

Free translation for information

Swedish legislation AFS 2007:07 BA operations (smoke and chemical contaminated air)



Swedish Work Environment Authority (AML)

The Work Environment Authority issues Provisions and General Recommendations (AFS) specifying the requirements to be met by the work environment. Provisions can, for example, refer to hazards, mental and physical strain, dangerous substances or machinery. The Government has described the objectives of the Work Environment Authority's Provisions for the work environment as to create healthy, safe and developmental work environments.

AFS 2007:07 BA operations (smoke and chemical contaminated air), issued on 2 October 2007

AML general comments to the Provisions: The main differences in relation to the earlier rules are that there are now precise requirements to conduct risk assessment, detailed requirements have been limited and there are instead more functional requirements and there are reductions of the static demands for organization, in particular for BA operations in chemical contaminated air. AML is also more open to interactive learning, i.e. computer based education and training as an alternative to traditional lectures. Breast feeding mothers get better protection in the new provisions, and no difference is made between pregnant and breast feeding employees. An important part of the regulation contains the General Recommendations, which have expanded considerably in the new regulation.

Objective

1 § The objective of the provisions AFS 2007:07 is to prevent ill health and accidents at work consisting of BA operations in smoke and chemical contaminated air.

Scope

2 § These provisions apply to work consisting of BA operations in smoke and chemical contaminated air.

The provisions also apply, in applicable parts, during education and training of BA operations in smoke and chemical contaminated air.

The provisions however do not apply to interventions which are expected to lead to only moderate physical effort or strain.

Definitions

3 § In these provisions the meaning of the following definitions is:

Breathing apparatus

Personal protective equipment, which protects the breathing organs from exposure to air pollution or lack of oxygen by providing clean air or oxygen from stored gas in a package of bottles, which the user carries on his back

The supervisor of the work

The person who has been given the responsibility by the employer for the work in the accident area in event of an intervention and to made a decision on BA operations in smoke and chemical contaminated air

Base point

A place in the accident area, where the BA operations in smoke and chemical contaminated air will start and the leader of the BA operation has his position during the intervention.

Fire protection clothing

Particular protective clothing, which is used when firefighting

Physical work capability

Medical requirements for physical working capacity in accordance with the provisions for medical checks in working life

Intervention area

Where the fire and rescue service, industrial fire service or some similar organisation will be or can become involved in BA operations in smoke and chemical contaminated air

BA operations in chemical contaminated air

Intervention to save life, stop the discharge of chemicals or similar situations by a responder, dressed in chemical protective clothing and equipped with BA equipment, into an area where air pollution is spreading out of control or an area with lack of oxygen

Chemical protective clothing

Particular protective clothing, which is used by responders in BA operations in chemical contaminated air

Air pollution

A substance or mixture of substances in the air, which can lead to inconvenience or ill-health

BA operations in smoke

Intervention into thick fire smoke to save life or to fight a fire or another similar situation dressed in fire protective clothing and with BA equipment mounted

Leader of a team of BA operators in smoke and chemical contaminated air

The person who has been given the responsibility by the employer to lead an intervention team of BA operators in smoke and chemical contaminated air team and has the necessary training and competence for the task and experience as a BA operator in smoke and chemical contaminated air team

Risk assessment

4 § The employer must make a risk assessment. He must have the necessary knowledge in respect to

1. methods for risk assessment and
2. the risks in the whole area of operational responsibility of the fire and rescue service

The risk assessment shall be conducted in accordance with the prevailing conditions in the whole area of operational responsibility which can lead to an intervention with BA operations in smoke and chemical contaminated air having to be undertaken.

The risk assessment shall be carried out so that the organization, education and training, procedures, tests and equipment can be adapted to the identified risks and possible accident scenarios.

A new risk assessment shall be conducted when there are changes in the work which have an influence on the risks.

5 § The supervisor of the work shall before an intervention starts conduct a risk assessment on the site of the incident or before training to enable the intervention to be planned and organized in such a way that equipment, appropriate protective clothing and other correct personal protective equipment can be chosen.

If the risks are deemed to be considerable in relation to what can be achieved, then other alternatives than BA operations in smoke and chemical contaminated air shall be chosen. BA operations that have already started shall in this situation be interrupted.

The supervisor of the work must ensure that the risks, which BA operations in smoke and chemical contaminated air are subject to, are reasonable in relation to what can be achieved through the intervention.

The supervisor of the work is responsible for establishing a base point.

6 § BA operations in smoke and chemical contaminated air may start at the earliest when a risk assessment has been conducted in accordance with 5 §, the crew is sufficient for the task and a check of the breathing apparatus has been carried out.

BA operations in smoke and chemical contaminated air

7 § In the event of a BA operation in smoke the team shall be manned with at least

- one supervisor of the work
- one leader of a team of BA operators in smoke (8 §)
- two BA operators acting in smoke (9 §)

In the event of a BA operation in chemical contaminated air the team shall be manned with at least

- one supervisor of the work
- one leader of a team of BA operators in chemical contaminated air (8 §)
- two BA operators operators acting in chemical contaminated air (9 §)

8 § Leaders of each team of BA operators in smoke and chemical contaminated air must maintain communication from the base point with those involved in the intervention and provide necessary information and instructions. They must check the time used for the intervention and withdraw the operators when the estimated intervention time is getting close to the end or, if so is needed, for other reasons. They must in an emergency situation be able to make a rescue intervention. BA operators must not be given other tasks during an on-going intervention.

9 § BA operators acting in smoke must work in pairs and the whole time keep in close contact with each other. BA operators acting in chemical contaminated air must normally work in pairs.

10 § When an intervention starts, the pressure in the gas bottles of the breathing apparatus must be as close to the filling pressure as possible.

11 § The BA operators acting in smoke and chemical contaminated air must report to the leaders of each team of BA operators acting in smoke and chemical contaminated air observations on the site of the incident that are important for maintaining personal safety. The intervention must be stopped immediately in the event of danger or if a BA operator feels uncertain, disoriented or unusually tired.

BA operators must ensure that the retreat route is clear and must not proceed further than to a point where they can find their way out again. They must also check that they are in communication with the leader of each team of BA operators in smoke and chemical contaminated air.

BA operators must at regular intervals check the pressure in the bottles of the breathing apparatus. The retreat must start so that they have plenty of time left and at the latest when the spare air valve of the apparatus starts functioning. BA operators must inform each other and the leader of each team of BA operators acting in smoke and chemical contaminated air when the retreat is started.

12 § In the event of a fire or risk for a fire, BA operators acting in smoke and chemical contaminated air shall for their protection have secure access to water for fire extinguishing.

13 § Before a BA operation in chemical contaminated air starts, the supervisor of the work must take measures to get information concerning what chemicals there are or could be on the site of the incident.

Medical examination and test of physical working capacity, etc.

14 § Any BA operators acting in smoke and chemical contaminated air must be in good health and have a good physical working capacity and be able to work calmly and methodically in difficult situations.

15 § The employer shall provide medical examination in accordance with the Provisions of the Work Environment Authority on medical control in working life for employees conducting or going to conduct BA operations in smoke and chemical contaminated air.

16 § An employee, who is pregnant and has informed the employer about this, must not be involved in BA operations in smoke and chemical contaminated air. This prohibition applies also to the breast-feeding period. Violation of this rule can be punished with fines, see 20 §.

Equipment

17 § Breathing protection of the type compressed-air apparatus with a breathing valve and safety pressure in combination with a complete mask must be used in BA operations in smoke and chemical contaminated air. The use of any other breathing apparatus, which provides an equivalent level of protection (100 000 or more), is also allowed. The compressed-air apparatus must be equipped with a manometer for seeing the existing air pressure (remaining amount of air) in the gas bottles.

The breathing air in gas bottles of the compressed-air apparatus must be as free from pollution as possible.

When the approach routes and the time of action are long, an oxygen gas apparatus can be used, if it is considered to provide sufficient protection. The oxygen gas apparatus must have a protection level of 10 000 or more. The equipment must be checked by measuring the in-leakage into the mask of every user.

18 § A personal protection equipment for fire or chemical intervention which is suitable for the task must be used. BA operators in smoke and chemical contaminated air and leaders of a team of BA operators acting in smoke and chemical contaminated air must have access to a functioning communication system. The leader of a team of BA operators acting in smoke and chemical contaminated air must also have an air hose for rescue purposes.

Education and training

19 § Any person who is employed in BA operations in smoke and chemical contaminated air must have received particular theoretical education and practical training which is equivalent to at least the education level specified in Annex 1. The capability must be maintained by participation in at least four exercises each year, whereof at least two under hot conditions. The exercises must be distributed over the year.

The education and training must be adapted to the risks within the intervention responsibility area of the fire and rescue service and to the existing resources in the form of personnel and equipment which are available. Also other activities for which these provisions are applicable must adapt their education and training to the risks and resources. BA operators serving in smoke and chemical contaminated air must be given the opportunity to conduct physical exercise to the extent necessary.

Provisions regarding punishment

20 § The rule in 16 § is regulated in the chapter 4, 6 § the Work Environment Act. Breaking this rule can in accordance with the provisions in chapter 8, 2 § of the Act lead to punishment with fines.

Annex 1 to these Provisions (AFS 2007:07) on BA operations (smoke and chemical contaminated air) contains an education programme for BA operations and specifications on the education and training, examination and additional education regarding the use of the oxygen gas apparatus.

**Extracts from
The General Recommendations (AFS) of the Work
Environment Authority (AML) for the implementation of the
Provisions for BA operations in smoke and chemical
contaminated air**

..... The basic obligations of the employer for conducting work in respect to the working environment can be found in the Provisions of the Work Environment Authority regarding systematic work environment work. According to these provisions, the employer must regularly investigate and assess the working condition risks in the activity. The employer must also take appropriate measures to prevent bad health and accidents in the work.

Support for the obligations to undertake measures to limit the risks for instance within the rescue services can be found in about twenty Provisions issued by AML, for example provisions concerning prevention of serious chemical accidents and work in an explosive environment and these provisions for BA operations. Employers are furthermore obliged to regularly check if the measures have led to the intended effects and if there is a need to take further measures

..... Risks in the working environment

Risks for BA operators in smoke and chemical contaminated air are of many different types and difficult to foresee beforehand. It is therefore of the utmost importance that reporting of working environment accidents and "near-misses" and the investigations of incidents function well enough to make it possible for bad health and accidents to be prevented through a learning process.

The personnel is subject to both physical risks (for instance severe heat, explosions, parts of buildings falling down, sharp edges on different objects and the risk for falling when the visibility is limited or non-existing) and psychological risks due to inter alia extreme influence of stress

..... Comments to particular paragraphs and annexes

..... **To 5 §:** BA operations in smoke and chemical contaminated air are the most dangerous work permitted in Sweden and one of the most requiring tasks in respect to physical efforts. The paragraph should be given the interpretation that BA operations are primarily a life-saving intervention. Indoor intervention with BA operations to extinguish fires should be avoided as far as possible.

Outdoor firefighting should be considered as the primary intervention alternative.

If information is lacking about chemicals that are on the site of an accident (see 13 §), then the risk assessment should be made and its results considered extra carefully before a strategy is decided on and an intervention is started.

The risk assessment, which the supervisor of the work makes on arrival at the site of the accident, is crucial for how the intervention is organized and conducted. If an industrial fire and rescue service is taken into use, then this must be taken into account in the risk assessment. The risk assessment can with advantage be conducted using a stipulated check-list which is well known for all involved. Such a check-list should be based on the risks that have been identified and analyzed and the possible accident scenarios (see 4 § and comments).

Taking into account the stress situation which normally comes up in the course of a rescue intervention, it is an advantage if the work follows established routines as far as possible.

When the risks have been assessed, the supervisor of the work decides how to deal with the situation and distributes the tasks.

There are available methods for fast initial interventions with outdoor fire extinguishing (for example First Response Units). These lead under favourable conditions to the fire being under control at an early stage. Thereby the need for BA operations can be reduced.

In the risk assessment before an intervention, different facts need to be taken into consideration:

- if there is human life to save
- the size and spreading speed of the fire
- the risk for a fire gas explosion
- if information is available at the site of a chemical accident about the chemical
- the physical conditions and type of object and risks at the site
- the size of the rescue force and its components
- available rescue equipment
- what training, experience and competence the team members have
- if ambulance and police are on site or on the way

The risk assessment before an intervention should be documented as soon as possible after the intervention

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