

1 Physical hazards (F)

1.1 Items on the checklist

Physical hazards are hazards that arise at work due to the influence of various forms of energy. They include noise, temperature, lighting and radiation. The physical hazards checklist is well-suited for almost all work inspections, since the items it contains generally affect working environments and apply to all types of work.

F 1. Continuous noise refers to the prevailing level of noise at the workplace. The following operating values relating to the daily noise exposures of employees are prescribed by law:

- the lower exposure action value of 80 decibels (dB); if this is exceeded, the employer must obtain personal hearing protectors for the employees.
- the upper exposure action value of 85 dB; if this is exceeded, the employee must use the personal hearing protectors obtained for him by the employer and the employer must prepare a noise abatement programme.
- the limit exposure value is 87 dB; if exceeded, the exposure must be reduced below the limit value.

Even lower noise levels may cause harm due to communication difficulties, disturbances to peace of mind or poorer performance.

F 2. Impulse noise is a sudden loud noise, for which the following operating values have been set:

- the lower exposure action value of 135 dB (peak sound pressure 112 pascals (Pa)); if this is exceeded, the employer must obtain personal hearing protectors for the employees.
- the upper exposure action value of 137 dB (peak sound pressure 140 Pa); if this is exceeded, the employee must use the personal hearing protectors obtained for him by the employer and the employer must prepare a noise abatement programme.
- the limit exposure value is 140 dB (peak sound pressure 200 Pa); if exceeded, the exposure must be reduced below the limit value.

In order to more precisely assess impulse noise and extremely high or low frequency noise, a range of measurements are needed.

F 3. Workplace temperature. Wherever it is possible and necessary, workplace temperature and humidity must be capable of being regulated. The following temperature recommendations and maximum values have been set for different kinds of work:

- Light sitting work 21 – 25 °C
- Other light work 19 – 23 °C
- Moderately heavy work 17 – 21 °C
- Heavy work 12 – 17 °C

F 4. General and local ventilation. The general ventilation system must be sufficient and arranged in the most appropriate way. If necessary, it must be supplemented with local ventilation.

F 5. Draught. A draught is an incoming air flow that is cooler than the room air. If the air flow velocity is 0.15-0.5 m/s, it is normally considered to be harmful. It is certainly draughty when the air velocity exceeds 0.5 m/s. Open external doors or windows may cause a disturbing draught.

F 6. Cold or hot objects can cause injuries from burns or extreme cold. Hot or very cold parts of work tools must be protected, if necessary, so that workers are in no danger of touching them or coming too near. Workers must have the necessary protective equipment to handle cold or hot objects.

F 7. Working outdoors. The risks of outdoor work are affected by length of time spent outdoors, air temperature, wind velocity, sunshine, rain and slipperiness.

F 8. General lighting. The workplace must have suitable and sufficiently effective lighting as required by the work and the needs of the workers. In assessing the sufficiency of the lighting, note should be taken of the effect of daylight, the season and time of day, the weather conditions and the use of sunshades and local lighting. The lighting must not cause dazzle.

F 9. Local lighting at workstations. If necessary, the general lighting must be supplemented by local lighting at workstations. This is very important in work requiring great precision. Although deficient lighting does not cause eye injuries, it may increase the risk of accident or fatigue.

F 10. Safety/indicator lighting at walkways. Walkways must have sufficient general lighting. Exits must have sufficient reserve lighting and their position must be shown by illuminated signs. Safety and indicator lighting must meet the SFS-EN 1838 and SFS-EN 50172 standards.

F 11. Outdoor lighting. Workplace-related areas (e.g. storage spaces, yard areas, parking areas, access ways) must have sufficient outdoor lighting.

F 12. Hand/arm vibration. An investigation must be made into whether the workplace uses vibrating machines or equipment (e.g. pneumatic and electrically driven hand tools, mobile work machines), whether vibration causes problems and whether the workers display vibration-related symptoms. In addition, the need for further investigations must be assessed. Vibration measurement and analysis is a job for experts.

The daily exposure limit value for hand-arm vibration is 5 m/s²; if this is exceeded, the employer must take steps to lower the vibration. The daily exposure action value for hand-arm vibration is 2.5 m/s²; if this is exceeded, the employer must prepare a vibration control programme.

F 13. Whole-body vibration. An investigation must be made into whether the workplace uses vibrating machines or equipment (e.g. pneumatic and electrically driven hand tools, mobile work machines), whether vibration causes problems and whether the workers display vibration-related symptoms. In addition, the need for further investigations must be assessed. Vibration measurement and analysis is a job for experts.

The daily exposure limit value for whole-body vibration is 1.15 m/s²; if this is exceeded, the employer must take steps to lower the vibration. The daily exposure action value for whole-body vibration is 0.5 m/s²; if this is exceeded, the employer must prepare a vibration control programme.

F 14. Ionizing radiation. X-rays, gamma-rays and radon lead to exposure to ionizing radiation. Radiation measurement is a job for experts.

F 15. Ultraviolet radiation. UV radiation is present in welding, in certain lamps and in sunlight. Exposure to UV radiation can cause e.g. sunburn inflammation or cataracts in the eyes.

F 16. Laser radiation bears a risk of causing injury to the eye or the skin, for example. Lasers are classified according to their risk, as presented in the SFS-EN 60825-1 standard.

Class 3B and 4 lasers can cause permanent eye damage as a result of exposure to direct or diffuse beams (reflected from shiny surfaces).

F 17. Infrared radiation. Infrared radiation is present near e.g. heating and smelting furnaces and infrared dryers and heaters. Excessive radiation can be reduced by using reflective materials.

F 18. Microwaves are electromagnetic waves. Microwaves are used in e.g. radar and communications technology and in microwave ovens. The microwave-induced hazards are the heating effects, which are determined by the intensity of the field.

F 19. Electromagnetic fields. Electric and magnetic fields are present near e.g. induction heaters and ovens. There is no indisputable evidence of the health effects of electromagnetic fields.

1.2 Estimating risk levels

The probabilities related to the risks arising from physical hazards can be estimated, with respect to those quantities that can be measured, by comparing the measured results with the limit values, or by examining exposure frequencies and durations.

Table 1. Estimating the level of risk due to physical hazards.

Likelihood	Severity of harm		
	Slightly harmful Discomfort, irritation, temporary minor illness	Harmful Burns, extended serious effects, permanent minor harm, impaired hearing	Extremely harmful Occupational cancer, asthma, permanent serious effects, death
Unlikely Serious effects 10-50% of guideline values	1 Very low risk	2 Low risk	3 Medium risk
Likely Serious effects 50-100% of guideline values	2 Low risk	3 Medium risk	4 High risk
Very likely In excess of guideline values	3 Medium risk	4 High risk	5 Very high risk

Example: A workplace's A-weighted noise level is 81 dB over a period of 8 hours. There is no impulse noise. What is the risk level of the noise in a space for a full-time employee?

Hazard:	Background noise
Description of hazard:	Noise level 81 db(A)
Severity of harm:	Harmful (risk of impaired hearing, concentration deficiencies, lower exposure action value 80 dB(A))
Likelihood:	Unlikely (full-time, no hearing protector in use, noise level under 85 dB(A))
Risk:	3

1.3 Actions to control physical risks

The most efficient and economical way is to eliminate physical hazards during the planning of workplaces. Corrective action carried out afterwards is usually expensive and difficult to implement. In workplaces that are already operational, noise can be reduced by encasing the machines or equipment that produce the noise, or by bordering the work station with acoustic screens. It is wise to always examine ventilation-related factors when planning or renovating work stations. The regular measures undertaken to maintain ventilation power include the checking of controls, examination of equipment functioning and maintenance and service. The consequences of excessively high or low temperatures can be diminished by technical or structural solutions and by means of personal protectors.

2 Accident hazards (A)

2.1 Items on the checklist

Accident hazards involve a sudden and uncontrolled energy source: moving objects, uncontrolled motion or energy. The accident hazards checklist is very well suited to the inspection of jobs involving many different work stages, machines or equipment or where the work is done in changeable working conditions.

A 1. Slipping. A slipping hazard refers to a situation in which there is too little friction to permit a walking person to stay upright. The hazard is usually related to smooth and even surfaces. It can be increased by ice, water or other liquid on the surface, and the inclination of the surface. The quality of the footwear and the method of moving also affect safety.

A 2. Tripping. A tripping hazard relates to obstacles on the access way (e.g. pipes, tubes, waste) or irregularities (e.g. thresholds, depressions, pit-holes, level variations) that may lead to a fall. The hazard is increased by e.g. attention being fixed on something else when carrying a load or when doing other work at the same time.

A 3. Being lifted or falling from a height. A falling hazard refers to a situation in which it is necessary to rise (e.g. by climbing) above the working level or access way, or in which the working level or access way has a free unprotected edge from where it is possible to fall to a lower level (e.g. there is no railing or there is an unprotected hole in the working level). There is a special falling hazard with respect to ladders and steep flights or **£** steps.

A 4. Being crushed between objects. Moving objects (e.g. machine parts) may lead to a crushing hazard, in which some body part (e.g. hands or feet) or the whole body becomes crushed between two moving objects or against a fixed structure.

A 5. Being trapped in a locked space. Being trapped when a door or hatch does not open from the inside may cause a serious hazard in cramped or locked cold spaces, for example.

A 6. Electrical devices and static electricity. An electric shock hazard arises when a person touches an unprotected live electric wire or other live device. With high voltages it is not even necessary to touch; merely entering the danger area is enough to receive an electric shock.

An electric shock or outbreak of static electricity can as such be fatal, or it can lead to other dangerous situations such as staggering, falling or a reflexive clinging to something. In addition, electricity can indirectly cause mortal danger if an overheated wire or sparking joint causes a fire.

A 7. Goods transports and other traffic. Internal traffic (forklifts, bicycles, mobile work machines, vehicles) moving on the same routes both indoors and outdoors can cause accident hazards (e.g. collisions). In addition, working time errands (e.g. business visits) and commuting safety should be investigated.

A 8. Oxygen deficiency. An oxygen deficiency can occur e.g. in tanks or other closed spaces used to store oxygen-consuming substances or goods such as wood chips or scrap.

A 9. Being plunged into water. Drowning hazards arise in work that takes place near water (e.g. rivers, lakes, the sea, pools) without any barrier against falling. Examples include the construction of bridges and harbours, and the maintenance and cleaning of pools.

A 10. Objects being dropped. There is a danger of objects being dropped when they are stored or moved above floor level. The danger is particularly high when the objects are above head level, e.g. when lifting loads above people.

A 11. Objects falling over. Objects can fall over when they are being moved or stored. This hazard can arise when the objects are in an unstable position or there is no binding. Examples include piled sheets, boxes, gas bottles, etc.

A 12. Objects/materials being hurled around. Objects and materials can be hurled around when machining takes place at high velocity, as in grinding or milling operations.

A 13. Hit caused by a moving object. Moving objects such as machine parts or transferrable pieces can lead to unexpected hits and knocks if people are working in the hazard area.

A 14. Being entangled in a moving object. The drains and moving edges of machines, conveyors, cylinders and rolls, and the heads of rotating axles give rise to an entanglement hazard. This hazard is increased by the wearing of loose clothing or, for example, loose hair.

A 15. Being slashed or cut. Sharp, thin metal, plastic or glass materials and knives, etc. can cause a slashing or cutting hazard.

A 16. Being stabbed. Sharp-pointed objects (e.g. nails) can cause a stabbing hazard.

A 17. Deficient protective equipment. The risk of accidents is increased if the appropriate personal protective equipment or machine/equipment guards and safety devices are in bad condition or are lacking .

A 18. Unsafe actions and risk taking. Risk taking refers to the conscious taking of a risk and risky behaviour. Unsafe actions refers to the use of dangerous working methods or a failure to follow safety guidelines. Unsafe actions can cause an accident hazard not only to the person him or herself, but also to bystanders.

A 19. Extraordinary situations. Whenever there are extraordinary situations (such as faults, disturbances and errors) or, on the other hand, maintenance, service or cleaning that occurs during normal operations, there is a risk of accidents or other hazards (e.g. due to awkward working positions).

A 20. Substance abuse. Working under the influence of intoxicants or hangovers or drugs increases the accident risk for both the person involved and his/her workmates.

A 21. Deficient alarms and rescue devices. Workplaces must have security systems (e.g. fire-fighting, life-saving and survival equipment) which, in the event of fire, explosion, drowning or other accidents, raise the alarm, protect from danger and help to save lives. The need for safety and survival equipment depends on workplace conditions and the nature of the work.

A 22. Deficient first aid system. If necessary, each workplace must appoint persons responsible for first aid and rescue operations, and sufficient training must be arranged for them. The workplace must have enough appropriate first aid equipment. Each employee must be fully acquainted with the first aid systems. The workplace must have a suitable space for the application of first aid.

2.2 Estimating risk levels

The probabilities related to the risks arising from accidents can be estimated by examining the frequency of accidents. The seriousness of the effects can be examined either by the length of consequent absences or the nature of the harm caused.

Table 2. Estimating the level of risk due to accidents

Likelihood	Severity of harm		
	Slightly harmful Absence < 3 days. Temporary minor effects: sprains, bruises	Harmful Absence 3-30 days. Extended serious effects, permanent minor harm: fractures, burns	Extremely harmful Absence > 30 days. Permanent disability, death
Unlikely Occasional hazardous situations; occur seldom.	1 Very low risk	2 Low risk	3 Medium risk
Likely Daily hazardous situations. Near misses have occurred.	2 Low risk	3 Medium risk	4 High risk
Very likely Hazardous situations occur often and regularly. Accidents have occurred.	3 Medium risk	4 High risk	5 Very high risk

Example: The warehouse has several high storage racks where heavy metal objects are stored on pallets. These objects are lifted many times per day by forklift trucks. What is the risk caused by falling objects from the perspective of those that work in and visit the warehouse?

Hazard:	Falling objects
Description of hazard:	Goods fall when being lifted from the racks.
Severity of harm:	Harmful (in the worst case death, but the more normal effects are contusions or bruises)
Likelihood:	Likely (for persons working in the warehouse) and Unlikely (for occasional visitors)
Risk:	3 (for persons working in the warehouse) and 2 (for occasional visitors)

2.3 Actions to control accident risks

Good order is the foundation of accident prevention. The accident risk can be reduced in the workplace by keeping walkways, working surfaces and steps in good condition. The falling hazard can be prevented with proper working and moving surfaces and by installing protective structures. The lighting must be in good condition. The accident risks related to the use of machines and equipment can be prevented by acquiring only machines that meet all requirements, by correcting the deficiencies in protective equipment on old machines and by training the workers to use the machines safely. Accident risks often result from deliberate risk taking, and their control is an integral part of active supervisor control and exemplary conduct.

3 Ergonomics at work (E)

3.1 *Items on the checklist*

Ergonomics at work concerns the suitability for people of various kinds of work, working methods and tools. It examines the effects on people of physical strain and awkward working positions. The ergonomics checklist is divided into two parts: A thorough discussion of workstation-related matters is extremely important for those working at a fixed workstation. The physical strain section is well-suited for the inspection of manual work stages.

E 1. Workplace cleanliness and order affects how smoothly and quickly the work can be done. Workplaces must be organised so that the most frequently used objects and functions are within close reach, while less frequently used ones are further away. Good order is a must.

E 2. Walkways, exits and rescue routes. Walkways must be fully formed, unobstructed and sufficiently wide. In an emergency all person in the workplace must be able to escape quickly and safely.

E 3. Steps, ladders and ramps. Moving across different work levels increases physical strain.

E 4. Height of working surface. The right height of a working surface depends on the nature of the work: in work demanding precise movements of the arm and hand, the working height should be higher than the elbow and the elbow must be supported. In work requiring strong horizontal pulling or pushing the best working level is at elbow height. If the job requires freedom of movement of the arms, the right working height is below elbow height.

E 5. Seat. If it is possible to sit during the work, seats must be organised for that purpose. The seats must be solid and, if necessary, adjustable.

E 6. Visual displays and terminals. Work done at a visual display unit must be organised so as to avoid any harm to the eyes or any mental or physical strain. Planning for this kind of work must consider matters related to the equipment, the working environment and user access.

E 7. Posture of back. Hunched, twisted and lop-sided postures and their combinations strain the back. Constant sitting or standing are also hard on the back.

E 8. Posture of shoulders and arms. The arms should always be lower than shoulder level. The shoulders should always remain relaxed during work.

E 9. Posture of wrists and fingers. The wrist should remain straight and in line with the arm.

E 10. Posture of head and neck. The head should be in a natural and central position.

E 11. Posture of legs. It should be possible to support both legs on the floor.

E 12. Continuous sitting or standing. Continual sitting causes fatigue and muscle tension. This can be reduced by diversifying the work, taking breaks and exercising. The strains caused by standing work can also be reduced by the use of standing supports, a correct working height and a flexible standing platform.

E 13. Work breaks and pace of work. Employees should have the possibility themselves to counteract physical strains by taking a break. The more exacting and straining a job is, the greater is the need for proper breaks.

E 14. Constantly repeated movements. Work-related physical movements should be diverse and self-adjusting. Constantly repeated movements cause fatigue, muscle tension and stress injuries.

E 15. Lifting or carrying heavy loads is physically hard. The resulting strain depends on the size, shape and position of the load, the number of lifting movements and the working environment. It can be reduced by good planning and the use of lifting aids.

E 16. Tools, machines and other equipment. The tools used at work should be suitable for the work and for the working conditions. They should also be used safely. Tools should be used only for those jobs and for those conditions for which they are suited.

E 17. Objects to be handled. In particular, those objects that are too large, too heavy, awkwardly shaped, unstable or dangerous in terms of their composition or contents can cause a hazard to employees during handling.

E 18. Work station supports and aids. If the work requires separate leg, standing, elbow or wrist supports in order to reduce static loads, they should be acquired.

E 19. Adequacy of working space. The capacity and surface area of a working space should be sufficient. The amount of room air should be at least 10 cubic metres per employee.

E 20. Possibility to vary working posture. Workstations should also be sufficiently spacious ergonomically. The employee should be able to move and change position during the work.

3.2 Estimating risk levels

The level of risk due to deficient ergonomics at work can be estimated by examining the frequency of ergonomic strain and the nature of the effects.

Table 3. Estimating the level of risk due to ergonomics at work

Likelihood	Severity of harm		
	Slightly harmful Discomfort, irritation, temporary strain	Harmful Extended serious effects, permanent minor harm, occasional absences	Extremely harmful Permanent serious effects, long or repetitive absences
Unlikely Occasional strain; occurs seldom	1 Very low risk	2 Low risk	3 Medium risk
Likely Daily hazardous or straining situations	2 Low risk	3 Medium risk	4 High risk
Very likely Continuous hazardous or straining situations	3 Medium risk	4 High risk	5 Very high risk

Example: Final product inspection and sorting occurs on the conveyor belt. Workers on the line work in 45-minute periods for 7 hours every day. What is the risk level of constantly repeated movements?

Hazard:	Constantly repeated movements
Description of hazard:	Repeated movements of the arms and wrists, stress injuries and fatigue
Severity of harm:	Harmful (pains, absences, slowing of work pace)
Likelihood:	Very likely (integral part of the work, has an effect all the time)
Risk:	4

3.3 Actions to control risks caused by ergonomics at work

If the workstation is well laid out and ordered, this will help decrease the risks arising from physical strain. The use of lifting aids and correct goods lifting methods will reduce the strain involved in heavy lifting. By using aids and diversifying the work, it is also possible to diminish the strains involved in heavy, repetitive movements.

4 Chemical and biological hazards (C, B)

4.1 Items on the checklist

Chemical hazards refer to health hazards caused by hazardous substances, compounds and particles. The chemical hazards checklist allows a preliminary survey to be made of the need for more detailed measurements and the need for an assessment of chemical hazards.

The risk assessment involves identifying chemical exposures at the workplace and the hazardous properties of the chemicals. Hazardous properties are identified from the package labels and from the latest guidelines on safe handling and use.

C 1. Hazardous or harmful chemicals. Employee exposures to hazardous or harmful chemical agents must be restricted to such an extent that they pose no threat to employee health, safety or reproductive health. The employer must have adequate information about the properties and dangers of the chemical agents used. The quantity and nature of employee exposures to chemical agents must be investigated so that an estimate can be made of the health hazards and the necessary actions can be taken.

C 2. Cancer-causing chemicals. In all activities bearing a risk of exposure to cancer-causing chemicals, the nature, quantity and duration of the employee exposure must be assessed, and alternative substances and methods must be considered in order to reduce the exposure. Exposed employees must be notified in the Finnish Register of Occupational Exposure to carcinogens (the ASA register). The assessment of exposures is a job for experts.

C 3. Allergy-causing chemicals. This refers to the exposure of employees to chemicals by way of inhalation that causes asthma, allergic colds or other over-sensitive reactions, or by way of skin contact that causes skin sensitising. The harm is usually permanent. The assessment of exposures is a job for experts.

C 4. Flammable or explosive substances. Utmost caution must be observed when handling and storing explosive, flammable, corrosive or other such hazardous substances. Dust-air mixtures can cause an explosion hazard.

C 5. Dust and fibre. Dust consists of solid particles floating in the air and is generally created by a mechanical process or by mixing. Fibre refers to the mineral fibres used in industry (e.g. textile dust) or to synthetic, inorganic fibres (e.g. glass or mineral wool). Dust and fibres irritate the skin, eyes and breathing organs, so that exposure must be prevented/minimised.

C 6. Gases. Gases refer to all gaseous substances at the workplace that are harmful to health and safety.

C 7. Vapour, fume and smoke. Vapour arises during the evaporation of a liquid substance into the air (e.g. solvent vapour). Fumes arise when machining solid material in hot processes (e.g. welding fumes). Smoke comprises solid particles floating in the air after burning (e.g. oil smoke).

C 8. Labelling of chemical packages. Employers have a responsibility to ensure that, when they receive hazardous chemical packages, they have appropriate, clear and permanent labels. Storage tanks must also be labelled.

C 9. Guidelines on safe handling and use. The employer must keep, order and archive guidelines on safe handling and usage at the workplace. The archive must contain an alphabetically arranged directory of the chemicals used at the workplace. The guidelines and directory must be available to employees upon request.

C 10. Methods of using chemicals. Chemicals must be used in such a way that their use does not cause a hazard to the health and safety of employees. Employee exposure to the chemicals must be investigated so that the hazards they cause can be assessed.

C 11. Storage of chemicals. Chemicals must be stored at the workplace in such an effective way that they do not cause harm to people, property or the environment. Chemical stores must be labelled clearly.

C 12. Disposal of chemical waste. Chemicals must be disposed of in such a way that they do not cause a hazard to people or the environment.

C 13. Condition and use of protective devices. Personal protective devices must be used against chemical exposure in situations where technical measures cannot adequately reduce the risk. The devices must be sound, appropriate, sufficiently protective and suitable for the work.

C 14. Condition and use of first aid equipment. The workplace must have enough surgical dressings, medicines and other first aid equipment, whose condition and place of storage must be checked once a month. If necessary, the employees must be instructed on how to obtain quick first aid.

C 15. Condition and use of electrical devices. Attention must be paid, in installing, using and maintaining electrical devices, to the risk of fire or accident due to wrong connections, faults or overheating.

C 16. Hot work permits and practice. Hot work refers to work in which sparks arise or a flame or other heat is used, and which causes a fire hazard. When hot work is done in a temporary hot work location, a hot work permit is mandatory.

C 17. Fire-fighting equipment and its labelling. Every workplace must have access to water and a sufficient quantity of fire-fighting equipment, i.e. fire extinguishers, smothering blankets, hoses, fire extinguishing agents, etc. The equipment must be appropriately and visibly labelled, sound and fit for use, and easily available.

C 18. Exits and exit signs. Every workplace must have a sufficient number of appropriately labelled, clearly visible and easily accessed exits leading to the ground, which must always be kept free.

B 1. Infection risk, e.g. bacteria and viruses. At workplaces with an infection risk (e.g. health care facilities), the nature, duration and magnitude of employee exposure must be estimated. Bacteria and viruses can cause inflammation, allergies or diseases. The assessment of exposures is a job for experts. A special government decision has been made on biological agents.

B 2. Fungi, e.g. mould. At workplaces with a risk of hazardous fungi (e.g. agricultural work and waste disposal), the nature, duration and magnitude of employee exposure must be estimated. Fungi can cause allergic diseases (e.g. hypersensitivity pneumonitis) and/or rashes. The assessment of exposures is a job for experts.

4.2 Estimating risk levels

The limit values defined for each exposure should be used as an aid in estimating the health risk due to air impurities. On the other hand, the risk due to skin exposures, accident-related chemical exposures and exposures to biological agents can be estimated in the same way as for accident risks, for example.

Table 4. Estimating the level of risk due to chemical hazards

Likelihood	Severity of harm		
	Slightly harmful Discomfort, irritation, temporary minor illness R20,21,22,36,37,38,66,67 EUH066,H302,H312,H315, H319,H332,H335,H336	Harmful Burns, extended serious effects, permanent minor harm R23,24,25,33,34, 40,43,48,62,63,64,68 H301,H311,H314,H317, H331,H341,H351,H361d, H361f,H362,H371,H372, H373	Extremely harmful Occupational cancer, asthma, permanent serious effects, life- shortening diseases R26,27,28,35,39,41, 42,45,46,49,60,61 H300,H304,H310,H314, H318,H330,H334,H340, H350,H350i, H360D, H360F, H370
Unlikely Chemicals are handled seldom. Concentrations are small.	1 Very low risk	2 Low risk	3 Medium risk
Likely Chemicals are handled often. Concentrations are moderate.	2 Low risk	3 Medium risk	4 High risk
Very likely Chemicals are handled a lot. Concentrations are large. Symptoms have appeared.	3 Medium risk	4 High risk	5 Very high risk

Example: A silk screen printer is continuously exposed to solvent agents at work. The combined concentration of solvents in the air has been estimated to vary between 50% and 100% of the MAC value (maximum allowable concentration). What is the risk due to the solvent agents?

Hazard:	Flammable and explosive substances, printing ink and solvent fumes
Description of hazard:	<ol style="list-style-type: none"> 1. Solvent substances, a health hazard when inhaled, evaporate from the printing ink. 2. Printing ink causes skin complaints if there is contact. 3. Solvent fumes can combust and cause a fire.
Severity of harm:	<ol style="list-style-type: none"> 1. Harmful (irritation, temporary nervous system effects, and permanent effects from long-term exposures over the MAC value). 2. Slightly harmful 3. Extremely harmful
Likelihood:	<ol style="list-style-type: none"> 1. Likely 2. Very likely 3. Likely
Risk:	<ol style="list-style-type: none"> 1. Solvent fumes 3 2. Rashes 3 3. Combustion 4

4.3 Actions to control chemical risks

The following actions may be used, as appropriate, to prevent chemical and biological risks:

1. Selection and introduction of chemicals, working methods and practices that cause no hazards or as few hazards as possible
2. Implementation of sufficient internal control in the workplace
3. Reduction in the number of people exposed and in the exposure period
4. Technical prevention and control measures
5. Personal protectors and protective clothing
6. General occupational hygiene measures
7. Training and guidance
8. Use of warning and safety signs
9. Monitoring of employee health status
10. Planning of emergency and first aid actions

5 Psychosocial stress (P)

5.1 *Items on the checklist*

Psychosocial stress refer to the mental stresses of work. The checklist includes the generally known sources of fatigue and stress that are present in nearly all workplaces. Psychosocial stress is a part of the total stress caused by work, and therefore is an integral part of an overall assessment of risks.

P 1. Repetitive or monotonous work. Work that is constantly repeated or lacks variety leads to boredom and decreased motivation. These harmful effects can be prevented by providing breaks and diversifying the work.

P 2. Working alone or night work. We can talk about working alone if employees work alone, or if they work on night shifts, for example, or feel isolated due to noise, walls or other reasons. Working alone raises the accident risk, and may lead to a feeling of excessive responsibility, or lack of information, or the threat of violence, etc.

P 3. Constant state of alertness. There are demands for a constant state of alertness when working in a control room, in health care or in transportation, for example. This can lead to fatigue and a loss of concentration. The negative effects can be lessened by breaks or work rearrangements.

P 4. Forced pace of work. In some kinds of work, the employee cannot him/herself determine the pace at which the work is done. This may be due to the machines, production lines, processes, other workers or excessively short timetables.

P 5. Social work load. Social work load are affected by the quality and quantity of relationships between people. Excessive pressures can arise at the workplace or between employees and persons outside the workplace. A lack of social support may also be a factor.

P 6. Too busy. A temporary state of rush and hurry may be positive in promoting mental alertness, but if it continues or if there are constant peaks of excessively busy work, it can have harmful effects on employee health and safety.

P 7. Too high expectations or goals. Excessively ambitious or unclear expectations or goals and an accompanying feeling of a lack of control over one's work are stressful. The expectations and goals should be in the right relationship to the employee's capabilities and skills, and to his/her ability to influence the work.

P 8. Lack of possibilities to advance. Work in which employees have multiple opportunities to use their knowledge and skills, learn new things and advance in their careers are mentally rewarding.

P 9. Job and workplace orientation. Job orientation refers to the help and advice new employees receive regarding their job, while workplace orientation refers to the process of familiarising employees with the workplace organisation and ways of working. Proper orientation is a crucial step in preventing factors that may become harmful to employee health and safety.

P 10. Job descriptions and responsibilities. Employees should have a clear idea of their job description, their responsibilities and what their role is in the whole organisation.

P 11. Working hours, overtime, shift work. Working hours are prescribed in the working hours legislation. Local adjustments may also be made .

P 12. Uncertainty of employment. If employment is for a fixed term or for a fixed task, or if changes occur in the employment contract, or if there is a threat of discontinuation of employment, this can be a source of stress for employees.

P 13. Poor management or organisation. The management-related factors that cause stress can be e.g. poor management methods, excessive absence by the boss, a management style that is seen as unfair, a neglect of management obligations, etc.

P 14. Poor working atmosphere. The working atmosphere is affected by the employees' attitude towards their work and their team's work, the management skills of bosses, the relationships between employees, the atmosphere in the whole organisation, etc.

P 15. Lack of interaction. Communications include not only the information flow to employees about their work, their working environment and the company, but also the provision of feedback between employees and between subordinates and bosses.

P 16. Threat of violence. Workplace violence refers to perceived physical violence or the threat of violence while engaged in normal work. It can arise at the workplace or employees can be threatened outside the workplace (violent customers, patients, etc.).

P 17. Bullying or harassment. Bullying or harassment include pressurising, insulting, ostracising, or name-calling. It may also involve discrimination or sexual harassment.

P 18. Lack of social support. Social support refers to informational support (advice, suggestions and re-assessments), material support (practical help), critical support (providing positive feedback on another's work and capabilities) and mental support (a willingness to help, confidentiality, empathy, listening and encouragement).

P 19. Lack of possibilities to influence. The possibilities to influence refer to employees' power or independence to make decisions affecting their own work. This can relate to e.g. working order, working pace, working methods, equipment purchases or the division of work.

5.2 Estimating risk levels

The risks arising from psychosocial stress can be estimated by examining the frequency of exposure to stressful situations and the resulting harms.

Table 5. Estimating the level of risk due to psychosocial stress

Likelihood	Severity of harm		
	Slightly harmful Fatigue and frustration, occasional absences	Harmful Lowered ability to concentrate and act, helplessness and restlessness, repeated absences	Extremely harmful Hopelessness, extreme depression, continuous absences
Unlikely Hazardous or stressful situations occur seldom or a little at a time.	1 Very low risk	2 Low risk	3 Medium risk
Likely Hazardous or stressful situations occur repeatedly or for a period at a time.	2 Low risk	3 Medium risk	4 High risk
Very likely Hazardous or stressful situations occur continuously, with harmful effects. Permanent stress.	3 Medium risk	4 High risk	5 Very high risk

Example: The amount of work done by an assembly team has increased substantially in half a year, resulting in continuous overtime. The working atmosphere and team spirit is perceived as poor. What is the level of risk caused by this problem?

Hazard:	Too high expectations or goals
Description of hazard:	Amount of work cannot be handled in normal working hours, continuous overtime.
Severity of harm:	Harmful (decreased motivation, poor working atmosphere)
Likelihood:	Likely (situation continued for 6 months)
Risk:	3

5.3 Actions taken to control psychosocial stress

Psychosocial wellbeing can be promoted by the following actions:

1. All employees are contracted with the goals and tasks of the work community
2. The division of work is fair and clear.
3. All employees know what they must do and what they are responsible for.
4. Employees have the power to influence their own work.
5. The flow of information is reciprocal and goes in many directions.
6. Employees get feedback and support
7. The interaction between bosses and subordinates is open and confidence is holding.