget equipment or procedures
- If your fire suit is filthy, change into clean clothing before leaving the scene
- Make sure you keep a good personal hygiene, such as washing hands and face before you eat on-scene
- Clean yourself off if you take a break – even if it is only a short one

### **After responding to a fire call**

- Make sure to hand over your filthy equipment for cleaning as soon as possible
- Do not wear your filthy turnout gear while sitting in any rooms where people either sleep, eat or stay in general
- Always use gloves and filter masks when you are in contact with filthy equipment – both fire engines, protective gear and clothing
- Take a shower as soon as possible after the fire call
- Clean your equipment before returning to the station house



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# Avoid getting cancer being a firefighter

## Good preventive behaviour

To avoid getting cancer being a firefighter is not just about the Fire Services providing the proper equipment, but it is also about the unit taking part in ensuring the right preventive measures.

Of course the proper equipment is necessary! However, the management and crew need to get behind a culture, where focus is on safety and minimizing impacts during firefighting. The units at the local fire stations must discuss what their positions are on preventive behaviour, how big an influence the actions have before, during and after a fire call. That is the essence of preventive behaviour.

In this pamphlet you can read about how the workplace, management and crew can avoid having a research done in 20 years' time, on why so many firefighters get cancer – namely, by being in control of preventive behaviour.



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