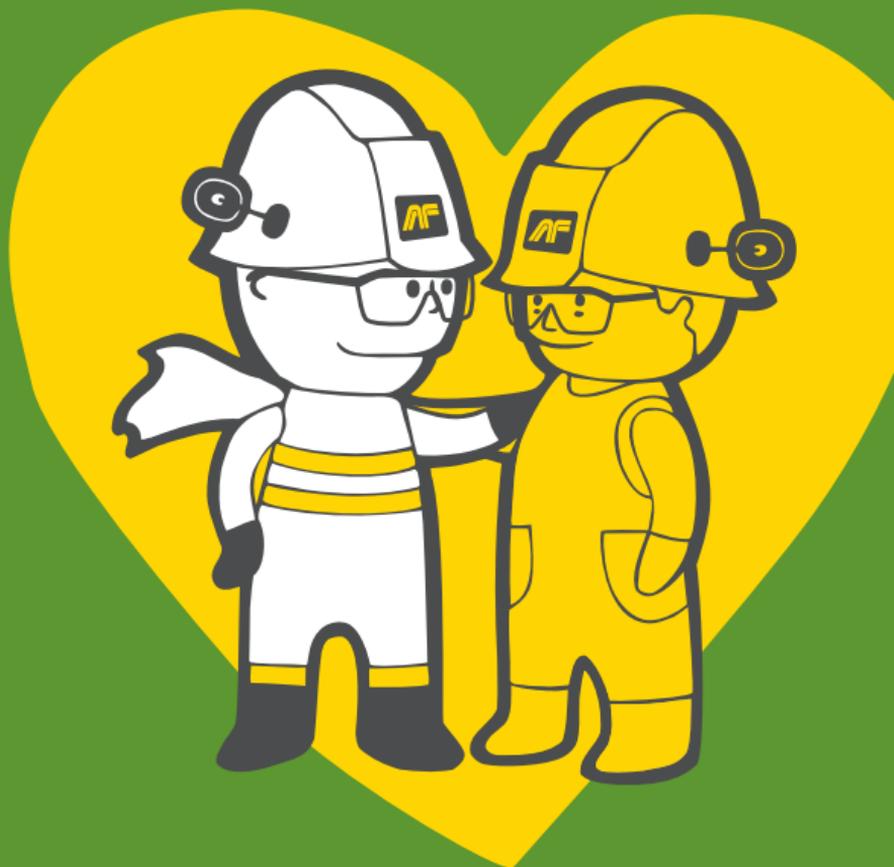




HSE



Personal HSE handbook for AF
employees and partners



This book belongs to

Name

Employer

HSE Handbook

April 2019 / Version 2.2

© AF Gruppen ASA

HSE basics

1

Introduction, goals and responsibilities, HSE tools, personal protective equipment, HSE rules, sanctions

Safety

2

Working at height, trenches, cranes and lifting equipment, machinery and equipment, electrical risks, hot work, and rock blasting

Health

3

Physical and psychosocial working environment factors

External environment

4

Waste and recycling, emissions, energy use, noise, artefacts

Preparedness and first aid

+

Signals and hazard symbols

6



Introduction

1

At AF one goal comes before anything else, namely that all employees, suppliers and partners will go home each day without injury. For us this is a matter of values. No financial results or project challenges are worth a person's health and life. If an assignment cannot be carried out in a safe manner then it should not be carried out at all.

2

This clear goal is an obligation for us all as managers, employees, suppliers and partners. We must plan and perform our work in a way that there is no harm caused to people, equipment or the environment. Such a goal is only achievable if everyone, both individually and collectively, accepts a daily responsibility for the HSE work in all our projects.

3

A strong focus on HSE is created through several elements. Good order and tidiness, proper use of personal protective equipment, well planned tasks, compliance with established procedures and the active identification and management of all HSE risks.

4

We must therefore be clear and uncompromising in our approach to health, safety and the environment. So take the best care of yourself and demonstrate through your actions that you care about others. In this way we can achieve safer and more pleasant workplaces for everyone.



Morten Grongstad, CEO

6



It is AF's goal that everyone returns home in one piece at the end of a workday.

- All injuries can be avoided
- Our behaviour must reflect positive attitudes to health, safety and the environment (HSE)
- All managers must be involved and visible in the HSE work

It is the responsibility of the employer to plan and organise the work and to define the required protective equipment.

It is the employee's responsibility to speak up and care about HSE, and to follow all rules and regulations.

It is the responsibility of the safety representative (HSR) to ensure that work is carried out safely and to warn of hazardous conditions. The HSR has a legal right and obligation to stop work in the event of risk to life or health, cf. The Working Environment Act § 6-3, until the HSR or the Labour Inspection Authority has decided whether the work may continue.

The project manager is responsible for all aspects of a project. The HSE manager/HSE engineer is the HSE advisor for a project.

This book gives an overview of the requirements and regulations applicable when working for AF, and applies to all employees and subcontractors.

Safe Job Analysis

Safe Job Analysis (SJA) is the most frequently used tool at AF for managing HSE risk. We want to influence risk in order to avoid accidents, health problems and disease. Through SJA we find the safest and most appropriate way to complete a task.

Anyone taking part in a particular task must participate in the SJA, or at least receive a thorough review of the SJA prior to start-up.

The most important elements in a SJA:

- What can go wrong?
- Why can it go wrong?
- How can we prevent it from going wrong?
- Define responsibilities for barriers that can prevent it going wrong



Inform your immediate manager if you think that a SJA should be undertaken before commencing work, or if you feel unsafe during the work.

Barriers

Barriers are measures to prevent HSE risks leading to accidents or health problems/disease.

AF utilises both physical and organisational barriers. All critical work operations must be protected by at least two independent barriers. If one barrier fails, the other will still prevent an accident. We must endeavour to ensure that at least one of the barriers is physical.

Reporting of undesirable incidents

All accidents, near misses, hazards and undesirable health issues must be reported. All reports will be investigated so that we learn from events, learn from each other and in this way avoid accidents, health problems and disease. Feedback will be given on the reports via open meetings, notices etc., on what barriers have been implemented.

AF actively encourages employees to contribute to undesirable incident reporting and no one will experience negative feedback or repercussions for reporting any concerns.



*Always report hazardous conditions or accidents,
or if you see someone taking chances.*

Personal protective equipment

The type of protective equipment must be risk assessed for the work that will be performed.

Workwear

The minimum clothing is long work trousers and t-shirt. The workwear must satisfy the project's requirements for visibility (class 1, 2 or 3) and high visibility clothing must as a minimum cover the torso. Further consideration must be given to the type of workwear that is appropriate and approved for the job, in order to provide adequate protection (mechanical, cold, heat, rain, chemicals, etc.). For AF employees the workwear must comply with the AF design manual.

Protective footwear

Protective footwear is mandatory in all projects at AF. Protective footwear must be the correct fit for the user and suitable for the application in order to avoid injury and undesirable strain. The footwear must satisfy the project's requirements for protection. Such requirements may include requirements for puncture resistant soles, chemical protection, slip resistance and stability in order to prevent ankle sprains.

Leg protection

When using a chainsaw use suitable protective trousers with sewn-in leg protection and safety boots.

Head protection (helmet)

Helmets are mandatory for all projects at AF. The helmet must be fitted with hearing protection and marked with the company name, personal name and the helmet must not be more than 4 years old. Machine operators should have a helmet with them in the machine and the helmet must be put on before getting out of the machine.

AF colour codes for helmets:

- White: Skilled worker
- Green: Safety representative (HSR)
- Yellow: Line Management and Staff (officials)
- Blue: Visitor

For individual projects there may be deviations from this due to the principal having different colour codes.

Eye protection

It is mandatory to wear safety glasses for all AF projects. There are many different types of safety glasses and it is important that the right type of safety glasses is used for the work being performed. There are many operations that require safety goggles, for example, cutting, grinding, drilling and splitting work.

Visors are an approved type of safety glasses. However, AF recommends the use of ordinary safety glasses because it is our experience that it is easier to use visors incorrectly and that such usage has historically resulted in eye injuries.

Conventional glasses cannot replace safety glasses. Contact your immediate superior if you need safety glasses with optical strength. Safety glasses that can be worn over your own glasses are a good alternative for occasional, non-permanent and short-term work, visits or inspections.

Hearing protection

Hearing protection must always be mounted on a helmet and used when you are exposed to noise greater than 85dB (A) over a normal working day, or powerful impact/impulse noise. Generally speaking, if it is difficult to follow a conversation at a distance of one metre, use hearing protection. For more information about noise, see the chapter Health.

Protective gloves

The use of protective gloves is mandatory for all AF projects. A wide range of protective gloves is available and it is important that the right type of gloves are used for the work being performed. For example: mechanical risk, handling chemicals and hot work.

All protective gloves are marked to indicate the type of work they are suitable for and the level of protection offered, such as cut resistance, protection against heat and fire, low temperatures and hazardous chemicals. Good gloves must be user-friendly, flexible, comfortable and must fit properly.

Headlamp/portable light

For work and travel in areas without adequate lighting, employees will be equipped with portable lights or headlamps. When working and travelling underground, employees will as a minimum be provided with an appropriate headlamp. Visitors to tunnels must have a portable light and/or headlamp and be accompanied by a responsible manager.

Respiratory equipment

Must be used if air may contain harmful amounts of gases, solvents or dust. There are two main types of respirators:

1. The first type of respirator supplies fresh air either from a pressure bottle or via a hose (air-fed mask).
2. The second type purifies the existing air. This is done with three main types of filters:
 - Dust filter for particle dust
 - Gas filter for gases/vapours
 - Combined filter

The dust filter does not work for gas/vapour and the gas/vapour filter does not work for dust. Dust masks must have a P3 filter. Air filters must always be running if dust is a nuisance to workers.

When concrete grinding, sandblasting, applying spray concrete as well as when using chemicals, painting and spray painting in confined areas, an air-fed mask must be used.

For more information about dust, chemical products, hot work and gases, see the chapter Health.

Fall safety equipment

When working at heights where there is danger of falling to a lower level, fall protection equipment must be used. We distinguish between two types of fall protection; collective (guardrails, scaffolding and the like) and personal fall protection equipment.

Collective fall protection must always be used if possible. Personal fall protection equipment must be used when assembling scaffolding, guardrails, etc., or when working where collective protection is not available. A Safe Job Analysis must be conducted before personal fall protection equipment is used. All personnel who use personal fall protection equipment must have documented training in the use of, and rescue from, a harness.

Lifejacket

Lifejackets must always be worn when working over or near open water. Inflatable lifejackets are allowed provided that they are adequately maintained and inspected before use. The risk analysis for a project determines type-specific requirements for lifejackets.

Barriers and signage

The following operations normally require that the area is cordoned off:

- Working at height and the assembly/disassembly of scaffolding
- The use of personnel lifts
- The use of radioactive sources (own barrier equipment with black radiation symbol)
- Cutting work
- Work with PCBs, asbestos and hazardous chemicals

A Safe Job Analysis will identify the need for any other barriers. No one can remove/change barriers without the agreement of the person responsible for the barrier (e.g. the supervisor). Plastic chain must be used for cordons. Cordon tape must not be used.

Colour codes:

- ○ Red/white: Access forbidden
- ● Yellow/black: Warning of hazardous conditions/area

Order and cleanliness

Good order and cleanliness helps to:

- Prevent accidents and injuries
- Prevent fires
- Ensure good hygiene
- Ensure a pleasant, safe and efficient workplace



You must keep your own workplace clean and tidy.

Lighting

Adequate lighting is essential in order to avoid accidents. All internal walkways and dark rooms must be illuminated with a series of lights. The lamps must be regularly checked, maintained and cleaned. All lighting connections must be water protected. Lighting equipment must be located so that glare is avoided.

Smoking

AF premises and vehicles must be non-smoking. Premises are defined as offices, meeting rooms, dining rooms, bedrooms and communal/TV rooms etc. Vehicles are defined as AF cars, buses and construction machinery etc. Smoking is permitted in the designated area only.

Sanctions for violations of HSE rules

Reprimand on site

Anyone who witnesses HSE rules being broken, must reprimand the person concerned.

Verbal warnings

Are used for less serious offences and for first time violations. Verbal warnings are confirmed in writing with a letter.

Written warnings

Are used for serious violations or other second time violations, along with a conversation with the project/site manager or HSE manager.

Dismissal

Used in the event of further violations or aggravating circumstances.

2

3

4

+

6



Safety

Working at height

Manual work at height should be limited wherever possible. When working at heights over 1 m the person must be secured by a railing, safety harness or by other means. Work at height in connection with unloading and loading often occurs over 1 m and must be secured. Work at height must be risk assessed! The risk assessment must also include an evaluation of the necessary protective equipment such as helmets with chin straps, harness type and anchor points.

All use of stepladders is prohibited at AF. Instead use a lift, scaffolding, or trestle with platform measuring a minimum of 50x60 cm and a maximum height of 100 cm.

Ladders

Ladders may be used for temporary access. If the usage exceeds 20 times per day over two days, alternative means of access such as stair towers must be arranged.

Ladders may under close supervision be used for measuring and laying-out, and for other works that have a duration of less than half an hour, provided that the work is within an area limited to only one placement. Ladders may not be used when they need to be moved in order to carry out work.

2

3

4

+

6

Ladders must be secured at the top or bottom, or held by another person. The maximum allowed ladder length is 6 m, of which 1 m must protrude above the roof or ledge when the ladder is to be used for temporary access. Inclined ladders must be leant at an angle of between 65° and 75° .



Ladders must be secured at the top or bottom, or held by another person. Inclined ladders must be leant at an angle of between 65° and 75° .

Scaffolding

Before use, all scaffolding with work platforms over 2 m must be checked by qualified personnel and equipped with approval signs at all access points. Following re-building, storms or other conditions that may have weakened the stability or strength of scaffolding, it must always be checked and re-approved. Warning signs must be suspended during dismantling and re-building.

Scaffolding with work platforms over 1 m must at least have a handrail mounted at a minimum height of 1 m. In addition, a handrail must be fitted on the wall side if the distance between the wall and scaffolding is greater than 30 cm. If over 2 m, there must also be knee and foot rails. Use nets, tarpaulins or screens when needed in order to guard against falling objects.

All work platforms over 3 metres must have an underlying safety platform.

When working on travelling scaffolding, all wheels must be locked at all times. Access must always be from the inside. The scaffolding must only be used on firm, level and horizontal surfaces. When it is being moved, no one should be on the scaffolding and objects must be removed or secured against falling down.

The employer will ensure that users of scaffolding have received the necessary training.

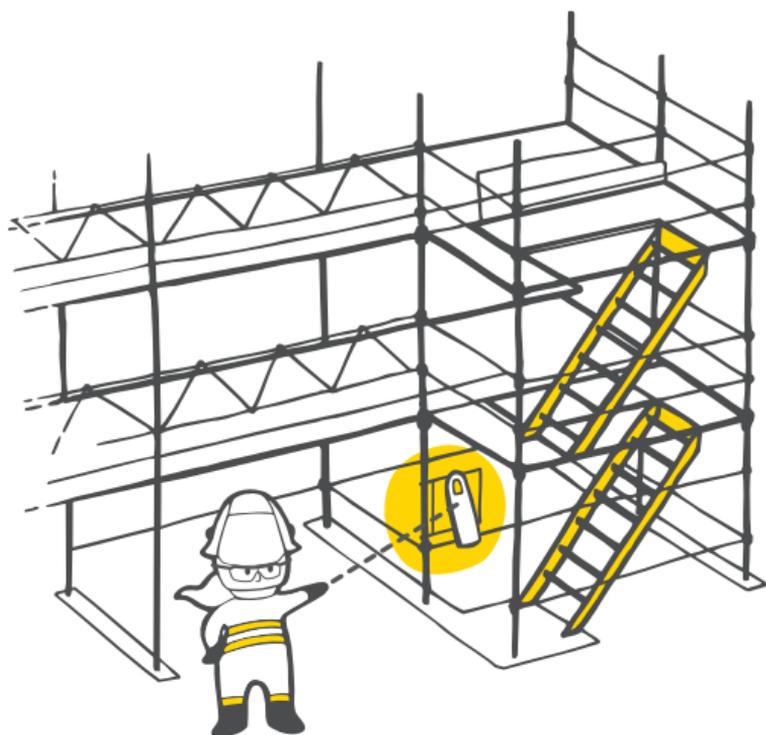
2

3

4

+

6



Scaffolding must have safe, convenient and appropriate access by an external stair tower if possible. Scaffolding must be inspected and approved prior to use and following changes. Only personnel with the regulation training may build, change and dismantle scaffolding/travelling scaffolding.

Instructions for the use of scaffolding

Before the scaffolding is used

The user must ensure:

- That the scaffolding has been checked and approved for use (sign)
- The scaffolding must be approved and a report on the scaffolding checks must be signed by a responsible line manager (AF) with the necessary expertise
- The scaffolding has a loading class suitable for the work to be performed

When using scaffolding

The user is responsible for ensuring:

- The foot, knee, and handrails have not been removed
- The clamps, floor boards, etc. have not been removed, i.e. that there is are no holes in the scaffolding floor
- The wall ties have not been removed
- That there is no equipment, stored waste or any materials on the scaffolding

2

3

4

+

6

Adaptation and re-building of scaffolding:

- Adaptation, re-building and removal of scaffolding parts must only be carried out by qualified scaffolders
- Permission for the re-building of scaffolding and the removal of scaffolding parts must be approved by a qualified scaffolder who will risk assess the change

The user must always notify their manager if faults or deficiencies are discovered in the scaffolding. The works manager will immediately notify the AF manager responsible.



Trenches / slopes

Work in trenches and on slopes has an associated landslide risk. The preparation of a trench plan and work instructions is required for the excavation of a trench or pit deeper than 2 m. All unshored trenches deeper than 2 m must have sloping walls with a reasonable incline. Inclined trench edges may also be necessary for depths less than 2 m in unfavourable conditions, for example with heavy rain or when digging below the groundwater level. In frozen soil, excavations may be made with vertical walls when the backfilling is done before there is a risk of thawing.

Be especially alert for collapse/landslide on slopes, mountainsides and in trenches when the temperature moves between minus and plus temperatures!

Trenches with vertical sides deeper than 2 m must be shored up with sheet piles or trench boxes etc. With trenches deeper than 3 m then the shoring must be designed by a geotechnician.

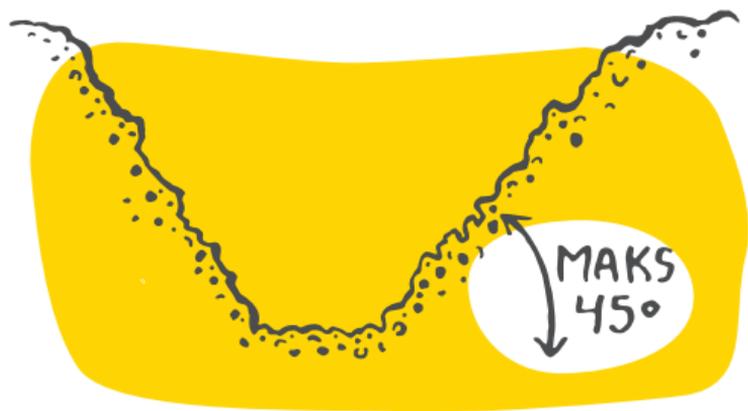
2

3

4

+

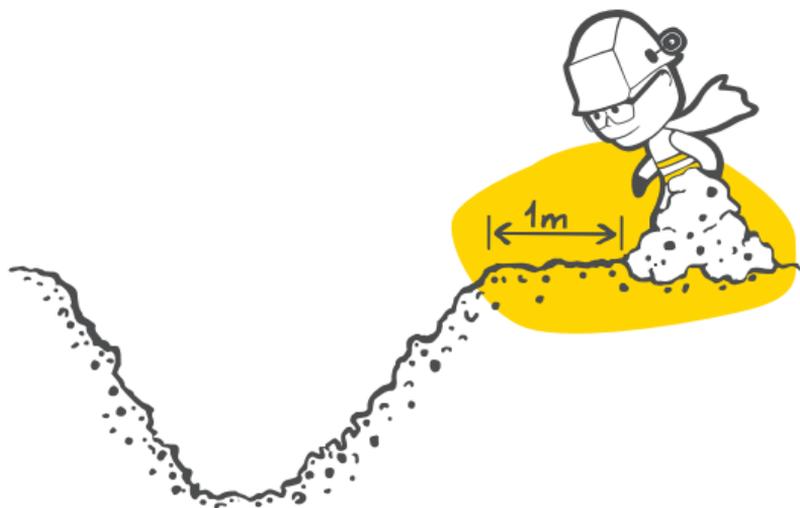
6



With intersecting trenches in disturbed ground, the trench walls must have a maximum angle of 45°, even if the trench depth is less than 2 m.



In loose soil shoring may also be necessary at depths less than 2 m.



2

Excavated soil must always be placed at least one metre from the edge in order to avoid an increased risk of a landslide.

3



4

Trenches deeper than 1 m must always have at least one escape route.

+

6

Plan your work so that most of the excavation, pipe-laying, etc. can take place from the end of the trench. If heavy equipment must be used from the side of the trench, the equipment must be located as far as possible from the edge of the trench.

Remember to place an escape route a good distance from the excavator. There must be no obstacles between you and the nearest escape route.

Cranes and lifting gear

All cranes and lifting gear must have undergone inspection by a competent person at least once a year. Certificates should always be kept easily accessible. Approved lifting gear must have a nameplate with certificate number and safe working load.

Colour codes for inspection years for lifting gear may use:

● 2017: Red

● 2021: Red

● 2018: Yellow

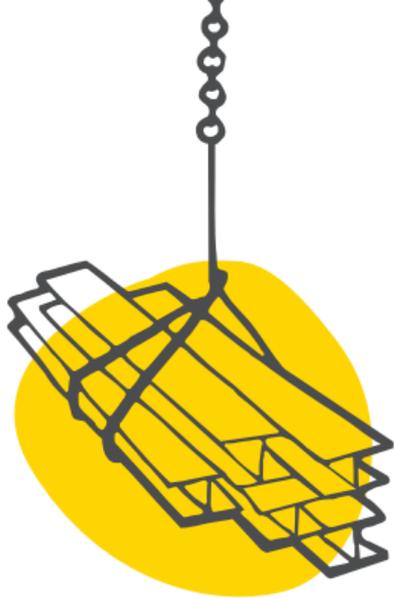
● 2022: Yellow

● 2019: Green

● 2023: Green

● 2020: Blue

● 2024: Blue



Never go underneath a suspended load.

2

3

4

+

6

Straps with white markings are for one-time use and should be discarded after use.

With all lifting and operations with a danger of falling objects, there must be a safety zone where all traffic is prohibited. The size of the safety zone is defined through Safe Job Analysis.

A Safe Job Analysis is carried out before the crane lift when several cranes are operating in the same airspace and when it is windy. When several cranes are operating in the same airspace, the crane drivers must have a radio connection. During thunderstorms crane operations must cease.

Access to tower cranes must not be via a vertical ladder. Ladders must be at an angle or a lift must be used.

Anti-collision systems must be installed when two or more tower cranes have an overlapping work area. Sector limiting systems must be fitted on all tower cranes where high voltage power lines, specific traffic areas, nurseries or similar are within the crane's work area.

When erecting a tower crane, the mounting and foundation is required to be expertly inspected before use.

Slinging

- In order to undertake slinging you must have completed a documented training/slinging course
- Check the lifting gear visually before use. Damaged or broken equipment must be discarded
- Ensure that lifting tables for the lifting gear in question are available
- When lifting long objects, 2 slings must be used and possibly also a guide rope
- Check the balance of what you have slung once the load is off the ground
- With blind lifts where the crane operator does not have continuous eye contact with the load and the area below, the slinger must fully direct the lift over the radio
- If a radio is being used between the slinger and crane operator, you must state who you are and who you are talking to. Make your message short and concise. If something is unclear, ask for confirmation

See Chapter 6 Standard signals and gestures, for directing cranes.

2

3

4

+

6

Mobile work platforms / personnel lifts

Cranes and lifting devices must not be used for passenger transport. Only authorised personnel baskets on cranes/loaders may be used for this.

All operators of personnel lifts must have received documented safety training for this type of equipment. In addition product specific training must have been conducted for the lift in question. Product specific training must as a minimum include a thorough review of the lift's safety devices and limitations.

The user manual must be in a language that the lift operator is familiar with. Scissor lifts must not be in raised position when being moved or left. When using a boom lift the person in the basket must be secured with a safety harness.



Check that the lift and any supporting legs are standing on a firm, level surface before use.

2

3

4

+

6

Training in the use of work equipment

Machinery and equipment must only be used by people who have undertaken the necessary training. For some machinery and equipment certified safety training is required (certificate of competence). For other work equipment that requires special care when using and that does not require certified safety training, documented safety training is required. In addition to certified or documented safety training, the employer will ensure that workers are given the necessary training for the specific work equipment they will use.

When disconnecting equipment from machines (buckets, grabs, claws, forks etc.), the equipment must always be laid down or secured from tipping over. When swapping over such equipment, the operator must ensure that the locking mechanism is in position and check that the hydraulic hoses are undamaged.

All hand tools must be checked before use. Defective tools are marked defective and submitted for repair or disposal. Modification of tools or the use of tools outside of the framework specified in the user manual is not allowed. User manuals for work equipment and tools must be made available for users in a language the equipment users are familiar with.

Electrical risk

High-voltage equipment

Flashover of dangerous voltage from high voltage power lines to for example cranes or cables can occur without direct contact with the line. The owner of the high voltage installation (network owner, the Norwegian National Rail Administration etc.) must therefore be contacted when work will be taking place closer than 30 m from the installation. The owner will decide what measures are necessary to get permission for such work. High-voltage lines must only be handled by qualified electrical personnel!

Cable detection

Before digging starts in areas where one would expect there to be buried cables, network owners will be contacted to show where the cables are (applies to all types of cables, including low current, fibre and signal cables). For low voltage cables the unearthing or undermining of cables will be carried out by hand digging. When excavation is required within a specified safety distance of high voltage cables, the network owner must be contacted. The re-routing or cutting off of existing power cables must be done by qualified electrical personnel!

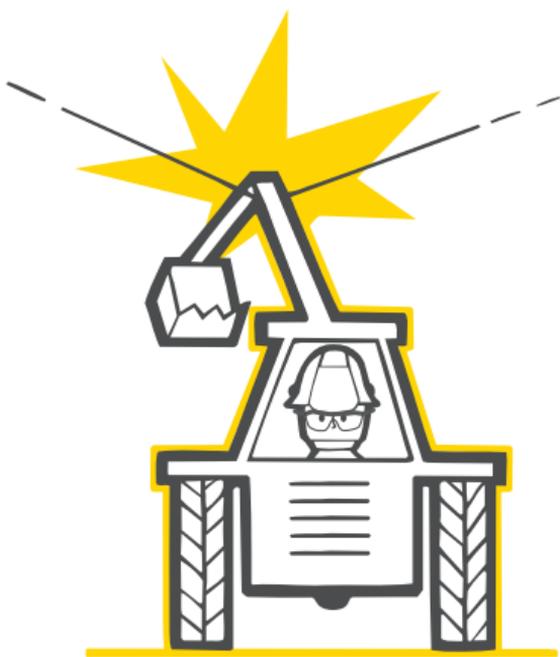
2

3

4

+

6



If a flashover occurs then no one must touch the machine. The operator must remain seated in the driver's seat until the line has been disconnected and the owner of the high voltage installation has given the okay signal for evacuation. Most high voltage installations have automatic re-engagement, i.e. the line will automatically try to restore voltage following a short circuit. Machines must not be touched or moved until qualified personnel with high voltage expertise are present.

Electrical equipment

- All electrical components and bare wires are regarded as energised until disconnected and a measurement has been made
- Changes to the electrical equipment including any protective devices is not permitted
- Cables and wires must be placed or protected so that they are not damaged
- Electrical equipment with faults or deficiencies must be immediately de-energised. The fault must be reported to the immediate manager who will ensure that the fault is rectified.
- Sweating/moisture can conduct electricity. Use dry gloves when working with electrical equipment
- Use an insulating underlayer (e.g. wood or dry cloth) for lying down work with electrical equipment

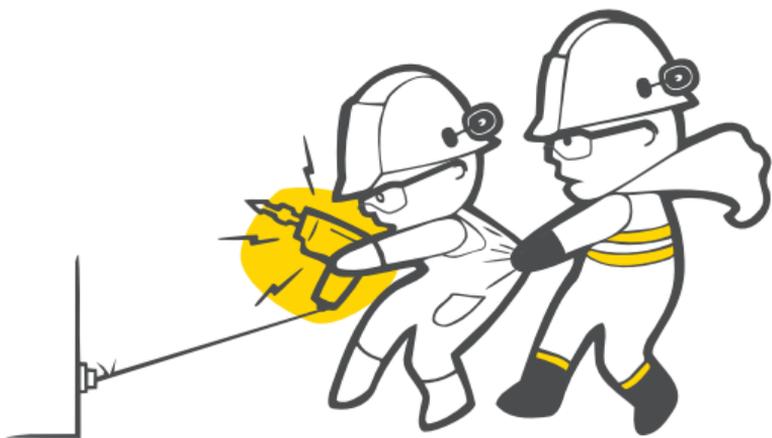
2

3

4

+

6



If someone is caught up in energised equipment, that section of the installation must be de-energised. With low voltage (NOT with high voltage) an injured person may be freed by grasping the dry clothing of the injured person or wrapping dry cloth around your own hands. Make sure that the injured person or yourself are not subjected to a dangerous fall, as releasing someone often requires considerable force.

Hot work

Hot work means work where machines and equipment are used that generate sparks and heat that may cause a fire. Hot work includes the use of a naked flame, hot air, welding/cutting and grinding equipment.

The following requirements are set for hot work:

- A certificate of competence for hot work
- Necessary fire extinguishing equipment must be readily available, with a minimum of two 6 kg ABC fire extinguishers. One of the fire extinguishers may be replaced with a fire hose with a minimum diameter of 19 mm and charged with water up to the jet nozzle
- Tight-fitting goggles, gloves and full flame retardant workwear (long sleeves) must be used for grinding, welding and cutting
- Combustible materials must be removed or covered up
- Openings in floors, walls and ceilings must be sealed
- With hot work on painted surfaces, noxious gases and particles are released. Respirators, preferably an air-fed mask, must be used
- Prior to hot work inside a building and in tanks and confined spaces where there is a risk of fire / explosion, a Safe Job Analysis must be carried out

2

3

4

+

6

- In tanks and confined spaces it must be ensured that there is sufficient oxygen and that the surrounding atmosphere is not explosive. A gas meter must be used for reliable verification
- Those carrying out hot work must risk assess the need for a fire watcher. If fire prevention measures do not completely eliminate the risk, there must be a watcher on site during, and for at least one hour after the work is finished. The watcher must have the same expertise as the person carrying out the hot work
- A checklist must be used that ensures and documents all safety aspects. This must as a minimum correspond with the checklist published by Finance Norway



Hot work must only be undertaken by personnel with a certificate of competence.

Working with gas

- Gloves that protect against heat must be readily available
- Check that hoses, connections and other equipment do not have a leak
- Valves, connections and hoses must be protected from impact and from damage from falling or ejected objects
- Bottles must never be dragged when being moved. A bottle trolley must primarily be used
- First stage devices and other equipment must always be disconnected after use
- Gas must be kept in a suitable place with proper signage. Flammable and/or toxic gas must under no circumstances be kept in a cellar or room/container without ventilation
- Oxygen cylinders must be stored at least 8 metres from bottles with flammable gases when stored in the open air
- It is recommended to use an approved container for storing gas
- Bottles must be stored so that they can not be damaged by vehicles

2

3

4

+

6

- All equipment for oxygen must be kept free of grease
- In addition, the rules for hot work and dangerous substances must be followed



Gas cylinders must always stand upright and be secured against overturning with a chain or something similar.

Rock blasting

Electric detonators must not be used when blasting. Electronic detonators are allowed. Explosives and detonating devices must only be handled by people with the necessary expertise.

Standard warning instructions for blasting operations:

- Short bursts of the siren of 1 min duration before blasting
- Blasting
- One long blast of the siren - all clear

In the event of suspected unexploded explosives, a Safe Job Analysis must be carried out before any further work.

Rock scaling

The scaling and securing of rock faces is a necessary measure to avoid rock falls. This work must be performed by experienced personnel because it is particularly risky and requires special knowledge of rock faces.

Be especially alert for rockfalls when there is heavy rain and when there is a change from minus to plus temperatures!

2

3

4



6



Health

Work related disease and illness often occurs following prolonged harmful exposure. It may therefore be difficult to see the relationship between the exposure and the disease/illness. For this reason it is important that both the employer and employees are informed about how different exposures can affect our health.

Employers are legally required to risk assess all exposures, and to take steps to ensure that health is not adversely affected. Employees must cooperate with the employer on this. If other measures do not reduce exposure to an acceptable level, the necessary protective equipment must be used.

The health chapter introduces the most common health exposures, within the physical and psychosocial work environments. For more in-depth information it is recommended to study the AF health card.

3

4

+

6

Physical work environment

Noise

Volume is measured in decibels (dB). An increase of 3 dB corresponds to a doubling of the volume. A volume over 80 dB entails a risk of hearing damage and measures should therefore be implemented. Hearing protection must be used if other measures do not have sufficient effect.

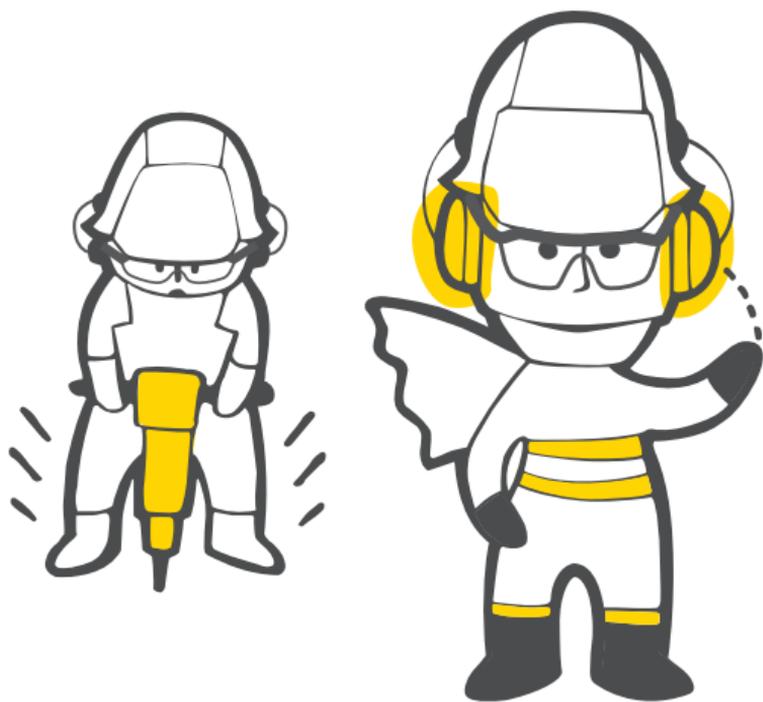
If you stay or work in areas with 95 dB or more, double hearing protection must be used (earmuffs + ear plugs). Staying in areas with more than 110 dB must not occur. With noise levels over 105 dB, very brief exposure can, without hearing protection damage your hearing.

Use of hearing protection in combination with protective glasses, old and poorly maintained hearing protection and wrongly inserted ear plugs can reduce the effectiveness of hearing protection.

Preventive measures in order of priority:

- Consider alternative work procedures that give a reduced exposure to noise
- Increase the distance to the noise source
 - a doubling of distance reduces noise levels by 6 dB
- Enclose the noise source

- Mark noise zones
- Use proper hearing protection (category 1, 2 or 3)
- is there a need for dual hearing protection?
- Warn colleagues of noisy work



*Increasing the distance to the noise source is an effective way of reducing the noise impact.
Use hearing protection where other protective measures are not possible.*

3

4

+

6

Dust

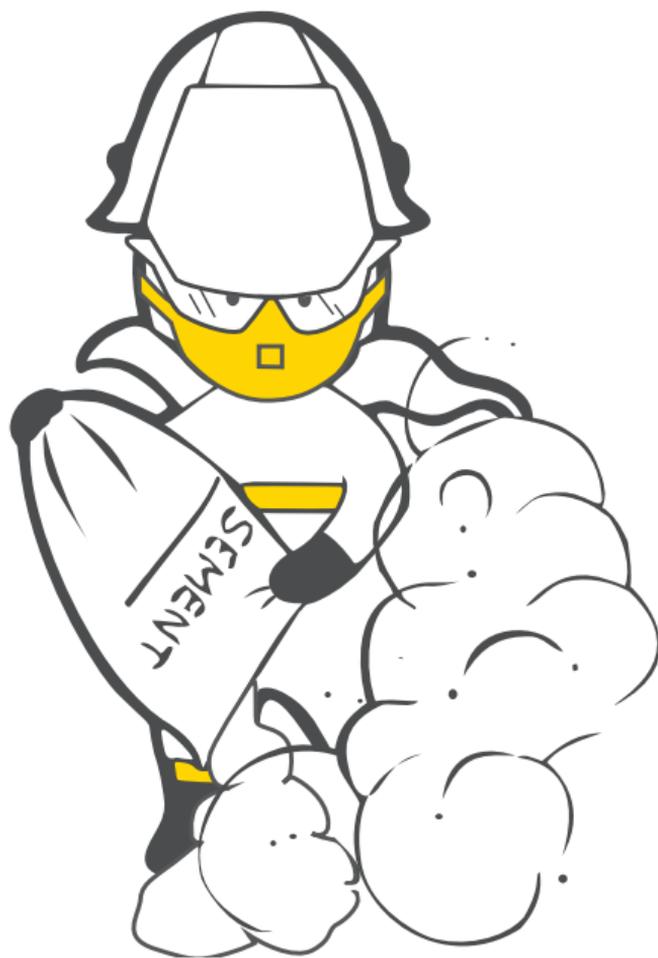
Dust can affect mucous membranes in the respiratory tract and cause acute disorders such as bronchitis and pneumonia. Over time the prolonged inhalation of dust can lead to chronic lung disease.

With a high concentration of dust in the air, measures must be taken to prevent or reduce the dust problem. Possible measures may include regular watering or using dust-binding agents. Indoor sweeping with broom must not take place, here a vacuum cleaner must preferably be used. Use of mops is acceptable for primary cleaning. Use equipment that has built in dust extraction.

Acceptable limit values for the amount of dust in the air vary depending on the type of dust.

If it is not possible to reduce the concentration of dust in the air to acceptable levels, protective equipment must be used. Motor-assisted filter masks or air-fed masks are recommended for high exposure. Filter masks must have a P3 label. P3-filters protect against hazardous fine dust and smoke, biochemical substances, micro-organisms, spores, viruses, bacteria and quartz. Dust masks do not protect against gases.

See also Chapter 1 about respirators.



Prolonged inhalation of dust may lead to chronic lung diseases. Protect your lungs with a suitable mask when other measures do not provide sufficient effect.

3

4

+

6

Asbestos

Asbestos fibres in the air may occur due to re-modelling or demolition of older buildings mainly in the following locations:

- Roofing and wall panels (Eternit etc.)
- Insulation of hot water pipes
- Fire breaks (walls, ceilings, between heaters and wall)
- Brake linings in older lifts
- Vinyl coatings
- Fire insulation on steel beams
- Ventilation ducts



In the event of suspected asbestos, work must be stopped and the supervisor/foreman must be notified. Asbestos must only be handled by workers with special training in this.

3

4

+

6

Gases

Some gases have an acute effect on health, while others can cause illness in the long term. Poisonous gases may cause harm even at low concentrations. Some gases are flammable and some are odourless. Gas meters are used to investigate the occurrence of gases. Typical work environments and work assignments where you may be exposed to gases are:

- Tunnel work
- Blasting work
- Work with chemicals
- Work in tanks and enclosed spaces
- Hot work
- Work close to emissions from combustion engines
- Work in areas where biological material is decomposing (Typically in construction pits and trenches on previously built land)

One should always try to reduce gas exposure associated with work processes. In addition, the surveying and measuring of gas levels may show that it is necessary to use protective masks:

- Mask with gas filter (make sure it has the correct filter for the type of gas)
- Air-fed mask

It is important to regularly check and maintain masks. See also Chapter 1 about respirators.

Hot work

When welding, cutting, burning, soldering, grinding, sanding and finishing heated materials so they change character and noxious by-products are released in the form of dust and gases. The substances can affect health in the short or long term with sometimes serious and chronic diseases. Survey and take material samples if there are unknown components in the material to be heated.

- Use alternative work methods, for example cold cutting, if possible
- Use an extractor where it exists, or consider putting in place extractors
- Use masks with appropriate filter or use respirators
- Change the filter regularly and ensure good maintenance of masks
- When burning on painted surfaces, an air-fed mask or motor assisted filter mask must be used

3

4

+

6

Chemicals

Some chemical products are very harmful. Employers must therefore create a substance file of safety data sheets that must stay with the products when they are in use. Pay particular attention to points 1, 2, 3, 4 and 8 on the safety data sheet. Before using substances that are labelled toxic, harmful, highly flammable or harmful to the environment, a risk assessment must be completed based on the safety data sheets. There must be an assessment of whether less hazardous substances can be used instead (substitution assessment).



Chemicals will generally kept in their original packaging. If chemicals must be transferred to another receptacle it must be labelled in the same way as the original packaging.

All chemicals are potentially harmful, It is the inherent characteristics of the chemicals, combined with the quantity and length of exposure, that will determine how hazardous a work process may be.

Sewage

Workers who are in contact with waste water have a certain risk of being infected by bacteria and viruses. The risk depends on the degree of contact with sewage, and the risk of infection is reduced by the proper use of protective equipment, good personal hygiene and preventive practices during the working day. Preventive measures alone may not be sufficient to reduce the risk to an acceptable level. Therefore it must be considered whether employees who are exposed to waste water must be offered vaccinations against sources of infection.

Vibrations

Hand and arm vibrations occur when using vibrating hand-held tools. Use of such a tool gives a risk of damage to blood vessels, nerves, muscles and joints. Symptoms of health problems can be paroxysmal white and numb fingers, pain and loss of strength in the hands.

You must know how much the tool vibrates, because the vibration level is crucial for how long you can use the tool per day. All tools must be marked with the

3

4

+

6

maximum usage time. When using several vibrating tools per day, it is the sum of vibration for those tools that puts the restriction on their use. If you cannot find information on vibration levels it can be measured, the AF occupational health service has equipment to do this.

At AF it is mainly machine operators who are exposed to whole-body vibration. Health issues can include back, neck and shoulder disorders. An even surface, good driving seat/cabin and a focus on speed and driving style are the most important barriers for reducing whole body vibrations.



Ergonomics

Muscular skeletal disorders are the disorders that occur most and that cost the most, both for society, AF and individuals.

Many suffer muscular skeletal disorders that are wholly or partly due to work tasks. Pain may come suddenly in the form of, for example, inflammation, or wear through prolonged strenuous work. Usually disorders are experienced in the lower back, neck, shoulders, hips and knees.



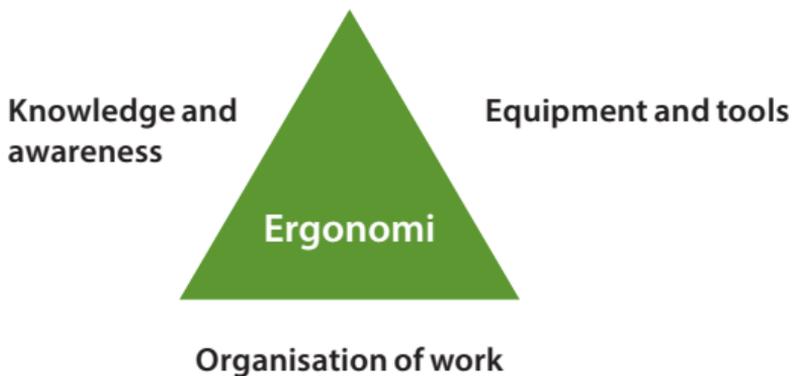
To avoid disorders you need to use your body correctly.

3

4

+

6



Focusing on ergonomics is important in preventing muscular skeletal disorders. Ergonomics can be described simply as adapting a work environment/technique to suit the individual, and both the employer and employee must pay attention to what is good ergonomics. Movement and proper loading is both healthy and necessary. The aim is to reduce unnecessary strain and overloading. Tasks which over time produce heavy, repetitive work, unilateral/stressful working postures, and considerable time pressure are particularly unhealthy.

Good ergonomics is achieved when all sides of the «ergonomics triangle» are in place:

Knowledge and awareness: Which movements do our bodies best tolerate? Which working postures are good? Is the best work technique being used? Do you have good habits?

Equipment and tools: Is the best and most appropriate tool for the task being used? Is good maintenance being ensured? Are good means of assistance available?

Organisation of work: Are tasks undertaken in a favourable order with variation in mind? Is job rotation implemented? Are materials placed where they are needed? Do you remember to take short breaks? Are you asking for help, for example with heavy lifting?

It is not difficult to give the «right» answers to these questions. The challenge is to have a system which ensures we do the right thing, even on a busy day.



3

4

+

6

Ergonomic exposure may include:

- Work squatting or kneeling
- Work with hands held above shoulder height
- Monotonous work
- Heavy lifting and carrying
- Leaning forwards without support from hands/arms
- Standing or walking work
- Monotonous arm or hand movements
- Physically strenuous work
- Work with neck bent forwards or backwards

For more information about the different ergonomic exposures, see the AF health card for the project you are working on.

Psychosocial working environment

Work revolves for most of us around providing services to earn wages and benefits. But often work means so much more. The workplace can also be an arena where someone uses their qualifications in such a way that they feel useful. It is satisfying to feel mastery, and experience professional and personal development.

Working life differs from most other arenas in that the degree of self-determination is reduced. There is someone else who decides what you will do and who you will work with. The Working Environment Act provides clear guidelines for interaction and communication in the workplace. Everyone is entitled to a work environment where people respect each other. No one must be subjected to harassment or other improper conduct, no one should violate the integrity and dignity of others, and employees must not be exposed to adverse psychological strain. The workplace must be an arena where people feel safe and get on well with their colleagues.

Both the employer, the employee themselves and colleagues of those who encounter problems in the workplace are obliged report this and seek to resolve the challenges. Collaboration problems, conflicts, harassment and stress must be dealt with. The reporting and management of work environment problems must happen as early as possible.

Working environment problems must as a starting point be taken up with the immediate manager. You can also seek advice and guidance from the safety service, employee representatives or from Human Resources. The Occupational Health Service has a neutral role in work environment issues and can be contacted for assistance in such cases.

3

4

+

6



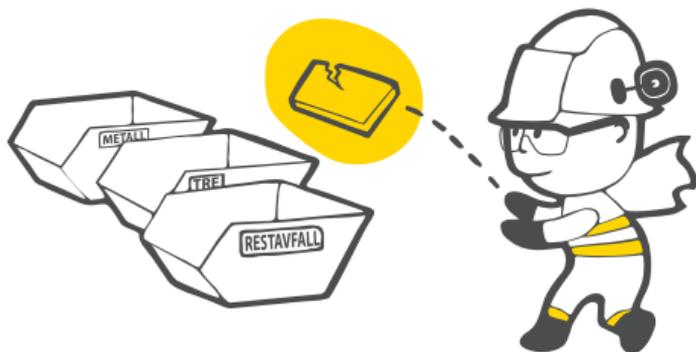
External environment

We must pay attention to our surroundings when we are at work. All burden to the environment must be minimised and unnecessary damage must be avoided.

Everyone has a responsibility to protect and maintain the environment.

Waste management

Good waste management is planning in order to minimise the amount of waste produced and implementing good recycling routines for the waste that is generated.



All waste must be sorted and placed in labelled containers. The purpose of sorting is to facilitate recycling. Sorting is important for environmental reasons, but also because it is economically advantageous and because we get better organised, safer and more efficient workplaces.

Hazardous waste must not be mixed with other waste, but disposed of in special containers.

4

+

6

Discharges and emissions

Unintentional emissions to air, water and soil must be prevented.

- Refilling of fuel must take place in locations that are established for this or from tankers or mobile tanks with an approved quick release coupling
- Tanks and containers must be located so that they are not vulnerable to collision or other damage that may lead to emission
- Repairs and maintenance work on machines must be carried out in working areas with an impermeable sheet and oil separator
- Washing must take place in an approved wash bay
- Run-off/erosion into watercourses must be restricted

All machines must have an absorbent agent (Zugol etc.) in case of incidents involving oil/fuel. Used absorbent agent is treated as hazardous waste.



Energy consumption and greenhouse gas emissions

Energy consumption affects the climate negatively through greenhouse gas emissions. It is therefore important to prioritise solutions that limit and minimise the use of energy, primarily fuel use, electricity consumption and amounts of waste. Examples of solutions:

- Insulated containers
- Energy efficient lighting
- Logistics/driving technology
- Avoid idling
- Updated/new machinery
- Energy efficient sheds
- Energy efficient heating of construction sites

4

+

6

Material and product selection

In our industry, there are numerous hazardous and environmentally dangerous products. For these products we evaluate options and we replace them with less hazardous products if this can be done without unreasonable cost or inconvenience (substitution assessment).

Noise

Noise complaints arising from our operations will be limited by the use of modern methods and machinery, and by planning work so that noisy activities will, as far as possible, be carried out during the daytime.

Dust

Described in chapter 3.

Artefacts and red-listed species

In the event of the suspected discovery of artefacts or red-listed plants, organisms or animals, work must be immediately stopped and the customer/authority notified.



+

6



Preparedness and first aid

In the event of an accident involving personal injury

- Protect the injured, limit the consequences. Ensure your own safety.
- Call for help: **Dial 1-1-3 for an ambulance**
- Start first aid
- Notify the management
- Secure the accident site, keep people away
- Direct those not Involved at the scene of the accident to the agreed meeting point

In the event of fire or explosion

- Call for help: **Call 1-1-0 for the fire brigade**
- Start extinguishing if possible
 - In the event of fire in power sources, water or powder must NOT be used before the power has been disconnected
 - In the event of a risk of explosion: Evacuate the area immediately
- Assess the spreading risk. Try to limit the fire
- Evacuate the area if necessary
- Notify management



In the event of a pollutant discharge

- Limit the spread of the pollution.
Look for the source, it may be hidden
- Apply Zugol or similar. Avoid using water!
- Notify management
- Dig up polluted soil and place it in a container for hazardous waste
- Notify the fire brigade on **1-1-0** in the event of a major pollutant discharge or complex situation

First aid

How to prioritise?

Think ABC when providing first aid:

A Airways

B Breathing

C Circulation

Use this mnemonic rule when you have one or more injured parties.

First you must secure everyone's airway (A), then you must ensure that everyone is breathing (B), before take any measures regarding circulatory failure (C).



Examine the injured person

- Talk to them
- Look at them
- Touch them



A - Airways: Is the person's airway open and clear?

- If the head and chin is positioned down towards the chest, the weight can obstruct the airway and the person may suffocate.



- The chin must be up and the head must be tilted backwards! In cases of suspected neck injuries *carefully* tilt the head backwards.



+

6

B - Breathing: Is the person breathing?

- Listen, feel and look for breathing for 10 seconds
 - People who are not breathing:
Start cardiopulmonary resuscitation (CPR)
 - People who are breathing:
Look for signs of circulatory failure

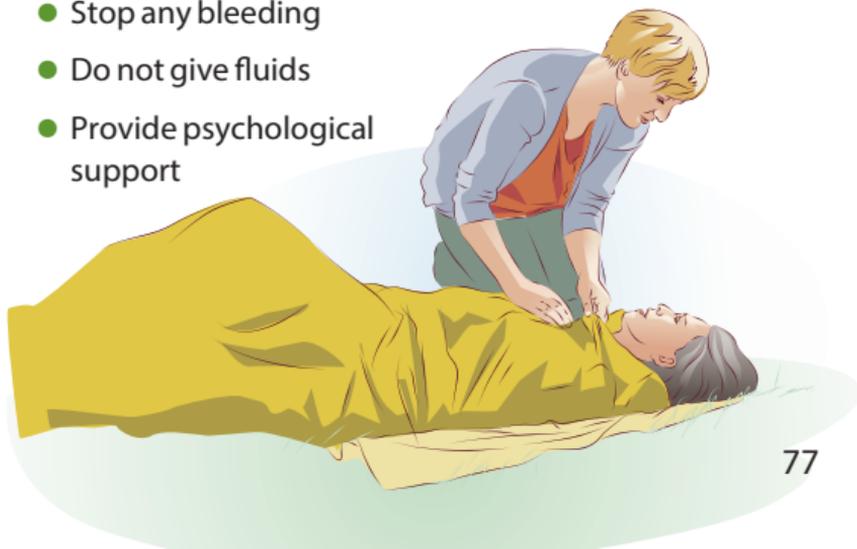


C - Circulation: Does the person have symptoms of circulatory failure?

- Pale, cold and clammy skin
- Freezing/trembling
- Behaving strangely («out of it»)
- Can you see blood or signs of internal bleeding?
- Is the person complaining of any pain?
- Is the person asking for a drink?

Measures against circulatory failure

- Keep the person warm
- Lay an awake person flat with legs raised
 - Lay a conscious person with chest injuries and breathing difficulties should sit half upright in order to make it easier to breathe
- Stop any bleeding
- Do not give fluids
- Provide psychological support



If unconscious and not breathing - Start resuscitation

Remember to alert **1-1-3** if it has not already been done!

Start with 30 chest compressions:

- Place the person on their back on solid ground
- Press in the centre of the chest Press straight down with straight arms (5-6 cm for an adult)
- Release and press down again
- Use approx 30 chest compressions in 18 seconds (equivalent to a rate of 100 compressions per minute)



Continue with 2 breaths:

- Open the airway by lifting the chin up and forward, at the same time carefully tilt the head backwards. Look for foreign objects in the mouth and if so remove them
- Squeeze the nostrils together and press your mouth over the person's mouth
- Blow carefully in until you see the chest rise

Use approx 1 second for each rescue breath.





- Let the air come out again
- Blow in again
- Continue alternating between 30 chest compressions and 2 rescue breaths until help arrives

If unconscious and breathing

- To keep the airways clear place the person on their side
- Move the top leg up and forwards to stabilise the person



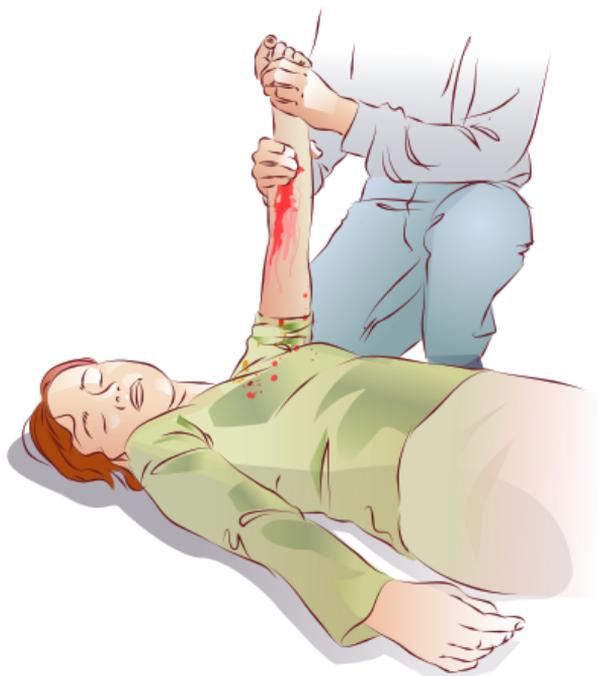
- Tilt the head back and position the face with the mouth low, as a rule with the hand to support the chin

- Remove blood and vomit from the mouth
- Regularly check that the person is still breathing
- Keep the person warm: Outdoors put the person on a blanket. Also cover the person with clothing or a blanket if you have one

Note: With suspected neck or spinal injuries evaluate whether to place the person on their side or not.

External bleeding

- Press directly on the location of the wound.
- Hold the location of the wound as high as possible

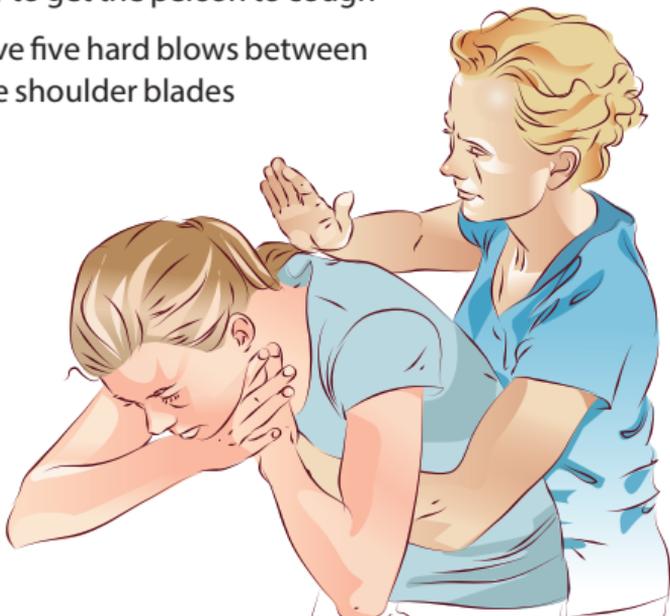


Foreign bodies in the airways

Foreign bodies in the airways can block the airways and could cause the person to suffocate.

What you can do:

1. Try to get the person to cough
2. Give five hard blows between the shoulder blades



3. Give five quick abdominal thrusts (Heimlich manoeuvre)
4. Continue alternating five back blows and five abdominal thrusts until the foreign body comes up
5. If the person loses consciousness: Start with CPR



Heimlich manoeuvre

- Stand behind the person
- Place a fist between the navel and the breastbone
- Place your other hand on top of the first
- Move your hands quickly inwards and upwards
 - Release and repeat
- Assess how hard to do it based on the person's size

Burns

- Cool quickly with cold water for the first few minutes
- Cover damaged skin with sterile gauze or clean cloth
- After that cool it down with lukewarm water (approx 20 degrees) for at least 20 minutes
- Do not tear away fabric if it is stuck to the skin
- Apply a burn dressing (WaterGel or similar)

Dial **1-1-3** to arrange transportation and place of treatment.



Electrocution

Consider your own safety so that you are not exposed to electrical current.

Respond to symptoms of electrocution as with other first aid (burns, unconsciousness, respiratory arrest, fall injuries, etc.).

People who have been exposed to the following must go to the hospital for follow-up:

- High-voltage current
- Lightning
- Low voltage electric shock with probable current flow through the body
- Unconsciousness or dizziness following electrocution
- Burns
- Signs of nerve damage (e.g. paralysis)

Mental first aid

- Spend time with the person who is injured
- Show concern for anxious people
- Explain what has happened and that help is on the way
- Be a good listener and acknowledge the injured persons concerns
- Make bystander keep their distance

Do not give up! All first aid efforts must continue until healthcare professionals take over.

Debrief

Talk with others about what you have experienced

- Talk about your own reactions in retrospect - it will do you good
- Describe the incident:
 - What did you see?
 - What did you hear?
 - What were you thinking?
 - What did you do?

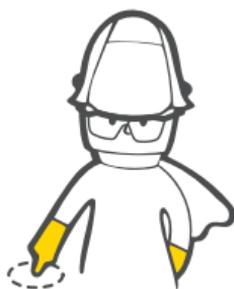


Standard signals and signs for directing crane movements



LIFT THE LOAD

With the arm raised, index finger pointing up, move the hand in small horizontal circles.



LOWER THE LOAD

With the arm lowered, forefinger pointing down, move the hand in small horizontal circles.



LIFT THE BOOM

Arm straight out, hand closed, thumb pointing straight up.



LOWER THE BOOM

Arm straight out, hand closed, thumb pointing straight down



TELESCOPIC BOOM OUT

Both fists in front of body with thumbs pointing outwards.



TELESCOPIC BOOM IN

Both fists in front of body with thumbs pointing inwards.



TURN

With the arm straight out, point with the fingertips to the side you want the boom to turn.



SIGNAL NOT ACKNOWLEDGED

One hand moves forwards and backwards. The palm towards the person being signalled to.



STOP

Arm straight out, palm down, move your arm quickly to right and left.



QUICK STOP

Arms straight out to the side, palms down, hand moves quickly to the right and left.

Hazard symbols



Acutely toxic



Chronic
health hazard



Health hazard



Flammable



Gas under pressure



Corrosive



Explosive



Oxidising



Environmental
hazard



AF emergency phone number

22 89 12 00

AF Gruppen ASA

Phone +47 22 89 11 00

Fax +47 22 89 11 01

afgruppen.no