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First aid and crisis support

The Swedish Work Environment Authority´s provisions on first aid and crisis support, and general recommendations for applying the provisions

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The Swedish Work Environment Authority's provisions on first aid and crisis support

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The following provisions are issued by the Swedish Work Environment Authority pursuant to Section 18 of the Work Environment Ordinance (SFS 1977:1166).1)

Scope

Section 1

These provisions apply for all activities covered by the Work Environment Act (SFS 1977:1160). For persons pursuing professional activities either individually or together with a family member, only the provisions in Sections 8-10 apply.

Definitions

Section 2

For the purposes of these provisions, "first aid" refers to

1. such measures as must be applied immediately and at the scene in the event of an accident or acute illness, in order to restore and maintain vital bodily functions or prevent further development of an injury,

2. such measures in the form of eye flushing and emergency showering as must be applied in order to prevent further injury following splashing, dousing or similar, and

1) Cf. Council Directives 89/391/EEC (OJ L 183, 29.6.89, p. 1) and 89/654/EEC (OJ L 393, 30.12.89. p. 1)

3. such measures as need to be applied as quickly as possible in order to get the injured or ill person into medical care.

Section3

For the purposes of these provisions, "crisis support" refers to the psychological and social care which needs to be administered in connection with accidents, acute crisis situations and similar serious events which may trigger crisis reactions.

Risk assessment

Section 4

First aid and crisis support are to be planned, organized and followed up on the basis of an assessment of the risks of ill health and accidents in the work environment.

Preparedness for first aid and crisis support

Section 5

All workplaces must possess the preparedness and routines for first aid and crisis support needed for the specific nature, extent and risks of the activities carried out there. In planning, contacts must be made with the relevant local authorities as necessary.

It must be guaranteed that workers know how first aid and crisis support are organized in the workplace. They must be kept familiar, on a continuous basis, with the routines that apply.

Notices with the following information must be placed in suitable locations

- where first aid equipment is kept,
- which individuals are trained to administer first aid,
- telephone numbers to emergency services and taxis, and
- the address and directions, if necessary, for how to get to the workplace. The notice must be designed in such a way as to be easily recognizable.

First aid knowledge

Section 6
Based on the nature and extent of the activities carried out there, and the specific associated risks, a sufficient number of individuals **trained** to administer first aid must be available in the workplace. Measures must be applied to keep knowledge of and abilities in first aid up to date.

Crisis support knowledge

Section 7
Managers and managerial staff must have sufficient knowledge about crisis support to be able to plan and organize it in a suitable way.

Equipment for first aid

Section 8
All workplaces must have sufficient equipment for first aid. This equipment must be appropriate to the risks associated with the activity. The equipment must be indicated by signs and be easily accessible.

To the extent that the size of the premises, the nature of the activities and the specific associated risks warrant it, there must be one or more first aid rooms. These must be indicated by signs.

Section 9
Where there is a risk that substances which could cause eye injuries could splash or otherwise get into employees' eyes, and where immediate eye flushing is necessary in order to avoid injury, a device for such flushing must be placed in the immediate vicinity of the workstation. Access to the device must not be blocked. The device must be easy to activate and use.

The device for eye flushing must allow for a sufficiently effective and lasting flush such that eye injury or further development of an injury is prevented. Where substances are used which require at least 15 minutes of flushing time, the flushing fluid must be held at room temperature. The installation of a fixed device for eye flushing, connected to the drinking water supply and with temperate water, should always be considered. If necessary, this must be complemented with a portable, disposable device.

Employees must be informed about how to use the device for eye flushing.

The flushing fluid must be of good quality. The spray nozzle and its function must be regularly inspected. Such inspections must be documented **at** least once every six months. Routines must be in place for the replacement of eye flushing bottles before their expiry date.

Section 10
Where there is a risk of dousing with a substance which could damage the skin or be easily absorbed by it, and where there is a risk of burning injury, an emergency shower must be located in close proximity to the workstation. Access to the emergency shower must not be blocked.

The emergency shower must be easy to activate both from a standing and a crawling position, and must provide sufficient water to prevent injury or the further development of an injury. The water must be of good quality.

Where corrosive substances are handled, the installation of a tempered water supply to the emergency shower should be considered.

Workers must be informed about how to use the emergency shower. The function of the emergency shower must be regularly inspected. Such inspections must be documented at least once every six months.

Entry into force

These provisions enter into force on 1 July 2000.

The Swedish Work Environment Authority's promulgation of provisions on first aid in case of accidents and acute illness (AFS 1984:14) and the Swedish Work Environment Authority's general recommendations on eye flushing (AFS 1986:25) are repealed as of the same date.

KENTH PETTERSSON

Leif Aringer Göran Lindh

The Swedish Work Environment Authority's general recommendations on the application of the provisions on first aid and crisis support

The following general recommendations are issued by the Swedish Work Environment Authority on the application of its provisions (AFS 1999:7) on first aid and crisis support.

General recommendations have a different legal status from provisions. They are not mandatory, instead their function is to clarify the import of the provisions (e.g. by explaining suitable ways of fulfilling the requirements or by giving examples of practical solutions and procedures) and to provide recommendations, background information and references.

Background

The basic premise of work environment management is to prevent employees' exposure to ill health and accidents. Among the employer's tasks in the internal control of the work environment is the identification and assessment of risks and the application of measures to remove or reduce them. Regulations on internal control are included in the Work Environment Authority's provisions on the internal control of the work environment. Work environment management embraces preventive measures above all, but also measures to reduce the consequences of an accident, acute illness or some other serious incident. Even if measures are applied to prevent accidents or other serious incidents from happening, it is not always possible to avoid all negative effects. It is therefore important to have a working action plan for immediate care and for getting casualties into suitable treatment as soon as possible.

There is a need for theoretical and practical knowledge of life support measures such as ensuring unobstructed airways, stopping severe bleeding, preventing circulation failure and providing cardiopulmonary resuscitation. Training and regular practical exercises in such measures are an important element of planning preparedness for emergency first aid for accidents or other serious incidents.

It is important that workplaces possess preparedness not just for administering emergency first aid when accidents or illness occur, but also to meet the need for psychological and social care that arises when employees become the victims of acute crises, accidents or other serious incidents. This

can help reduce personal suffering and prevent illness absence as well as the associated production decline.

Occupational health care is a resource which can be called upon for risk assessments, training and planning of measures for first aid and crisis support. It will usually be able to offer concrete help and, when necessary, professional assistance in crisis support as well as other areas. In a school context, school health care services may also be called upon.

Under the Work Environment Act, personal protective equipment must be used if satisfactory protection against ill health or accidents cannot be achieved by other means. Protective goggles or visors are an inexpensive and effective form of protection against eye injury. Contact lenses are not an equivalent form of protection; instead these may increase the risk of eye injury. If there is a risk of dousing with a corrosive or hot substance, it is important to wear protective clothing that covers the whole body. Even small splashes of a corrosive or hot substance, which you may not feel, can cause skin injury. In this context, boiling water and steam are also regarded as dangerous.

If an accident occurs despite protective measures, immediate eye flushing can save a person's eyesight in many cases. Quickly washing off a corrosive or hot substance from a person's skin can limit the extent of the injury. Remember that improving the injured person's chances may be a matter of seconds.

The provisions are aimed primarily at guaranteeing that the need for first aid and crisis support is analyzed and that necessary measures are planned and applied.

Guidance on individual sections

Guidance on Section 3 Definitions

A crisis is usually defined as an incident in which a person's earlier experiences and conditioned reactions are insufficient to enable them to understand and mentally handle the incident in question.

Crisis reactions are triggered by incidents which are so unusual and unexpected that they cannot be overcome with the resources an individual typically possesses to deal with difficult situations. One of the characteristics of a crisis is that it is a situation in which there is the threat of a loss of some

kind to the individual. For example, it might be the loss of a family member or a colleague, the loss of work, identity, social position, financial security, reputation, self-esteem or self-image. Examples of circumstances which may trigger crisis reactions are provided in *Appendix 1*.

Guidance on Section 4 Risk assessment

It is important to conduct a thorough inventory of any health and accident risks in the workplace, and of the need for first aid and crisis support which may arise as a result of these risks. For schools, accident risks during pupils' breaks in the school yard are also included. As a basis for risk assessments, occupational injury statistics can be used, as well as other information about accidents or incidents which have previously occurred in the activity field or in similar activity fields.

All activities in which there is a risk that substances which can cause eye injury could splash or otherwise get into employees' eyes, or where there is a risk of dousing with a substance that could damage or be absorbed by the skin, it is important for the employer to plan and apply preventive measures.

Fundamental measures should include making an inventory of which substances are handled and what risks they pose for the eyes or the skin as well as in case of inhalation in gaseous form. Suppliers of dangerous substances normally provide information about the product's health and safety characteristics in a product information leaflet. This leaflet will also contain information about first aid measures.

The existence among employees of diseases which may give rise to emergency, life-threatening conditions, such as diabetes, epilepsy and allergy, may need to be taken into account in planning first aid measures. The geographical location of the workplace may affect first aid needs and should also be included in the risk assessment.

If work is carried out by a single individual, it is important to take this into account when organizing first aid. Special rules apply for this type of work, as described in the Swedish Work Environment Authority's provisions on solitary work.

The organizing of preparedness and routines for first aid and crisis support in the workplace can be seen as a natural part of the employer's internal control of the work environment.

In the wider community there are established organizations offering assistance in the event of a disaster or major accident. The National Board of Health and Welfare's general recommendations on psychological and social care following major accidents and disasters (1991:2) describe the organization and resources for caring for casualties. Most emergency hospitals have a special psychological/psychiatric disaster management group (abbreviated PKL group in Swedish) or equivalent. Every municipality should further have an emergency preparedness group for psychological and social care (abbreviated POSOM group) to manage the needs of individual casualties or groups following serious crises, accidents or disasters.

Guidance on Section 5 Preparedness for first aid and crisis support

A decisive factor for the ability to give satisfactory assistance in the event of accidents, acute illness or similar serious incidents is to be prepared for and have knowledge of emergency measures. Emergency actions, both physical and psychological, are very important in preventing further injury. They also improve the outlook for recovery and reduce the risk of future ill health.

Routines for first aid and crisis support

Being prepared for care and treatment means, among other things, that there are routines in place for these tasks. Who does what when something happens? This can be naturally tied in with the division of responsibilities which is meant to take place as part of the internal control of the work environment. It is important to have an organization that guarantees continuous quality and adaptation to changed conditions. Operational changes, e.g. transitions to new machinery and chemicals, may mean that new risks arise. Examples of what routines for dealing with accidents and crisis situations can include are given in Appendix 2.

The requirements for preparedness and knowledge can be met in collaboration with other companies, e.g. joint preparedness within a shopping galleria or an office complex. This may be advantageous particularly for smaller businesses.

The employee's familiarity with routines and planning

It is important that employees know how first aid and crisis support are organized and set up, and that their knowledge is kept up to date. Recurrent information updates are necessary, as well as possible practical training or drills of the routines. It is important that schools and other education centres also inform the students of how first aid and crisis support are organized. In this context temporary staff must not be forgotten either.

It is helpful if the information placard about how first aid is organized in the workplace is easily recognizable as such by visitors as well. The placard should therefore have a green background colour or frame, and should have a clearly visible first aid symbol. The placard may need to be complemented with a map of the entire workplace with the location of the workstation in question marked.

It is a good idea to have a sign next to telephones describing how emergency services can be contacted, along with an instruction along the following lines:

When you contact the emergency service, remember to state the following:

1. Your name
2. Where you are phoning from
3. The type of accident
4. The number of injured people
5. The type of injury or condition

Contacts with the appropriate services, e.g. emergency medical care or rescue and social services, can facilitate care and treatment of the injured as well as rescue and cleanup efforts after an accident. When planning and organizing care and treatment after serious incidents, resources to turn to include occupational health care services, the local health care and medical services, and affected rescue services.

In order to be able to reach the family of an injured employee it is a good idea to keep a list of daytime telephone numbers to employees' next of kin.

In this context it is worth recalling that Section 2 of the Work Environment Ordinance stipulates that the employer shall inform the Work Environment Inspectorate without delay of any accident or other work-related incident which has caused death or serious bodily injury or has affected several employees at the same time. The same applies to incidents which have involved serious threats to life or health. Additionally, the Ordinance on Work Injury Insurance and Public Personal Injury Protection (SFS 1977:284)

stipulates that the employer always report work injuries to the social insurance office.

Guidance on Section 6 First aid knowledge

How many needs to be trained in first aid?

In assessing how many people need to have knowledge of first aid, it is a good idea to look at the local circumstances in terms of such things as occurring risks, the size of the workplace, shifts if any, the spread of the workforce, temporary and mobile workstations, and the distance to medical care resources. The longer it takes for an ambulance to get to the workplace, the greater the need for good first aid preparedness. Particularly in cases of obstructed airways with hindered breathing, heart failure or severe bleeding it is important to begin first aid measures immediately. The casualty's condition may become critical within minutes, and the risk of permanent brain damage increases quickly. Planning should therefore be aimed at ensuring that a knowledgeable person is on the scene as soon as possible.

It is also important to consider staff turnover and the need for recurrent training. Training should be adapted to the activities of the workplace. Training needs may vary for different occupational categories in the same workplace. In small workplaces with few employees but high work injury risks, it may be necessary to give everyone first aid training. It is important that school pupils are also familiar with first aid routines.

What knowledge is needed?

Training and practical drills in S(R)-ABC[2]) should always be included.

S. If the casualty is in a dangerous environment, he or she should be moved to a safer place where those helping him or her do not themselves risk injury. This applies on roads with traffic and for gas leakage accidents, for example. When the risk of injury in a dangerous work environment is elevated, all employees should be informed of the importance of getting the casualty to a safe location.

2) S=Safety, (R=Response,) A=Airway, B=Breathing, C=Circulation

ABC. This involves both the ability to assess the need for first aid and the ability to administer it in order to
– ensure a clear airway,
– check for normal breathing,
– check pulse
– relieve anxiety.

Training in cardiopulmonary resuscitation (CPR) should also be included.

It may further be necessary to know how to assess the need for first aid in cases of
– acute illness,
– skull fractures,
– neck, back and other skeletal injuries,
– burn injuries and accidents involving chemicals,
– eye injuries,
– overheating and cold (exposure) injuries, and
– taking care of children.

When there is a risk of the occurrence of an asphyxiating atmosphere, knowledge of how to use oxygen may also be necessary. However, the use of oxygen for treatment purposes requires delegation by a doctor.

It is important that knowledge is kept up to date. Practical repetition and drilling need to be a recurrent feature.

Information about first aid measures can also be provided by means of placards or similar in workstations where the risk of accidents is particularly high. However, these signs should only serve as reminders of previously acquired knowledge.

Guidance on Section 7 Crisis support knowledge

Knowledge about planning and organizing crisis support within an operational activity implies the existence of an understanding of the need for crisis support and the ability to organize preparedness for crisis support in connection with serious incidents. The degree to which knowledge about the practical application of crisis support is provided for will depend on the nature of the operational activity, its extent and the particular risks associated with it. In planning and organizing preparedness as well as in the

application of crisis support, the occupational health service is a resource which should be used.

A natural way to provide for the competence needs in this area is to include and promote an understanding of the need and value of crisis support in staff development programmers, particularly in management and leadership training. Section 13 of the provisions on internal control of the workplace states that employers are obliged to ensure that managers and management staff possess the special knowledge required in order to meet the work environment standards.

On crisis support and measures in the workplace

In the acute phase, psychological and social care and treatment mean creating security and giving care. The casualty is protected from further threats and is given humane care. When security has been guaranteed, the casualty is given the opportunity to talk about his or her experiences and begin a reconstruction of the event. In connection with a serious incident in the workplace, counseling known as "relief dialogues" can be decisive for recuperation and for normalizing the situation. It is important for the casualty that he or she can share the experience with others, e.g. co-workers. Good treatment and care during the acute phase are instrumental in reducing stress reactions and preventing future illness. Good preparedness also builds trust and security for and among the individuals in the organization.

Information in crisis situations

Clear and factual information is very important in the event of a serious incident. Tendencies for people to spread rumors and distort reality increase in situations of extreme stress. It is a human inclination to turn to the imagination in order to fill in the gaps in one's knowledge. It is therefore important for information about serious incidents to be provided continuously, even when the actual information value may appear low. Information should be provided to all affected staff. Even those who are absent from work for various reasons should be informed of what has happened. Assembling employees immediately following an accident or similar serious incident and informing them about it gives everyone the opportunity to fill in the gaps with facts. It also provides an opportunity to inform them about common stress reactions. Not least, assembling all staff also gives them a chance to talk about the incident and share their thoughts about it.

This in turn creates the conditions for establishing a common view of what happened, which contributes to stabilizing the situation.

Adapting working conditions

For staff that has experienced severely stressful events, it may be necessary temporarily to alter work routines such as tasks or hours. During a transitional phase it may be necessary to relieve their workload or release them from tasks which require fast or far-reaching decisions. It is crucial, however, that such alterations be carried out in close consultation with those they will affect and that the aim of any alterations be a temporary adjustment of routines to an individual's ability. It should be emphasized in this context that following serious incidents, e.g. violence and threats, it is often of therapeutic value to remain in or promptly return to work – which should nevertheless be adapted to the circumstances. The Swedish Work Environment Authority's provisions on work adaptation and rehabilitation contain rules for how adaptation and rehabilitation activities are to be carried out. Rules for what applies in connection with situations of violence or threats can be found in the Work Authority's provisions on measures against violence and threats in the work environment.

Guidance on Section 8 Equipment for first aid

Examples of equipment which may be needed in connection with first aid include bandaging materials, blankets, fire-fighting equipment, stretchers, protective gloves against contaminated blood, etc. Emergency showers and devices for eye flushing are also in this category.

A large variety of equipment is available. However, equipment needs for first aid are usually relatively limited, and can be adapted to local risks and to the availability of prompt and adequate medical assistance. For mobile work, equipment can be stored in the vehicle used or in a special belt bag, for example. Accident preparedness in extremes of climate (e.g. outdoors in the winter) should take the climate into account in the selection of equipment.

It is important that equipment is stored accessibly but securely. It is a good idea to appoint someone to be in charge of renewing and supplementing the equipment as needed.

Equipment for minor injuries which the casualty can administer him or herself, such as plasters, should be kept easily accessible and separate from other bandaging materials intended to stop severe bleeding, etc.

Section 8, Chapter 2 of the Work Environment Act lays down the requirements for first aid in the event of an accident or illness, to the extent warranted by the nature of the work and the needs of the employee. It is important to consider the need to be able to get and in and out of the work location with a stretcher, that there is a telephone or other means of communication, and that the need for first aid equipment is met in the work location in question. The Work Environment Authority's provisions on staff facilities contain rules about rest facilities and staff cubicles. If such spaces are intended to be used for first aid tasks, it is important that the needs mentioned above are met.

Regulations regarding the design of signs can be found in the Work Environment Authority's provisions on warning signs and notices in the workplace.

Guidance on Section 9 Eye flushing

Substances and products that can cause eye injury

Chemical products introduced in the market must have a health and safety classification in accordance with criteria specified in the Swedish Chemicals Agency's regulations on the classification and labeling of chemical products. The risk phrases must be clear from the labeling and from the product information leaflet. All corrosive substances can cause serious eye injury if they splash in the eyes. If there is any uncertainty about whether a substance or product can cause eye injury, the advice of a suitable expert should be sought for the risk assessment. Appendix 3 lists examples of substances that can cause eye injury.

Measures in the event of an accident

In order for eye flushing to have a maximum effect, three conditions apply in particular:

- Flushing must begin immediately. It is the only way to prevent or limit serious injury, and it may be a matter of seconds.
- Flushing must continue for a long time.
- The eyelids must be kept wide open during flushing.

Contact lenses should be taken out and rinsed before carrying out eye flushing as they can prevent effective flushing and could therefore make a possible eye injury worse.

If a corrosive substance splashes in the eyes

Flush immediately with a soft jet of water or eye flushing fluid for at least 15 minutes. Keep the eyelids wide open during flushing so that nothing gets stuck underneath them. After the initial flushing, the casualty should be transported to a hospital or a doctor. For alkaline splashes the eye flushing should continue during transportation. This is particularly important if the nearest hospital is located far away. If that is the case, make sure there are enough bottles of eye flushing fluid to last all the way to the hospital. However, the fact of continuing flushing is far more important than the quantity of liquid used in prolonged flushing.

If an irritant substance splashes in the eyes

Flush immediately with a soft yet of water or eye flushing fluid for at least 5 minutes. If complaints (intense smarting, pain, sensitivity to light, vision disturbances) persist, continue flushing and contact or visit a hospital or doctor.

If a foreign particle gets stuck in the eye

Flush the eye with a soft jet of water from a flushing device, a clean drinking glass, or something similar, until the particle is gone. If the foreign particle cannot be flushed out, a doctor should examine the eye.

Eye flushing device

Location

It is of the utmost importance that the eye flushing device is kept in the immediate vicinity of the workstation. Ideally it should be possible to get to the device and begin flushing within a few seconds. It is therefore important that the route to the flushing device is not blocked. The device should be so placed that the casualty, without looking and without help, can make their own way to it quickly.

In workstations where it is difficult to have a device which allows for sufficient flushing time placed in the immediate vicinity, bottles of eye flushing fluid can be used instead. On construction sites and in agriculture, for instance, one alternative is for employees to keep eye flushing bottles in their pockets. These can then be used until they get to a proper eye flushing device which allows for prolonged flushing times.

Choice of eye flushing device

There are a number of different eye flushing devices in the market, including everything from fixed showers connected to the drinking water supply and portable, disposable showers with a sterile salt solution to disposable eye flushing bottles.

Irrespective of which device you choose, it is important that it fulfils certain functional requirements, such as

a) being easy to activate,

b) preferably leaving your hands free to keep eyelids wide open,

c) providing effective flushing for an adequate length of time d) in extended flushing, providing tempered fluid.

a) It is important that the flushing device be easy to operate even by an injured or dazed person, since flushing must begin immediately.

b) It is a good idea if the device is designed in such a way that flushing continues automatically once activated. That way the user's hands are free to keep the eyelids wide open. In order for the flushing fluid to reach the injured eye, both hands normally have to be available to keep the eyelids wide open since the pain typically causes cramps in the muscles surrounding the eye. Sometimes help is needed from a co-worker. In the case of solitary workers it may therefore be necessary for an automatic alarm to be triggered once flushing begins. The eyelids may become slippery (soapy) from alkali and therefore difficult to hold open with the fingers. A piece of tissue or cloth makes this easier.

c) A fixed connection to the drinking water supply is often the best choice, above all because it allows for long flushing times with a continuous flow. Another advantage is that both eyes can be flushed at the same time.

Flushing should always be done with a soft jet of water so that the eye is not harmed. Pressure reduction may be necessary. The jet of water should not exceed 250mm. In industries etc. where water pressure fluctuates considerably during the day, regulation of both pressure and flow may be needed in order to avoid too hard a jet of water.

d) Where extended flushing times are necessary in order to avoid injury, as is the case with splashing of substances corrosive to the eyes, it is important that flushing can be done with tempered water. If only cold water is available, it may be difficult to endure a sufficiently long flushing time. The water temperature should be between 20 and 30°C. A failsafe blending system is required in order to avoid overheating due to pressure drops or lack of cold water. Since bacteria including Pseudomonas and Legionella easily grow in stagnant warm water, it is particularly important for fixed devices for tempered water to be flushed through every day. The circulation of warm water and using short pipes reduce the risk of bacterial growth.

A fixed device for eye flushing, connected to the drinking water supply and providing tempered water, or an equivalent device, should always be the first choice. When dealing with substances corrosive to the eyes it is extremely important to have such a device, as prolonged flushing with tempered water is required to prevent eye injury. If for various reasons a fixed eye flushing device cannot be chosen, eye flushing bottles and other portable devices have to be used in place of a fixed flushing device.

The Work Environment Authority's provisions on laboratory work with chemicals lay down a requirement for a permanently connected device for eye flushing with tempered water.

Since there is usually a risk of splashing in both eyes at the same time, and in the face as well, it is a good idea if the device has two flushing heads, or a shower head that covers both eyes as well as the face.

As a complement to fixed flushing devices, portable devices kept in the immediate vicinity of each workstation with a splashing risk may be used. Such devices should be of the disposable type, possibly rechargeable, and with a sterile salt solution as a flushing fluid. They should provide a constant flow of flushing fluid for between 5 and 15 minutes.

Disposable bottles with sterile contents can also be used during transportation to hospital.

Flushing devices for repeated use and with a reservoir of standing fluid are normally unsuitable, due in particular to the danger of bacterial and algal growth. Irrespective of which flushing device is chosen, it is important always to ensure that the flushing fluid is of a quality such that it cannot in itself cause or worsen injury.

It is important to choose a flushing device made of materials that can withstand the environment in which it is to be used. This is particularly the case with corrosive environments. Outdoor workstations may require flushing devices that are frost resistant.

The flushing device should be suitably indicated by a sign in accordance with the Work Environment Authority's provisions on warning signs and notices in the workplace. If bottles for eye flushing are used, these should be kept in a specific place in the workstation, preferably hung on the wall.

It is important that flushing devices be inspected regularly so that they work when they are needed. It is recommended that a fixed device for eye flushing be flushed through at the beginning of every working day.

It is a good idea if there are workplace routines for who is to inspect the devices and when. Written documentation of inspections should be kept available to employees and the Work Environment Inspectorate. The simplest way of doing this is to have a document posted next to the device on which the inspector writes the date and his or her name after each inspection.

Eye flushing bottles normally have a limited shelf life. It should be ensured that the bottles are changed before they reach the end of their shelf life. It follows that routines need to be in place and someone needs to be responsible for this kind of inspection and change.

Guidance on Section 10 Emergency showers

Certain substances can penetrate the skin and cause poisoning. Corrosive substances on the skin can cause corrosion injuries, which are visually very similar to burns. Their damaging effects can continue even after exposure has ended, because chemical reactions continue between chemicals and biological matter in human tissue. Otherwise harmless substances such as metals, water and fat can cause burns from splashing in the heated state. Skin symptoms are reddening, blistering and later, in serious cases, necrosis

(dead tissue). Examples of substances that cause skin injuries in the event of splashing or dousing are given in Appendix 3.

When treating a person who has been splashed or doused by a corrosive substance, it is important that those administering first aid are themselves protected against exposure.

The emergency shower should located in a place that makes it easily accessible, e.g. by an emergency exit route. It may sometimes be necessary to consider fire and gas risks when choosing the location. It may be necessary to have several emergency showers in a workstation, depending on the number of affected people and the size of the premises.

In order for a person to be able to activate an emergency shower from a crawling position and possibly without the ability to grip anything, the shower could e.g. be operated by means of chains, one of which would reach all the way down to the floor. By attaching this chain to the wall, the shower could be operated without a gripping movement. Alternatively the shower could be operated by means of pressure plates placed at the appropriate height on the wall or the floor.

The purpose of an emergency shower is quickly to extinguish burning clothes or remove a dangerous substance from the body. The shower head and water volume should be large enough for the entire body to be covered in a large amount of water within a few seconds. Alternatively the shower can consist of a stand with several shower heads that cover the entire body in water. Many companies sell showers that can be assembled to the client's specifications.

Extended showering times are often required in order to prevent further injury and to alleviate pain. If the emergency shower is to be used for both emergency washing off and subsequent showering it should have a drain underneath, since 30 minutes' showering with a flow of 200 l/min produces a lot of water.

It is easier to endure extended showering if the water is tempered. The National Board of Health and Welfare recommends that showering be done with tempered water (30-37° C) when the injured person has been exposed to substances which are corrosive to the skin or whose absorption by the skin can cause poisoning (National Board of Health and Welfare report 1998:3 Chemical accidents and disasters. Medical care and treatment). A shower with tempered

water requires a failsafe blending system. Instead of continuing to use the emergency shower after the dangerous substance has been washed off or the burning clothes extinguished, the injured person can be moved to a normal hygiene shower where showering can continue with tempered water until medical care staff arrive. It is important to remove contaminated clothing so that showering becomes effective. In order to remove certain fat-soluble substances, the injured person may in some cases need to be washed with soap and water.

It is of course very important that the emergency shower can withstand and work in the environment where it is located, e.g. a corrosive or cold environment.

"Good quality water" means normal drinking water. It is inappropriate, for example, to connect the shower to industrial quality water. However, in an emergency situation without access to clean water it is usually better to use "unclean" water than no water at all.

When there is only a risk of minor splashing, access to a sink may be sufficient. A handheld shower may additionally be connected to the tap. Where there is no access to water, a tanker lorry or similar and a hose can serve as an emergency shower facility.

Where emergency showers are required there is usually also a requirement for access to an eye flushing device. Combination shower sets are available.

It is important that the location of the emergency shower is marked with a sign in accordance with the Work Environment Authority's provisions on warning signs and notices in the workplace.

It is important that emergency showers are inspected regularly to ensure that they work when needed. For this reason, showers should be operated at least once a month, particularly if they are located in a corrosive environment and provide tempered water. If the shower is connected to a tempered water supply it is extra important to run it frequently in order to prevent bacterial growth.

It is a good idea to have routines in place that specify who does the inspecting and when. Written documentation of the inspections should be kept accessible to employees and to the Work Environment Inspectorate. The simplest way to do this is to have a document posted next to the shower on which the inspector signs his or her name and writes the date.

Appendix 1

Examples of situations which can trigger crisis reactions

* Work-related accidents and serious incidents

In work-related accidents it is not just the casualty who may be in need of crisis assistance. It is important that co-workers in the immediate vicinity and other employees with a relationship to the casualty are also given access to support and assistance.

* Violence and threats of violence

Being subjected to physical violence and injury to one's own body is in most cases a traumatic experience. A threat may be equally traumatic, particularly if it is to one's life, e.g. with the use of a weapon.

* The death or serious illness of co-workers

The loss of a co-worker in an accident or to illness can cause severe psychological stress among the other employees and lead to crisis reactions.

* Accidents and disasters in and outside the workplace

Even if emergency care and treatment following disasters or major accidents is organized and carried out by the community (see e.g. General recommendations from the National Board of Health and Welfare 1991:2, revised in 1996), it should be supplemented by actions in the workplace to care for casualties.

* Occupationally specific sudden and/or extreme stress

There are occupations in which the work in itself amounts to severe psychological stress because the employee is charged with taking care of seriously ill people, in particular if they are children, and people who have been injured or killed. Helping people in distress and taking care of the families of injured or afflicted people are all working conditions which are psychologically stressful.

Occupational categories with this kind of work include medical care, rescue and police personnel. Work of this nature also occurs among the clergy and employees in the social services. For these groups there is usually a certain level of preparedness as well as ways of dealing with the stress, e.g. support and counseling. Despite this, extreme stress situations can trigger crisis reactions even among staff with knowledge and experience in this area.

*Other workplace conditions which can amount to severe psychological stress

Without being attributable to an emergency situation or a specific event, the reactions of someone who has been seriously victimized may be similar in character to the reactions that follow on an acute crisis situation. This can also apply to difficult work conflicts. The Work Environment Authority's provisions on measures against victimization at work describe the employer's obligation to have routines in place for providing quick help and support to employees subjected to victimization.

Changes in work and to working conditions often cause stress. Constant changes and changes which are perceived as major intrusions into an employee's life can trigger crisis reactions.

The loss of a job can be a major upheaval in a person's life, and it is not unusual for layoffs and dismissals to trigger crisis reactions. Studies suggest that some people can react to a layoff with the same severity as they would to the death of a close family member.

Examples of what routines for dealing with accidents and acute crisis situations can include

For the purpose of being able to provide good treatment and care and to minimize acute and future ill health, it is important that planning and clear routines are in place for what should be done and by whom. They should include details about the distribution of tasks and about how each person should act in the event of a crisis. This might include

- taking care of the injured or afflicted person,
- calling an ambulance and the police,
- administering first aid,
- accompanying the person to hospital or to their home,
- taking care of those who have witnessed or been close to the incident,

– contacting family members,
– informing co-workers,
– making decisions about "special actions",
– assembling employees and
– taking care of any media contacts that might be necessary.

It is important that everyone in the organization knows who is doing what and what is expected of each employee.

The routines should also cover the agreement made regarding what is described above as "special actions", i.e. help actions by occupational health care or other organizations when more specialized competence is required, e.g. for psychological debriefing (a method used by professional leaders with the aim of reducing stress and alleviating shock following serious incidents). Such agreements should include the statement that the help actions are begun without discussions about whether they are necessary or "one can manage on one's own". In an emergency situation it is generally difficult to make assessments of that kind, and it is important that there are unambiguous routines for how actions are initiated.

Routines for the treatment and care of people in a crisis should also include measures for following up and drawing attention to any psychological symptoms in the afflicted person which are attributable to the event.

Eye and skin injuries

Corrosive substances

Corrosive substances and preparations are ones that can destroy living tissue if they come into contact with the skin or eyes. They typically include alkalis with a pH above 11.5 and acids with a pH below 2. Other characteristics of substances and preparations can also cause serious injury comparable to corrosion injury. Such characteristics are present in certain oxidizing substances (e.g. certain chromates, peroxides), tissue-fixative substances (e.g. phenol, formaldehyde), alkylating substances (e.g. certain cytostatics) and substances that reduce surface tension (e.g. quaternary ammonium compounds). This group also includes hydrofluoric acid and long chain amines, also known as fatty amines.

The corrosive characteristics of a substance are often determined by its concentration, but the level at which the risk of injury arises varies between different substances. Thus hydrochloric acid is corrosive in concentrations above 30% while sodium hydroxide is corrosive already in a 2% solution. Always read the product information leaflet to find out if a substance is corrosive to the eyes or skin.

The classification of hazardous substances and preparations

- R 35 Corrosive, causes severe burns
- R 34 Corrosive, causes burns
- R 41 Risk of serious damage to eyes
- R 38 Irritant to skin
- R 36 Irritant to eyes
- R 37 Irritant to respiratory system
- R 313 Dehydrating to skin

Substances with hazard classifications R 35, 34 and 41 require long flushing times if splashing in the eyes or dousing has occurred.

Examples of substances that can cause eye injuries

Acids

Acids can cause severe scorching with a risk of corrosion damage followed by scarring and impaired eyesight. Acids affect the proteins of the cornea, which coagulate. This coagulum may serve as a protective barrier, delaying deeper injury, but often causes an impairment of eyesight. However, certain organic acids such as formic acid do penetrate deeply. It is therefore important that any acid is immediately flushed out of the eyes.

Examples of corrosive acids: Hydrochloric acid, sulphuric acid, nitric acid, phosphoric acid, sulphamic acid, acetic acid, lactic acid, trichloroacetic acid, hydrofluoric acid, chromic acid, formic acid and oxalic acid.

Alkaline substances

Alkaline substances (bases) can cause corrosion damage with a risk of perforation followed by loss of eyesight. Alkaline substances quickly bind to the eye's mucous membrane, where they have the ability to split fats and proteins and can therefore continue to damage the eye even after the sub-

stance on the surface of the eye has been flushed away. It is therefore extremely important that flushing begin immediately after splashing in the eyes has occurred (it is a question of seconds!) and that it be continued for a long period of time. A person who has had an alkali splash in their eyes must promptly – following flushing – be taken to hospital or a doctor for further treatment and examination.

Cement dust may be irritant or corrosive to the eyes depending on its pH. Cement which is alkaline in its powder or mixture form can cause the same eye injuries as other alkalis if it gets into the eyes. The same routine as for alkali splashes in the eyes applies, but it is extra important to flush underneath the eyelids so that no particles remain there. It is therefore important to use eye protection when doing bricklaying, plastering or masonry work involving cement.

Examples of corrosive alkaline substances: potassium hydroxide (lye). sodium hydroxide (lye, caustic soda), calcium oxide (quicklime), calcium hydroxide (slaked lime), hypochlorite, ammonia, cement and mortar.

Some substances which are not alkaline nevertheless cause similar damage if they get into the eyes. For example, long chain amines, also known as fatty amines, behave in the same way as alkalis if splashed in the eyes or on the skin. They are therefore treated as if they were alkalis when such splashing occurs.

Example of substances treated like alkalis in the event of splashing: certain peroxides and low molecular phosphates, amines, metasilicates, zinc chloride, hydrofluoric acid, phenol (carbolic acid), chrome trioxide and cresols.

Irritant substances

Examples of substances that can irritate the eye: organic solvents, tensides, detergents and certain vegetable saps (e.g. from Euphorbia species). The product information leaflet must specify if a substance is irritating to the eyes.

Mechanical injuries

Mechanical injuries can occur if foreign particles such as mineral dust, filings, shavings or gravel get into the eye. Flush immediately to get rid of the foreign particles. Contact a doctor if any particle is stuck in the eye or if pain or irritation persists. Metal filings and other solid particles can cause scorching and scarring with some impairment of eyesight as a consequence.

If such solid particles impact the eye with great force, there is a risk of perforation with complete loss of eyesight as a consequence.

Examples of substances which are corrosive or otherwise harmful to the skin

Acids

Acids on the skin coagulate the skin protein and form a barrier which partially blocks the acid's further penetration. The resulting injuries are not as extensive as for alkaline substances, though exceptions exist. Hydrofluoric acid, which is one of the most corrosive of all inorganic acids, causes intense pain on exposure. Since the penetration of the acid is deep, the injury often becomes very extensive – considerably bigger than what it appears at first. Similar injuries can be caused by fluorides, which can also cause haemorrhaging in the skin.

Alkaline substances

Just as for the eyes, alkaline substances cause more serious injuries to the skin than do acids. They cause a splitting of fats and proteins which allows them to continue penetrating as long as there is some alkali left on and in the skin. Alkali injuries usually cause intense pain and are slow to heal.

Hot substances and liquids

Hot substances and liquids cause injury because of their temperature. Hot liquids, e.g. molten metal and hot oils, require particular care.

Substances easily absorbed by the skin

Substances which are easily absorbed by the skin and can therefore cause injury are marked with an H in the Work Environment Authority's provisions on hygienic limit values. Certain biocides also belong in this group of substances.

Local anaesthetic

If splashing in the eye causes severe pain, a local anaesthetic can alleviate the pain and facilitate effective flushing. Such local anaesthetics for the eyes normally require a prescription.

Examples of antidotes

An antidote is a substance which counteracts the toxicity of the harmful substance, e.g. by neutralizing it. Antidotes might be flushing fluids or gels to be used before or after flushing with water. This applies to both splashing in the eyes and on the skin. Occupational health care services or a hospital should be contacted in order to set up routines for antidote treatment. Alternatively, such treatment can be administered only on arrival at the hospital (the distance may be relevant).

There are currently antidotes to hydrofluoric acid and fluorides (calcium gluconate solution or gel, Hexafluorine®), phenol (macrogol), fatty amines (0.5% acetic acid solution) and yellow (white) phosphor (potassium permanganate). A number of specific antidotes have been developed, e.g. for poisoning by heavy metals, cyanides, warfarin (rat poison), paracetamol, benzodiazepines, opiates, and cholinesterase inhibitors (insecticides). All these are prescription drugs. Occupational health care services or other medical expertise should therefore always be contacted before introducing the handling of any substances which may affect specific antidote treatments in the event of poisoning.

More information about antidotes in the event of splashing in the eyes, skin exposure, inhalation and consumption can be found in the chapter entitled Förgiftningar – behandlingsanvisningar (“Poisoning – directions for treatment”) in Läkemedelsboken (the medical products handbook) published by Apoteksbolaget AB.