Working environment manual – Seafarers
Prevent is a voluntary organisation in the work environment area, working under Swedish Trade and Industry, the Swedish Trade Union Confederation and the Negotiation Cartel for Salaried Employees in the Private Business Sector.

Prevent works for a healthy, sound and safe working life. Find more information at www.prevent.se.

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Better work environment at Sea
Foreword

The work environment of those employed in shipping cannot be described simply or briefly. Ships come in many types; small and large ferries for short or long trips, ro-ro ships, tankers, towboats and high-speed ships are only a few examples. The work, methods and organisation vary depending on the size and type of ship. Furthermore, the employees live onboard and spend their free time there for long periods. Different circumstances, issues and potential problems are added when compared to work on land.

The situation in itself, that the work is done at sea far away from medical services, rescue services or police services for example, makes further demands on sea safety and the environment onboard. If an accident should happen, it may have far more serious consequences at sea than it would have on land. In order to ensure a safe and healthy life onboard, preventive work has the highest priority. These are the reasons why provisions concerning shipping are so comprehensive, whether they are international provisions or Swedish law.

All this puts high demands on those involved with the work environment and requirements are often higher than those for work on land. However, this makes the work environment onboard a more interesting, wide-ranging and meaningful workplace for all concerned. This is true for supervisors, who must consider the work environment in their daily decisions, and the crew and their representatives, including safety representative.

This study material consists of two parts. The first, "Better work environment at Sea", describes how activities with the work environment should and can be carried out onboard, the demands that laws and other provisions make as well as some basic facts on various subjects. The second part is more comprehensive. It contains work environment manuals describing different tasks found onboard, what the risks are and what is necessary for the work to be done as safely as possible. The material also includes a number of instruments and checklists, which may be used in the systematic work environment management (SAM) in accordance with the provisions from the Swedish Work Environment Authority.

Tab 9 takes up ergonomics for the prevention of musculoskeletal disorders, and includes a model for identifying problematic work positions. Tab 11 contains information from different authorities about gases in cargo holds, fatigue at sea and other topics.

The system of using work environment manuals facilitates activities in many ways:

• It is not necessary to read through the basic part; simply choose the manuals that are relevant for the area of work in question.

• It is not necessary to search in many different places. Everything concerning a particular task is gathered in one place: risks, preventive measures, safety equipment, what needs to be checked, how the work is to be done etc.

• A copy of the work environment manual can be taken to the place of work.

• The fields of application are many. The work environment manuals can easily be copied and distributed to all concerned. A foreman can use the manuals as a guide in instructing personnel. The safety representative can use the manuals when checking the work environment.

The work environment file can be downloaded from the SAN website, www.sannytt.se. Manuals and checklists can also be printed from the website.
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Better work environment at sea

Modern ships can be described as miniature floating societies where all activities take place within a very restricted area. Living and working onboard a ship places high demands on individuals and the ship’s total environment. Many different people in different professions have to get on well together for the ship to function safely and satisfactorily. For this to be possible, the work environment and the leisure environment onboard must be of high standards.

Work onboard involves many different tasks, some of which have been in existence for hundreds of years. New tasks are constantly being added due to advances in society and technology. These tasks span a large range, from traditional guard-duties, loading and unloading, maintenance, mooring, and truck driving to administration and computer work. New techniques, new tasks and procedures are constantly being added, and new risks come with them.

The work environment at sea is also influenced by weather, wind, snow, ice, burning sun and high seas.

Even though workplaces onboard are planned to fulfil the highest demands, certain risks will always remain. The need to take special notice in certain areas is shown in the statistics concerning work-related injuries and near-accidents. Most accidents at work take place during some kind of transportation. The communication links between the ship’s deck, cargo spaces and storerooms often consist of ladders, which are both narrow and steep.

An open deck is almost the most slippery place in working life. Everything possible must be done to minimise the risk of slipping. Decks should be painted with non-slip paint. Expanded metal or iron studs welded to the deck surface improve safety in conditions of snow or ice.
Deck work

Accident risks during work on deck
In the deck department the surface may be slippery and oily. The same may be true of holds, the pump room, cargo tanks, workshops and other spaces. To this must be added the risk of slipping due to snow and ice, and of being washed overboard.

Painting, descaling and other maintenance work is often done high above the decks or water. The risks are obvious, and fixed scaffolding or platforms must be used whenever possible. Serious accidents, sometimes fatal, have also taken place in closed areas such as cargo holds when gases have been generated by loads being transported or there has been a lack of oxygen (see tab 11, Gas onboard ships).

Mooring work
Mooring work is one of the most high-risk tasks carried out on board, and when accidents happen they often lead to very serious personal injuries and sometimes even death. The frequency of injuries while mooring is highest for tankers and lowest for ferries and other ships in local waters, where the procedure is constantly
practiced. It is important to plan mooring work, who is in charge of it and how to ensure good communication between everyone involved. High-risk zones on the deck, so-called snap-back zones, should be clearly marked to make everyone aware of the danger of being there should a hawser break (see figure on page 1:6). Read more on this topic in tab 2:9.

**Engine**

Most accidents which occur in the engine-room relate to movement. Crew members slip on the floor, on stairs or ladders, and are hit or crushed against various objects. Handheld tools also cause injuries.

Accident risks perceived as most dangerous are:

- Working with hand-held tools in narrow spaces.
- Working with large and heavy machine-parts and tools.
- Transporting objects on stairs and ladders.

Accidents during transport on stairs and ladders are rare, but the resulting injuries are often serious.

Work is heavy in the engine-room and work postures are often awkward and uncomfortable. Research shows that the physical strains are as frequent on modern ships as they are on older ships. For instance, work on the crankcase, in the separator room, pipe-tunnels as well as removing cylinder heads can be very heavy. High temperatures and humidity intensify the strains.

Work with oils always carries risks. Oil-spills often cause slipping accidents. Prolonged contact with oils can result in eczema and other complaints.
Supply service

Accident risks

In the supply service area, accident risks are mainly related to transportation and moving. More than half of all accidents take place when moving. Personnel slip or trip. This may be caused by unsuitable shoes, dirty or damp and slippery floors and stress, possibly compounded by carrying heavy weights.

It is important to inspect corridors, stairs, elevators and so on from a safety point of view, especially those used by waiters and waitresses. They are constantly moving between the catering premises and utility rooms. Good shoes are an important prerequisite for avoiding accidents.
Rules for activities related to the work environment

The work environment is subject to an extensive network of rules. The Work Environment Act, the Work Environment Ordinance, the Ship Safety Act, the Ship safety Ordinance and provisions issued by the authorities on the basis of these statutes must be available on every ship. General agreements between employers and employees must also be kept onboard. As well as direct legislation in the work environment law, the work environment process is also influenced by legislation on the environment, chemicals, building, insurance, discrimination and rescue services. In the area of shipping there is also a large number of international recommendations and binding regulations. Below is a brief summary of the most important international and national rules and regulations.

International rules and regulations

The rules and regulations for shipping are international for the most part. This is also true for other modes of transport such as air, rail and road. The United Nations (UN) is the all-embracing organisation for many different areas of international activities, including transportation.

The International Maritime Organisation (IMO) comes under the UN. The IMO organisation is based in London and presides over all issues relating to shipping and safety at sea such as ship design, equipment, cargo handling and crews, as well as requirements regarding the competence and training of crews. The Swedish Transport Agency represents Sweden in the IMO.

IMO work often results in recommendations that are subsequently adopted by individual nations as binding rules. One example of this is the ISM code, which stipulates rules concerning the safety organisation of shipping companies and individual ships, which the Swedish Transport Agency has decreed will be applied as a Swedish provision. The IMDG code (International Maritime Dangerous Goods Code), which is applied by all countries, sets out the rules for transporting dangerous goods.

The recommendations concerning safety at sea are mainly drawn up internationally within the IMO. One of the main documents in this area is the International Convention for Safety of Life at Sea (SOLAS). SOLAS is regularly amended and updated as shipping conditions change.

The International Labour Organization (ILO) is the UN union body for employment and occupational issues. The fundamental goal of the ILO is to fight poverty and promote social justice. The structure of ILO is designed to bring together governments, workers and employers in a tripartite institutional structure which can handle the establishment of standards, counteract conflicts and solve disputes using peaceful means. ILO is the only United Nations organization with players from civil society as full decision-making parties on both the board as well as a highest decision-making body (International Labour Conference, ILO).

During the years between 1920 and 2003, International Labour conferences adopted 39 conventions, one protocol and around 30 recommendations concerning working conditions for seafarers. 36 conventions and the protocol for one of the conventions (number 147) have been revised and the recommendations have been modernised into a new Maritime Labour Convention, MLC 2006. The purpose of the convention is to ensure that seafarers have decent working conditions and to create equal conditions on the market for fair competition. In Sweden, the convention generally
corresponds to existing laws, regulations and collective agreements. Despite this fact, certain changes have been necessary in Swedish legislation to comply with the convention. The convention has meant that regulations have been simplified and checks of compliance with the regulations have become stricter. The Maritime Labour Convention was ratified by Sweden in 2012 and came into force on 20 August 2013. It is obligatory for all ships in international traffic to hold an MLC certificate.

The ISM code
(International Safety Management Code)

The ISM code has been produced by the IMO and has been incorporated into Swedish legislation through provisions from the Swedish Maritime Administration, from 1 January 2009, the Swedish Transport Agency. It deals with safety issues at sea and is aimed at preventing injuries to people and damage to the environment or to property. The ISM code covers all aspects of safety onboard, including the work environment. Quality assurance of production and environment in general is voluntary, however, and may be achieved through various systems.

The ISM code is applicable to all companies that run shipping operations. Every shipping company must have an organ that develops and maintains a safety organisation, both for the company and for its ships.

The safety organisation must fulfil demands stated in the ISM code. Objectives should include:

- to ensure safe procedures for running the ship and for a safe work environment,
- to safeguard against all identified risks,
- to follow developments in health and safety,
- to make continuous improvements in the skills of onshore and seafaring personnel in terms of safety leadership, including preparedness for emergency situations with respect to safety and environmental protection.

The safety organisation system should ensure that rules and regulations are complied with and that applicable codes, guidelines and standards recommended by the IMO, administration, classification associations and other organisations in the shipping industry are adhered to.

For every vessel in the shipping company’s land-based organisation, a representative must be appointed who has direct contact with the upper management of the shipping company to liaise between the vessel and the shipping company. This person must be able to assist the vessel in critical situations with respect to safety and environment, using resources required by the situation.

Laws and provisions

EU rules of law

The overall rules and regulations in the EU are established by the parliaments of the different member states and are found in three European Community treaties: the Rome Treaty, with later amendments such as the Maastricht Treaty and the Amsterdam Treaty.

With the support of these treaties, the institutions of the EU produce not only decrees and directives, but also decisions aimed directly at specific member
states, and recommendations. The decrees are applicable with immediate effect in all member states, while directives must be incorporated into the legislation of the different member states so that the aim of the directive can be achieved.

Standards are drawn up primarily for machines and personal protective equipment. The council of ministers makes decisions on directives and subsequently gives the commission to European standardisation bodies to draw up precise demands for how a product must be constructed to comply with the safety requirements in the directive.

**Fact box**
The Swedish rules of law are found in statutes, regulations and provisions. Statutes are decided by Parliament and published in the Swedish statute book (SFS). Statutes are often supplemented by regulations issued by the government. These regulations are also published in the Swedish statute book. Statutes and regulations often need to be supplemented by detailed rules. These are drawn up by different authorities and issued in each authority’s book of statutes.

The Swedish Transport Agency and the Swedish Work Environment Authority are the bodies that issue instructions and general advice in the areas of shipping and work environment. Publication takes place in the Swedish Transport Agency’s statute-book, TSFS, and Swedish Work Environment Authority’s statute-book, AFS.

Statutes, regulations and provisions all fall under the title of statutes of law.

**The Work Environment Act (AML) and the Work Environment Regulations (AMF)**
The Work Environment Act is the main statute in the area of work environment. It is based on an overall view of the work environment and takes into account all factors that are of significance for conditions at places of work, including physical, psychological and social factors.

The Work Environment Act generally applies to all work by employees carried out for an employer. As such, it applies to self-employed, family companies and students or conscripts during their education. From 2003 onwards the Work Environment Act has also applied to ships and work onboard.

There are a number of paragraphs in the Work Environment Act that state the objectives of work environment activities:

- Legislation is based on the prevention of illness and accidents at work, and the development of a good work environment in general terms.
- The work environment must be satisfactory with reference to the nature of work carried out, and must be developed at the same rate as social and technical developments take place in society in general.
- Employers and employees must cooperate to achieve a good work environment.

The Work Environment Act is supplemented by the Work Environment Ordinance, which includes regulations concerning safety officers and safety committees, among other things.

The Swedish Work Environment Authority has responsibility for work environment issues as laid down in the Work Environment Act and the Work Environment
Regulations. The Swedish Work Environment Authority defines in detail the general regulations in the Work Environment Act by issuing directions and general advice. These are published in the *Swedish Work Environment Authority statute book, AFS*.

**Laws and provisions**  
SFS 1977:1160 Work Environment Act  
SFS 1977:1166 Work Environment Ordinance

**The Ship Safety Act (FSL) and Ship Safety Regulations (FSF)**

The Ship Safety Act applies to all vessels used in shipping in Swedish territorial waters, and all Swedish vessels used in shipping over the entire world. The Act also applies when a vessel is taken to a shipyard or is temporarily taken out of operation. The Ship Safety Act does not apply to warships.

In legislation concerning ships, seaworthiness is an important concept. Seaworthiness often relates to technical issues, requirements for the hull, machinery and fixed equipment on ships. The concept of seaworthiness in the Ship Safety Act also includes issues relating to the work environment. A ship must be safely manned, have suitable equipment to prevent ill health and accidents, sufficient provisions and be loaded such that the safety of those onboard, the ship and the cargo is not jeopardised.

The Ship Safety Act, Ship Safety Regulations and provisions issued in accordance with these statutes supplement the regulations stated in the Work Environment Act and provisions from the Swedish Work Environment Authority. Overall, general regulations regarding accommodation and leisure time environments, medical care and diet are found in FSL. There are also regulations concerning minors, safety representative and safety committees. In other respects, FSL refers to the Work Environment Act.

**Laws and provisions**  
SFS 2003:364 Ship Safety Act  
SFS 2003:438 Ship Safety Ordinance

**The Swedish Transport Agency**

From 1 January 2009, the Swedish Transport Agency is the supervisory authority for shipping.

The Swedish Transport Agency issues instructions and general advice which is published in the Swedish Transport Agency’s statute-book, TSFS. The Swedish Maritime Administration directives, SJÖFS, will continue to apply until the Swedish Transport Agency has suspended them or replaced them with the new TSFS.

The Swedish Maritime Administration, which was previously a supervisory authority, became a purely operational organisation with responsibility for the safety and accessibility of maritime traffic.

**Supervision by authorities**

According to the Shipping Safety Act, supervision of the work environment is to be exercised by the Swedish Transport Agency in cooperation with the Swedish Work
Environment Authority. An agreement of cooperation between the two offices has been drawn up. The agreement primarily governs supervision, but also other areas of cooperation where the offices have common interests. By delegation from the Transport Agency, certain inspection and certification work may be carried out by recognized organisations (RO).

One important instruction for the work environment is TSFS 2009:119 on the work environment onboard ships.

Laws and provisions
TSFS 2009:119 Working Environments on board Ships

Maritime Law

The Maritime Law is another important statute for shipping. Among other things, it includes regulations on the registration of ships, responsibilities of shipping companies and captains in certain circumstances, the obligation to report to authorities, rules in the context of accidents at sea, the obligation to keep the ship’s log book etc.

Laws and provisions
SFS 1994:1009 Maritime Law

Act on Rest periods for Seafarers

There is a law that regulates resting time for personnel on Swedish ships, with the exception of fishing ships. This law states that the resting time may not be less than 10 hours for every 24 hour period, nor less than 77 hours during every seven-day period.

The captain is responsible for a working schedule being on the ship. This must contain information about the crew’s work schedule at sea, in the port and during resting time.

The work schedule must be affixed in a suitable location on the ship. Notes must also be kept on the ship regarding work hours. Exceptions to regulations in the law may be made through general agreements.

Laws and provisions
SFS 1998:958 Act on Rest periods for Seafarers

Qualifications for marine personnel

Personnel employed onboard Swedish merchant vessels must hold the required qualifications as laid down in the Regulations on qualifications for marine personnel. A certificate of qualification is required for service onboard.

The rules for qualifications are laid down in provisions from the Swedish Transport Agency. The regulations state in detail the requirements for education and practical training for different posts onboard and for different types of ships and trade. Qualifications also require a medical certificate stating that a person’s vision and hearing fulfil certain requirements in accordance with a special regulation.

Laws and provisions
SFS 2011:1533 Regulations on qualifications for marine personnel
TSFS 2011:116 Education and qualifications for marine personnel
Systematic Work Environment Management (SAM)

In order to ensure that the work environment fulfils the requirements in compliance with current legislation, employers must systematically plan, lead and follow up activities in this area. These work environment activities must be incorporated into ordinary daily activities. Rules for this are to be found in the regulations by the Work Environment Authority, *Systematic Work Environment Management*.

Working conditions must be improved in physical, psychological and social aspects through systematic work environment management. Ill, health and accidents must be prevented and a good work environment must be created and developed.

The provisions on systematic work environment management apply to employers’ inspections of the work environment, but also state that the work environment is an important area of cooperation and the employer must give employees the opportunity to participate in these work environment activities.

What is included in SAM?

Designing a system for the systematic work environment management is similar to other quality work: the company’s operations are reviewed, decisions are made about the procedures required, tasks and responsibilities are allocated, and decisions are made about what must be documented. The scope of SAM is determined by the size of the company and its operations. In a small company with an uncomplicated work environment the requirements may be fulfilled by relatively simple means, whereas larger companies will naturally have more requirements to fulfil.

Work environment policy

All companies, irrespective of their size and area of operations, must have a work environment policy that indicates the work environment the company wishes to achieve. The policy may contain general goals showing the directions of the intention, but also concrete goals that can be followed up. Companies that have more than ten employees must have documentation of their work environment policy.

Procedures

There must be procedures indicating how and when SAM will be carried out and which staff members will be involved. Procedures may also be required for tasks that are not directly described in the provisions on SAM. The work environment must be taken into consideration when purchasing goods and services, which can be ensured through established procedures. The same applies to the introduction of new employees, re-assigned employees, trainees and minors.

Risk assessment

Risk assessments of all tasks, work and conditions that may bring about ill health or accidents must be included in the systematic work environment management. Risk assessments must also be made when new machines, new production technologies, new products and substances are introduced, and also when there are changes to the organisation and manning levels, e.g. personnel cutbacks. It is
important that there are decisions and procedures for how risk assessments will be carried out and also for the more general investigations into working conditions; e.g. safety rounds with the support of checklists. Responsibility for risk assessments being carried out lies with the employer. Risk assessments must be documented.

**Documentation**

Documentation is required to be able to plan and follow-up work environment activities in an organised fashion. Action plans, risk assessments and lists of accidents, serious incidents and occupational diseases must be documented in writing by all companies in compliance with provisions. Companies with more than ten employees must also document their work environment policy, procedures, task allocations and follow up of work environment activities in writing. If there are more than ten employees the company must comply in full with the regulations on systematic work environment activities. If there are fewer than ten employees, only sections 8–10 require obligatory documentation. If serious risks are involved in work, there must be written instructions describing how the work is to be carried out.

Documentation is produced continuously during the year and summaries are compiled when necessary or in conjunction with annual follow-up work.

**Officials must be appointed**

The employer must appoint officials with the specific remit of preventing risks at work and promoting a satisfactory work environment. Areas of responsibility and tasks must be clearly defined. The employer must ensure that personnel appointed to carry out tasks have the resources required as well as the education and competence for their areas of responsibility. If the company has more than ten employees the allocation of tasks must be documented.

**Inspection of the work environment**

The work environment must be inspected and if any shortcomings are discovered measures must be taken to rectify defects. Inspections must be organised into daily activities. It may be appropriate from time to time to pay particular attention to one area with the aid of checklists, for example. For smaller companies an annual review with the aid of an industry-specific checklist and some complementary checks on procedures and responsibilities may fulfil the requirements that provisions place on systematic work environment measures.

**Following up work environment activities**

If risks or shortcomings are discovered in the work environment, they must be rectified as soon as practically possible, and serious defects must be set right immediately. If measures cannot be taken immediately, an action plan must be drawn up. Work environment management must be followed up annually. Followup work must be documented if the company has more than ten employees.

**Laws and provisions**

AFS 2001:1 Systematic Work Environment Management (see tab 8, Systematic Work Environment Management)
Responsibilities and powers

Shipowners

Shipowners have the main responsibility for the ship being seaworthy, for the work environment of the seagoing personnel and for the total environment onboard the ship. The shipowner is obliged to ensure that the ship is regularly maintained in compliance with the law.

In order to fulfil obligations as an employer, the shipowner often needs to delegate certain tasks. This delegation of tasks to the captain must be done in writing. It is the responsibility of the shipping company’s top management to ensure there is a clear organisational structure for the shipping company. It should be clearly stated who is responsible and has authority for issues related to the work environment of the ship.

Delegation does not mean that the shipowner is released from employers’ liabilities; the shipowner still retains ”supervisory duties”, meaning that the shipowner must ensure the organisation functions well.

Every shipping company must have a contact to whom the ships and seagoing personnel may turn regarding issues related to the work environment and safety.

Laws and provisions
AML 1977:1160 Act on work environment

The captain

The captain has a particular responsibility for the ship being seaworthy. He must ensure the ship is seaworthy before leaving the port and remains so for the duration of the voyage. The captain must ensure that certificates of inspection for the ship are kept onboard, that they are valid and that the ship is continuously inspected and maintained.
It is the captain’s duty to ensure that all seagoing personnel have basic knowledge of the ship, security regulations and applicable rules in case of accidents at sea.

The captain is the employer’s representative onboard and is responsible for the work environment being satisfactory and that it fulfils demands in legislation.

The captain is also responsible for:
- carrying out the shipowner’s policy regarding safety and environmental protection,
- motivating the crew to follow this policy,
- ensuring that suitable orders and instructions are given in a clear and simple manner,
- checking that specific demands are followed,
- reviewing the safety organisation and reporting any shortcomings to the shore-based management.

The captain has responsibility for coordination.

The chief engineer

The chief engineer is responsible for running and maintaining the ship’s machinery and for the fire safety of the ship.

Before a voyage, the chief engineer must ensure that the engines and all auxiliary equipment are in good condition and that fire protection equipment is ready for immediate use. The chief engineer is also responsible for fire drills and fire inspections being performed onboard the ship as often as required.

Supervisors

It is not only the shipowner/employer and the captain who are responsible for the environment onboard and the work environment of the employees. All persons in command are also supervisors.

This also involves responsibilities concerning work environment issues. All supervisors are duty bound to keep themselves informed about work environment rules applicable onboard. Ignorance of the rules does not excuse anyone from accountability.

The supervisors must have the requisite knowledge as well as the authority and possibility to correct any shortcomings in the environment.

Employees

Individual employees are also responsible for the work environment. The seafaring personnel must cooperate with the management in order to improve the work environment, bring attention to any deficiencies and suggest changes and improvements.

An employee must first of all turn directly to the supervisor responsible. Problems with the work environment must be solved as part of the normal, daily administration. If the problem is more substantial or if support or help is needed, the safety representative should be contacted.
All employees onboard are obliged to follow the safety instructions applicable. If, for example, personal protective equipment is obligatory when carrying out a certain task, the employee must use the equipment. If an employee repeatedly ignores provisions, he or she may, in serious cases, be relieved from duties.

An employer/supervisor is obliged to intervene if an employee does not follow the safety instructions or does not use obligatory protective equipment. Otherwise, in case of an accident, the employer may be held responsible for negligence and be seen as jointly responsible for the accident in a court of law.

Naturally the employee, too, is responsible for using and maintaining any protective equipment required for work.

If an employee believes that a certain task represents an immediate and serious danger to life and health, he or she must immediately notify the supervisor responsible or the safety representative. While awaiting a decision on whether the work may continue, the employee may refuse to do the work believed to be dangerous without risking liability for damages.

**Laws and provisions**

*SFS 2003:438  Ship Safety Ordinance*

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**Safety representatives**

Safety representatives are appointed by the seafaring personnel and are their representatives and advocates regarding work environment issues. The safety representative has an important duty that ranges from technical questions to maintaining interest and commitment in the work environment. Included in the post is the job of following developments and monitoring the work environment with regard to comfort and well being, as well as any risks to which the seafaring personnel may be exposed. Just as important is to strive for trusting cooperation between supervisors and employees in order to give work environment issues a prominent position.

Ships with more than five employees must have a safety representative appointed. If required, a safety representative may be appointed on ships with fewer employees. The number of safety representatives is determined according to the number of employees, the nature of the work and organisation, shift work etc. In most cases one safety representative is appointed for every section onboard. In case of any doubts regarding the number of safety representatives, it is possible to consult with the central trade union, the employer or the Swedish Transport Agency.

The duties of the safety representative are, among other things, to:

- represent the seafaring personnel in issues regarding safety and to work for satisfactory safety conditions,
- ensure protection against ill-health and accidents within the safety area,
- participate in the planning of new or changed premises, equipment, operational processes, working methods and organisation of work,
- participate in planning how to use substances that may cause ill-health or accidents,
- promote the maintenance of interest in work environment issues at the place of work,
- cooperate in the investigation of near-accidents, accidents, occupational illnesses and rehabilitation.
The safety representative must have the training necessary for the assignment. It is the joint responsibility of the shipowner and the trade unions to ensure the safety representative receives this training and also for the contents of the training.

The safety representative has no legal responsibility as a safety representative and cannot be held responsible in a court of law in the case of an occupational accident.

**The senior safety representative**

If there are several safety representatives onboard, a senior safety representative must be appointed to coordinate activities of the safety representatives and to represent them in certain matters, e.g. if several areas of safety are concerned. It is often the senior safety representatives who represents the seafaring personnel in contacts with the employer.

**Collective safety representative for several ships**

In some cases one safety representative may be appointed for more than one ship with the same shipowner. For example, on ships (over 12 metres of length and 4 metres of width) such as skerry ferries and tugboats there are usually relatively small crews serving on different ships. In these cases the Swedish Transport Agency may grant an exception from the principal rule.

**Local safety committee**

A safety committee must be appointed on every ship with a crew of twelve or more persons. On ships with fewer employees a safety committee may be appointed if the employees so demand. The safety committee consists of representatives of the shipowner/employer or union organisation, and the employees.

Work environment issues must normally be solved during daily activities and are a natural part of planning and purchasing, for example. It is primarily the overall issues regarding planning and supervising activities in the work environment area that are discussed by the safety committee. The safety committee cannot in any way take over the employer’s responsibility for the work environment.

The safety committee must:

- plan and supervise protective work onboard the ship,
- follow up developments in issues regarding the prevention of ill-health and accidents,
- ensure that the ship has a suitable crew,
• consider issues concerning the health care of the seafaring personnel,
• participate in the planning of new or changed working conditions,
• supervise and participate in investigations regarding accidents, near-accidents and occupational illness,
• participate in consultations with the ship’s committee and supervisors in matters concerning psychosocial issues,
• discuss issues related to alcohol and drug policies,
• discuss proposals from safety representatives.

The employees’ representatives on the safety committee have the same legal protection as trade union representatives.

At workplaces that do not have any safety committees, employers and safety representatives must cooperate in the same way as at workplaces with safety committees.

Confidentiality

There are rules of confidentiality that apply to safety representatives and members of the safety committee. Other people who participate in cases of work adjustment or rehabilitation are also subject to the same confidentiality. Confidentiality implies "not to disclose or use without authorisation what a person, in executing a job, has learned regarding trade secrets, working methods, working conditions, individual personal circumstances or circumstances of importance for the defence of the realm”

Safety representatives and members of the safety committee may consult their trade unions as long as they state that the consultation is in confidence.

Laws and provisions

SFS 1977:1160 Work Environment Act
Responsibility for coordination

Since the ship is a shared place of work, the various employers (including self-employed) must consult each other and work together to achieve satisfactory safety conditions. The shipowner is responsible for coordination but may delegate this responsibility, in writing, to another employer.

The person responsible for coordination must ensure that notices stating who is responsible for coordination are posted onboard. Other employers as well as the employees at the shared places of work must follow the instructions and rules that apply.

When a ship has been taken into a shipyard in Sweden, the responsibility lies instead with the employer accountable for running the shipyard.

With respect to a ship in a Swedish port being loaded or unloaded, it is the employer responsible for this work who has the responsibility for coordination. This responsibility may be transferred to the shipowner.

Laws and provisions
SFS 1977:1160  Work Environment Act
AFS 2001:1  Systematic Work Environment Management

Responsibility of manufacturers, installation engineers etc.

Demands are very strict on marine equipment, meaning equipment for rescue, fire-protection, navigation and so forth. The equipment must satisfy SOLAS and IMO requirements. These regulations are international and may be found in the provisions of the Swedish Transport Agency.

Manufacturers, suppliers, importers and others who hand over or install machines or other technical equipment also have responsibility for safety. This is made

During loading and unloading many companies are involved. In such circumstances one company must have overall responsibility for coordination.
clear in the Ship Safety Act and is specified in the directives of the Swedish Transport Agency. Whoever produces, imports or hands over a substance or installs equipment for use onboard a ship is obliged to:

- ensure that the equipment offers adequate security against ill-health and accidents,
- provide the necessary instructions (in Swedish) for the installation, use and maintenance of the equipment,
- ensure that the equipment is furnished with any information of importance from the safety point of view.

When a machine is put into operation the responsibility is taken over by the employer.

Whoever installs technical equipment must ensure that:

- necessary safety equipment is installed,
- steps are taken regarding other necessary measures.

Whoever produces, imports or hands over a substance that may cause ill health or accident is obliged to:

- prevent and counteract the substance causing a risk when used,
- provide the instructions (in Swedish) needed for the substance to be used without risk,
- ensure the substance, packing, container etc. is plainly labelled with all information relevant from a safety point of view,
- ensure that a safety data sheet is enclosed with the product.

**Laws and provisions**

*TSFS 2009:52 Marine equipment*

**Work environment agreement**

The then parties on the maritime labour market, i.e. the Swedish Shipowners’ Association, the Swedish Ship Officers’ Association, the Swedish Engineer Officers’ Association, SEKO Seafarers and the Swedish Union of Commercial Salaried Employees HTF, reached an agreement on the work environment on board and at their respective places of work ashore. The Work Environment Agreement was signed in 1995 and will be reviewed in 2016. The agreement contains:

A. Supplementary rules for work environment activities.
B. Recommendations for industrial relations concerning company health service.
C. Negotiation procedures.

Furthermore, the agreement contains guidelines for how the company health service should function, its policy, organisation and commissions. The agreement can be found in full under tab 10, Work Environment Agreements.
Work environment committee for the shipping trade (SAN)

SAN is an organ of cooperation between employers and employees in the shipping industry, with the task of promoting a better working environment onboard. The Swedish Transport Agency also participates in SAN’s activities. In order to understand and address problems, research plays an essential role. SAN supports research in occupational medicine concerning, for example, cancer, noise and vibrations. The parties involved have also established a foundation, SAMS, which supports various work environment projects such as referrals to company health service through contributions from shipowners.

A large part of work at SAN concerns information and training. This Work Environment Manual for Shipping is one example. Other examples are the newsletter SAN News and the annual SAN conference arranged for those who work with work environment issues in the shipping business.

SAN also has its own website, www.san-nytt.se, where the newsletter SAN News can be found in an electronic version. The website also has information about the council’s activities, marine research, articles about the work environment etc.

SAN has developed an interactive course about the work environment in both a Swedish and an English version, which can be accessed free of charge on the website. The course is mainly aimed at those who work onboard, but students and others who are involved with the work environment on ships may also find it useful.

SAN follows and supports ongoing research within the area of the marine work environment and some of the council’s members sometimes operate as a steering group for different research projects.

Företagshälsovård

Company health service plays an important part in activities with the work environment. The company health service compiles useful information from a number of workplaces, which the company health service can then spread to benefit the whole sector.

The company health service must remain impartial and aim at giving advisory service about the work environment, job redesign and rehabilitation. The company health service can usually offer both technical and medical competence as well as competence in behavioural science.
According to the Work Environment Act, employees must have access to the company health service as demanded by working conditions. The parties within the shipping business agree that the company health service is an important asset in activities with the work environment. Employers and employees must cooperate in questions concerning the scope and direction of work at the company health service. Shipowners procure and conclude agreements with the company health service.

**Examples of areas in which the company health service can be of assistance are:**

- Surveying the work environment from different aspects: physical/ergonomic, psychosocial, medical or biological. Listing and handling dangerous substances.

- Assistance with reorganisation, planning new workplaces and conditions, closing down or starting up activities.

- Measurements of ventilation, noise, air pollutants, electrical and magnetic fields, lighting etc.

- Training and information aimed at both management and employees regarding various work environment areas, computer work, ergonomic work technique, first aid, evacuation etc.

- Medical examinations, e.g. to fulfil the demands made in various provisions.

- Setting up and maintaining exposure records. Medical certificates and medical examinations are frequently called for in shipping, e.g. medical certificates for engine seafarers (various types of vessel), in connection with noise, certificates for handling food, work involving thermosetting plastics and products containing lead or asbestos.

- Advisory service for issues related to the work environment, handling conflicts, intimidation, personnel questions, discrimination, alcohol and drug issues etc. Suggesting preventive measures to be taken regarding the work environment.

- Accident investigations and investigations concerning the causes of occupational illness/injury. Measures to be taken in order to avoid repetitions.

- Rehabilitation and job redesign, rehabilitation investigations.

- Surveying special risks and carrying out risk analyses.

- Medical care and physiotherapy.

- Physical exercise, break exercise and such like.

Shipowners have a lot of experience and knowledge from normal operations which can be used when entering into contracts with the company health service, such as ability to order, knowledge about quality assurance etc. Among other things, it is important that the agreement clearly states that the exposure records kept by the company health service belong to the party ordering. It may also be necessary to state in the agreement what kind of software is to be used for keeping records.
Risk assessment of the work environment

In order to ensure a good work environment, it is necessary to regularly inspect working conditions and assess the risks of personnel suffering accidents or ill-health. Such inspections must take into consideration both the physical work environment (e.g. noise, vibration, lighting, chemical risks and difficult working positions) as well as psychosocial factors (e.g. stress, fatigue, threats and violence, as well as the organisation and content of the work).

Regulations regarding the assessment and handling of risks in the work environment can be found in Swedish work environment legislation, the ISM code and in the ISPS regulations on marine protection. There are also special regulations on how to deal with risks associated with pirate attacks and the handling of weapons on board.

To make risk assessments of the work environment, it is often sufficient to make a reasonably simple classification of the risks into low, medium or high categories. However, in certain cases it may be necessary to make a more detailed analysis. The risk matrix is then often used for assessing the probability of an event occurring and what consequences it may have. Irrespective of which method is used, it is important that the risk assessment is reliable and really does deal with the most important problem areas. The risk assessment is then used as a basis for designing and taking suitable measures to decrease the risks. Any shortcomings that could lead to a serious threat to life and health must be corrected immediately. Other risks that cannot be rectified immediately, which may require a budget to be drawn up or cannot be dealt with until the next visit to a shipyard, must be entered into a written action plan. The action plan describes what must be carried out, who is responsible for carrying it out and how the actions will be followed up to ensure that they have been implemented and produced the desired effects.

<table>
<thead>
<tr>
<th>Classification of risk</th>
<th>Assessment of risk of ill-health or accident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Negligible or small risk</td>
</tr>
<tr>
<td>Medium</td>
<td>Some risk</td>
</tr>
<tr>
<td>High</td>
<td>Serious or very serious risk</td>
</tr>
</tbody>
</table>

Example of simple classification of risk.

<table>
<thead>
<tr>
<th>RISKS</th>
<th>ASSESSMENT</th>
<th>ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task/work area</td>
<td>Low</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Example of a general form for risk assessment and action plan.

Laws and provisions

- **SFS 1977:1160** Work Environment Act
- **AFS 2001:1** Systematic Work Environment Management
- **TSFS 2013:48** Guard duty on board Swedish ships
What is an occupational injury?
The term occupational injury refers to accidents and illnesses that arise at work. It may be in the form of a physical injury to the body, or ill-health as a result of the psychosocial work environment, since conflicts at the workplace or a high pressure of work may cause ill-health. An occupational injury may also be caused by threats or violence at work. Accidents when travelling to or from a place of work are categorised as an accident at work if the journey is for work or in close connection with work. Special rules apply to contagious diseases.

Preventive measures
An accident is often described as a chain of incidents stemming from a source of risk. This source of risk may stem from technology, organisation or a person. It is important to remove sources of risk before accidents happen. In checking the work environment, risk analysis plays a very important role.
There are several methods of risk analysis. It is often enough to use simple checklists, e.g. in connection with a safety round.

Be alert to near-accidents. They are often repeated and will sooner or later lead to accidents.

Accidents and incidents must be reported and investigated
Serious accidents and incidents must be reported immediately to the Transport Agency. All accidents and incidents must be reported immediately and investigated internally by the shipping company, whether they have resulted in sick leave or not. The investigation is carried out in collaboration with the safety officer and, if possible, with the injured person(s). Occupational ill-health or disease must also be investigated by the shipping company. The purpose of the investigation is to analyse what happened, why it happened and what steps need to be taken in the short term and the long term to prevent it from happening again. Forms for this purpose must be easily available on board the ship. The investigation must be carried out systematically with a holistic perspective. Human, technical and organisational factors must be included in the investigation, as far as practicable. The investigation must be documented. Photographs may be included in the documentation.

To reduce the risk of ill-health and accidents on other ships, and to increase shared learning, the results of the investigation must be distributed within the shipping company

The investigation must lead to measures being taken. If they cannot be taken immediately, they must be scheduled.

ForeSea is a voluntary information system that was created to improve maritime safety. The persons responsible at shipping companies, i.e. Designated Persons, file reports on critical events and incidents in the system. By analysing the information in ForeSea’s bank of experience, the shipping industry is able to independently:
• take decisions on measures and improvements based on facts,
• spread information on hazardous conditions in the form of “Safety Alerts”,
• summarise experience gained in the form of “Lessons Learned”.
ForeSea will also make it easier for associated shipping companies to comply with the requirements on internal reporting in the ISM Code. Refer to www.foresea.org
Introduction of new employees

Accident statistics show that new employees constitute the largest risk category. The first period at work (hour  day  week) carries an extremely high risk of accidents. Induction training is a unique opportunity to impart knowledge and information to the new or redeployed employee regarding the company and colleagues, the profession and workplace, as well as risks and how to deal with them. There is no other time when the employee will be as interested or as open to information. It is part of the employers’ responsibility to plan the induction programme in consultation with the safety committee and the safety representative.

The work environment – part of induction

New employees must be informed about how work is to be done, but also receive information regarding the work environment in a wider perspective. Who should be turned to in different situations? What are the rights and responsibilities involved? The following questions concerning the work environment may be used when planning the induction, which should be followed up after a certain time period.

- Which supervisor/foreman should the employee turn to regarding work environment issues? Who is responsible for different issues?
- How are employees informed about rules and risks concerning the work environment?
- What are the risks, large or small, at the workplace?
- Have there been any accidents and/or near-accidents in recent years? If so, what were they?
- What obligation do employees have to call attention to risks?
- Is personal protective equipment needed? How is it used and maintained? Are suitable sizes available?
- How is the work environment inspected?
- Who is/are the safety representative/s?
- What are the duties of the safety committee?
- What rules apply to occupational health care?
- What routines apply when using dangerous substances?
- How should employees act in case of an accident or near-accident?
- If something happens, who is/are trained in first aid?
- Where can first aid equipment be found?
- How is crisis support organized?
- What procedures and action plans exist for substance abuse, harassment and discrimination?
- How is an occupational injury or illness reported? To whom?
- What rules apply regarding fire, alarms, evacuation?
- Where are the fire-extinguishers and alarms placed and how are they used?

A workplace may have changed so much in a short time that even employees who have been absent due to vacation or illness may need to be introduced to new technology, new computer programs etc.
Pregnant and nursing employees

Special directives apply to pregnant women and nursing mothers working onboard ships. The shipowner or captain is responsible for ensuring an individual risk assessment is carried out in collaboration with experts/Company health care, and that necessary measures are then taken.

One condition for this regulation being applied is that the employer has been informed about the pregnancy. In order to protect the foetus, the woman should do this as soon as the pregnancy has been confirmed. As far as practicable, the woman concerned may decide which people are informed of the matter. She always has the right to be represented by a safety representative.

There is more information in the Prevent leaflet "Pregnant and nursing employees".

Laws and provisions
TSFS 2011:116  Education and qualifications for marine personnel
AFS 2007:5  Pregnant and nursing employees
AFS 2001:1  Systematic Work Environment Management

Minors as employees

Special rules apply to minors working onboard in accordance with the Seamen’s Act, the Ship Safety Act and the Swedish Transport Agency. A minor is a person under 18 years old. The purpose of the rules is to prevent children and adolescents from doing any work which may cause ill-health or have an injurious effect on schooling or development, but the intention is not to shelter minors from insights and contact with working life.

People under the age of 16 are not allowed to participate in work onboard any ship. Exceptions are made for minors in training such as apprentices or trainees, who may be allowed to perform certain tasks. The responsibility for their safety rests with the shipping company as well as the captain of the ship.

Physically demanding tasks may impede the development of the body and are thus unsuitable for minors. The health of minors must not be jeopardised by the effects of dangerous chemical substances.

Some examples: people under the age of 18 (minors) may not take part in the following tasks:

• the use of dangerous substances, e.g. in cleaning tanks,
• working with paints or solvents containing toxic substances,
• gas or electric arc welding or cutting,
• care and maintenance of electrical power plant or working at or near such an installation,
• night-work, guard duty and solitary work,
• driving fork-lift trucks or other trucks and comparable vehicles

Pay attention to heavy and difficult lifting tasks.

Laws and provisions
SFS 1973:282  Seamen’s Act
SFS 2003:364  Ship Safety Act
TSFS 2009:119  Working Environments on Board Ships, Ch. 6 Minors
Discrimination

Our mental and social work environment is just as important as the physical work environment. People should not fall ill due to an unhealthy workload, discrimination, victimisation etc. at work. There are new provisions on the organisational and social work environment from 2016 which cover workloads, working hours and different forms of discrimination. Managers and supervisors need to know how to prevent insulting behaviour and discrimination, and how to act if it occurs.

Discrimination, mental violence, social rejection, harassment, including sexual harassment, are serious problems in the work environment.

Discriminating and insulting acts are characterised by serious disrespect and violate common concepts of honour and ethics regarding how people should be treated. Examples of discrimination are:

- slandering a colleague or a colleagues’ family,
- consciously withholding information or giving wrong information,
- consciously sabotaging or hampering the execution of work,
- obvious, insulting exclusion or negligent treatment of an employee,
- different forms of persecution, threats and intimidation, humiliation, e.g. sexual harassment,
- deliberate insults, over-critical or negative behaviour (taunts, unfriendliness etc),
- prejudicial monitoring of an employee,
- ”administrative sanctions” aimed at individual employees without relevant reason, explanation or efforts to mutually solve underlying causes. Sanctions may consist of taking away a workplace or tasks from an employee without reason, inexplicably redeploying him/her or demanding overtime, obviously obstructing the processing of applications for training or time-off.

Serious effects of discrimination may manifest themselves in the following manner:

In the individual employee:

- Increasing difficulties with cooperation, consisting of dislike, irritability or indifference. Consciously breaking rules or excessively adhering to rules, deteriorating performance.
- Physical illness, substance abuse or mental reactions, e.g. sleep disorders, pre-occupation, depression, anxiety or over-activity, sometimes severe aggression and severe tiredness.
- Suicidal thoughts or self-destructive behaviour.
In the work team:

- Decreased efficiency and productivity.
- Increased problems with cooperation, e.g. lack of understanding of other ways of working, withdrawal from the group or evasion of tasks, power struggles or the formation of groups with strong loyalties.
- High absence due to sickness, problems with substance abuse, high employee turnover and an increase in the number of applications for time-off.

The work team's ability and willingness to participate in solving internal problems may increase, decrease or cease completely. The earlier that conflicts are noticed and measures taken, the greater are the chances of constructive solutions. Loyalties and conflicts often set over time. The risks will increase with time if no measures are taken.

The Swedish Work Environment Authority has issued the provision "Discrimination in working life". The provision insists on preventive measures as well as measures taken after problems have occurred.

**Laws and provisions**

**AFS 2015:4 Organisational and social work environment**

**Discrimination in working life**

The new Discrimination Act is aimed at counteracting discrimination in working life. It prohibits and shall prevent any person from being directly or indirectly disadvantaged as a result of gender, ethnicity, religion or other faith, handicap, sexuality or age. Employers and workers must cooperate on active measures to achieve equal rights and opportunities, and particularly to counteract discrimination in working life.

An employer shall not discriminate between workers, people applying for work, people applying for or carrying out practical training, or performing work as hired or seconded labour.

Ethnic discrimination refers to one person or a group of people being unfairly treated in relation to others, or in another manner being subjected to insulting behaviour due to their race, skin color, national or ethnic origins or their faith.

Sexual harassment takes place far more often at places of work than many people believe. It is important to be attentive, to take complaints seriously and to dare to protest. Sexual harassment in working life includes every type of unwelcome sexual behavior, in words or deeds, that leads to a person feeling humiliated, stressed or uneasy. It applies both to a working situation and in conjunction with people applying for work.
Unwelcome sexual behaviour may include the presence of pornographic pictures, sexual innuendo, names, touching parts of the body, sexually degrading stories and terms of abuse. It can also include proposals or demands for sexual services as conditions for employment or benefits at work.

If an employer is aware that an employee believes that he/she has been subjected to harassment, for example due to their faith or through sexual innuendo, by somebody who works or practices at the workplace, the employer is obliged to investigate the circumstances and take necessary measures to prevent any further harassment in the future.

The Discrimination Act also contains regulations about equality work. Employers and employees must work in particular to level out and prevent differences in salaries and other conditions of employment between women and men who carry out work that may be considered as the same or equivalent. They must also promote equal opportunities for salary development for women and men.

Every third year an employer must draw up a plan for equality work. The plan must contain an overview of the measures required at the place of work and a report on which of these measures the employer intends to start or carry out in the coming years.

Every third year an employer must also draw up an action plan for equal salaries. The plan must state what salary adjustments and other measures need to be taken to achieve equal salaries for work that is considered as the same or equivalent.

The obligation to draw up an equality plan or an action plan for equal salaries does not apply to employers who had fewer than 25 employees at the beginning of the calendar year.

The discrimination ombudsman monitors compliance with the Discrimination Act.

*Laws and provisions*
*SFS 2008:567  Discrimination Act*

**Substance abuse**

Abuse of alcohol or drugs is a problem at workplaces, and when it occurs the consequences can be disastrous. As a preventive measure at least, every shipping company should have a clear policy stating explicitly that substance abuse is not permitted: alcohol and work do not mix and drugs will not be tolerated.

It is part of an employer’s responsibility for the work environment to formulate such a policy and, when required, to have a plan of action so the problem can be dealt with.

It is primarily the supervisor who must be observant regarding problems with substance abuse and deal with the problem, but it is the duty of every employee to help a colleague. Trying to shield a colleague by helping to hide the abuse is a false kind of solidarity. This only leads to longer and increased substance abuse and decreases the chances of successful rehabilitation.

It is imperative to act immediately. The earlier the intervention, the greater the chance of success when it comes to dealing with the problem.
An addict often denies his addiction as long as possible, both to himself and to other people. Substance abuse is often combined with strong feelings of shame and guilt and for this reason the person often tries to hide the condition even after he/she has recognised the addiction. It may be difficult to notice the outer signs of substance abuse.

Some signs that may indicate an employee is having problems with substance abuse are:

- diminished interest in work and poorer work output,
- changes in behaviour, e.g. insecurity, suspiciousness, aggressiveness, swings of mood,
- deviant behaviour, e.g. offers alcohol in order to have an opportunity to drink, negligent regarding hygiene, withdrawing from others.
- exceptional absence, extending hours of work, leaving work temporarily from time to time, constant excuses, late arrival etc.

However, some people may react in the totally opposite manner, being more on the alert in order not to be exposed.

It is not only the abuse of alcohol and drugs that may affect safety onboard. Pharmaceutical preparations of various kinds may also pose a threat if used incorrectly. Even correctly used drugs may be unsuitable in connection with certain tasks. The doctor who prescribes a drug must be able to account for its effects.

Since 1996 there has been an agreement between the Swedish Shipowners’ Association and SEKO Seafarers (the Union for Service and Communication Employees) regarding the policy on alcohol and drugs. The goal is to maintain safety in the Swedish shipping trade by preventing alcohol abuse and the use of drugs. The agreement sets out the standards to follow, when tests for alcohol and drugs may be used, how these tests are to be carried out and regulations concerning rehabilitation. A corresponding agreement has been made between the Swedish Shipowners’ Association and the Merchant Marine Officers’ Association.

**Advice and aid**

The occupational health service has personnel who can provide advice, make medical and psychological evaluations, assist with treatment, give supporting talks etc. There are often specially trained drug therapists.
Provocations, threats and violence

Provocations, threats or violence in any form cannot and shall not be tolerated. Repeated provocations lead to stress and irritation, which in turn bring about the risk of future conflicts and outbreaks of rage. As well as physical injuries, violence also causes psychological injuries to the victim, such as fear and violated integrity. Violence always involves a crisis for the victim and can lead to severe psychological suffering. Violent crimes in society often affect employees, and about one third occur at workplaces. In the maritime sector it is generally employees on ferry ships that are most affected by such crimes, but also those who work on ships in areas with an abnormally high risk of stowaways, pirate attacks and kidnappings may be the victims of violence or threats of violence. Irrespective of the type of risk, it is important that a special assessment is made in which the risks are examined as well as their consequences and what type of preparedness is required on board the ship and at the shipping office if an incident should occur.

Provocations, violence and the threat of violence do not necessarily always come from outside. As in all other cases of social contact, conflicts may arise on board ships since many people share the same living space. The very limited area on a ship makes it almost impossible to escape from problems. For this reason it is particularly important that conflicts are solved. Knowledge of the mechanisms behind aggression, conflict management and violence is extremely valuable, partly for reasons of avoiding and preventing their occurrence and partly for rehabilitation after the damage has been done. The employer has a large responsibility for providing preventive measures, safety procedures, action plans, training and education, planning for the care of victims and crisis support. Such work must be included and documented in the ship’s safety organisation. Safety regulations and readiness plans must come into force in a crisis situation, and crisis support must be provided to any victims. It is the responsibility of the management to carry out support measures after events that have caused shock to employees. Fundamental knowledge of crisis reactions and debriefing is of great importance in such situations.

Laws and provisions

AFS 1993:2 Violence and Menaces in the Working Environment

First aid and crisis support

The definition of a crisis is a reaction to a situation in which earlier experience is not sufficient to handle the situation. The person is forced to stop and find new ways to handle the situation that has arisen. There are no foolproof ways of determining whether a person is in crisis or not, since everybody reacts and deals with experienced abnormal events in different ways. In addition it is never possible to predict what events will trigger a crisis since it is not the event in itself but the individual interpretation, which is decisive for how a person reacts. What may be no more than a bagatelle for you or me may be perceived as terrifying to another person. What decides how a person reacts is earlier experiences and crises already survived, as well as individual personality factors. An earlier crisis that has been well worked through provides a good basis for managing new crises in a good way, just as crises not worked through or worked through badly can bring about vulnerability in new and stressful situations.

Reactions in a crisis situation usually follow four phases:

- **Shock** – the victim finds it difficult to realize and accept what has happened.
  
  This phase may be seen as a survival mechanism, and the victim is initially
protected against a reality, which is too terrifying and unmanageable. An exterior calm may easily be misinterpreted by people around as indifference. At the same time there is often an inner chaos and the person affected finds it difficult to handle information. The shock phase may last from a few moments to several days.

- **Reaction** – the victim can no longer deny what has happened, starts to realize what it means and reacts to it. Feelings are often expressed strongly and accusations, aggression, guilt and anxiety are common. Sometimes there are also physical symptoms such as problems with the stomach or the heart. Many people tend to isolate themselves during this phase. This phase may last from between several weeks to several months.

- **Working through** – the victim starts to leave their preoccupation with the event and return to the present. Interest in their surroundings returns, but the pain associated with the event remains. This is a time when people look for meaning; the victim tries to understand how and why the event could happen. This phase may take up to one year.

- **New orientation** – the victim starts to look to the future and feels that he/she can move forwards. The wounds are more or less healed, and the old, unpleasant feelings and thoughts have been worked through and are manageable. The memories remain throughout a person’s life, however, and will affect the person. A crisis well worked through can lead to life in the new orientation phase being on a higher level: the victim has grown and developed as a person after working her way through the crisis.

Care can be divided into three parts: medical care in the form of first aid, calling an ambulance, or measures by the person responsible for medical care on board or by the occupational health services. Practical care may include gathering the group of victims together and arranging food, clothes, money or temporary accommodation. Ensuring that basic physical needs are satisfied must take place before psychological care can be given, and eases the continuing process. Gathering the group together and talking about the events that took place with people you know provides security in an insecure situation. Psychological care may be given through individual debriefing or group debriefing.

In a crisis situation it is also important that those who were not directly affected are adequately cared for. In conjunction with serious accidents or incidents it is natural to take care of those who have been injured first, but care may then need to be extended to other people. Sometimes these people are called secondary victims. They may be people who were involved in the incident but who were not injured, those who witnessed the accident or perhaps felt that they either caused the accident or did not do enough to avert it. Family members may be badly affected. These people may perceive the crisis situation as extremely traumatic and it is not unusual that feelings of guilt and shame need to be worked through.

Debriefing is a method that has been specially developed to alleviate the initial negative reactions after an unexpected, traumatic experience. People affected go through the event in a structured manner, reliving their sensory impressions as well as their thoughts during the event. Putting words to a traumatic event gives it context at the same time as all of us have a need to talk about unexpected, overwhelming experiences. Both contribute to making the experience less unpleasant and frightening.

*Training in CCM, Crowd and Crisis Management, can be useful in preventive work to generate knowledge about how to deal with a crisis.*
**Stress**

The definition of stress is the bodily reaction that is triggered by a physical or psychological strain. The reaction is aimed at adapting the body’s systems to new demands or conditions. The trigger may be external circumstances or internal thoughts, such as unpleasant memories (see above about crisis reactions).

Stress can be experienced as negative or positive. In general we can say that a moderate amount of stress, such as in a stimulating environment, makes people work efficiently. There is a large amount of individual variation regarding ideal stress, though, including personality factors. Too little or too much stress can make performance worse. Too little stress may be just as bad as having too much to do, which is important to remember when tasks are monotonous.

There is a definite connection between having control and influence over the work situation and stress. If the amount of control and influence over one’s own work is minimal, this may lead to negative stress. If on the other hand it is possible to influence and make decisions on the work situation personally, even high-stress work conditions may be perceived as positive.

Everyday factors such as friendship, community spirit, appreciation of others and a sense of belonging may increase tolerance to stress and reduce the consequences. Social support is of great importance in human interaction at a place of work. Most people can take quite a lot of stress periodically if they have access to social support and rest. Sleep is important for the body to regain the energy to manage the strains involved in recurrent high-stress periods. Stress over a long time, with insufficient recovery, has a negative influence on people whether they see it as positive or negative. Chronic stress can lead to many serious symptoms of illness such as pain in the body, depression, diabetes, problems with the stomach and heart and infections due to impaired immunity.

It is important when planning workplaces and organisation of work to consider the basic human functions. Both experience and research have shown that the following factors must be considered in order to avoid harmful stress:

- A reasonable overall workload.
- Enough time to be able to finish each task.
- Clear work instructions, allocation of roles and goals.
- Personal support from both foreman and fellow workers.
- Some kind of acknowledgement/reward for work well done.
- Being able to influence one’s own work.
- Being able to freely express one’s points of view.
- Violence, threats, discrimination or other offensive treatment must not be allowed.
- The physical and psycho-social environments must be good.
- Opportunities to utilise individual competence and to advance.

These points may constitute the groundwork both when planning a new organisation of work and for discussions concerning the existing organisation.
Night work and shift work

Work onboard a ship goes on around the clock as long as the ship is at sea, and increasingly while the ship is in port. Many important functions onboard cannot be maintained without work during the evenings and nights. For this reason most seafaring employees work both nights and shifts.

Night work and shift work must be planned very thoroughly. A good tool for planning is the computer program SWP (Sleep and Wake Predictor) which can be downloaded from the Swedish Maritime Administration website at http://www.sjofartsverket.se/upload/Forskningsdb/swp_2008.htm

Night work means that a person’s diurnal rhythm is re-adjusted. The body temperature and production of many hormones are higher during the day and lower at night. This means that in the daytime a person is more alert and in a better mood, more attentive and able to concentrate as well as more efficient. The chances of doing a good job safely are better during the day than at night. The body’s metabolism also makes it more difficult to sleep during daylight hours. There is a double problem: working at night and the fact that sleeping in the day goes against the body’s natural rhythm.

The ability to adapt to the irregularity of shift work varies from person to person. Overall, however, it is difficult to adapt the diurnal rhythm to night or morning work. If a person is exposed to sunlight or daylight it is practically impossible to re-set the biological clock to nightwork.

Through careful scheduling of shift work, negative consequences may be decreased.

The following must be considered:

- The average total working hours per week.
- The length of each shift.
- The number of breaks and relief periods, their length and distribution during the shift. If personnel can choose their rest times, shifts of up to 12 hours are not a great problem. This of course assumes that they have slept sufficiently at the right time and that tasks are motivating.
- Distribution of working hours over 24 hours. On two-watch ships and particularly ships with only two mariners/deck officers, this distribution should not be divided in the traditional way with shifts 00-06-22-18. If the hours are divided into 03-09-15-21 watches instead, both groups will get some important night sleep. At the same time the difficult night watch between 00-06, which is the most high-risk watch, will be divided as a result.
Strain ergonomics
The body is built for work. Physical activities promote the development of muscles, strengthening of joints and tissues and increases the capacity of heart and lungs. It is important that there is a natural balance between the demands posed by work and the capacity for work. If work is too light, physical capacity is not developed; if it is too heavy, injuries will result such as in muscles.

Pain is a good warning and should always be taken very seriously. It is usually a sign that a muscle has been strained too much on a certain occasion or has been used exclusively for a long period of time. If the muscle can rest and recover, an injury may be prevented or heal completely. If not the problem may become permanent.

Muscle activity is increased by stress. When work is done under time pressure the muscle strain increases, thereby adding to the risk of stress injury.

It is not only increased muscle activity that is caused by stress. Other factors may also contribute to muscle injuries. In the same manner as stress may cause ulcers, it may also cause problems with muscles, especially in combination with depression. Being afflicted by long-term pain is often a contributing factor to the inability to recover. A vicious circle is started, in which pain causes stress and depression and stress causes pain.

Advice for the individual
The secretion of enzymes in the digestive organs is reduced during the night as well as the movement of the bowels, making it more difficult to digest food at night.

In order to avoid discomfort you should:
- Eat as little as possible during the night-shift, avoiding refined sugar and fat.
- Be careful with coffee as it may cause indigestion. The effects of caffeine last for about 3–4 hours. A good tip is a coffee siesta: drink a cup of coffee and then have a nap for about 15 minutes. When you wake you have the combined effect of caffeine and sleep.
- Eat three main meals every day. Those working shifts should eat their main meal in the day, irrespective of the shift. The largest meal should be eaten after the longest sleep.

Also:
- Be attentive to sleep hygiene. The place where you sleep should be quiet, dark, cool and used only for sleep. A dark roller blind or eye mask and pillow are inexpensive partial solutions.
- Avoid catnaps longer than about 20–30 minutes if you do not have plenty of time to wake up. The longer your catnap, the longer it takes to wake up. All sleep is good for you, though.
- Avoid the use of sleeping pills.
- Avoid physical stress or training less than 2 hours before sleeping.

There is more information in the brochure "Fatigue at sea" in tab 11, Information from authorities etc.

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Laws and provisions
AFS 2012:2  Ergonomics for the Prevention of Musculoskeletal Disorders
A large percentage of stress injuries are to the shoulders and neck. This is common to all professions and is due to the great mobility of shoulders and neck. Over forty muscles influence the movements of the shoulders and neck.

Bad lifting technique has injured many backs. A physiotherapist can alleviate injuries or even cure them, but can also teach correct lifting techniques.

Working with the arms above shoulder-height causes a large static strain. The maximum static strain of a muscle-group should be reached only for a very short time, barely a second.
**Good lifting technique:**

- Stand close to the load to be lifted.
- Stand steady with legs apart preferably with one foot slightly in front of the other.
- Always place yourself directly in front of the load the nose and feet/toes should point in the same direction.
- Estimate the weight of the load.
- Bend **knees** and **hips** keep the back straight.
- Take hold of the load and lift by straightening knees and hips, keeping the back straight.
- When putting the load down, the knees and hip are bent again, keeping the back straight and lowering the load in a steady manner.
- Use the strong muscles of the body legs and gluteus maximus and save your back by always lifting with a straight back, using the leg muscles.

Conditions are best for the body when any lifting can be done:

- directly in front of and close to the body,
- between thigh and elbow in height,
- without having to hold/carry the load for a long period of time,
- with a load that is convenient to carry,
- when you are standing steady i.e. the floor is dry, clean and uncluttered and the shoes are suited to the surface.

The body is subjected to a greater strain when lifting:

- From the side or one-handed,
- with the back twisted, bent forward or to the side.
The Swedish Work Environment Authority has published recommendations about ergonomics for the prevention of musculoskeletal disorders. In the general advice in these recommendations there are descriptions of how work involving physical strains should be planned, investigated and assessed in order to decrease the risk of injuries to joints, muscles and tendons. Read more about this under tab 9, Ergonomics for the prevention of musculoskeletal disorders.

A physiotherapist may provide advice during breaks on stretching and physical training that can reduce the risk of injury.

Welding with the arms held above shoulder-height causes great static strain. In addition to the welding itself, the body needs to stay in a fixed position with a large number of muscles statically strained.
Chemical risks to health

Estimates indicate that approximately 60,000 chemical products are in everyday use. These are composed of more than 10,000 chemicals and a great number of new chemical products are added each year. In contrast, only a small number of substances are of general importance for the work environment. Most substances are used in small volumes and within very specific areas.

Chemical risks to health frequently ensue from contact with substances or products and their absorption through the skin or through the air-passages and lungs. Harmful substances may also enter the body through ingestion. Chemical accidents, fire and explosions also come under the heading of chemical risks.

Laws and provisions
AFS 2015:7  Occupational Exposure Limit Values
AFS 2014:43  Chemical Hazards in the Working Environment

Effects of harmful substances

The effects of harmful substances may vary from slight irritations such as pungent odours and slight irritation of the eyes, to respiratory problems and unconsciousness. The effects may also become permanent, such as allergies, asthma, cancer and genetic (hereditary) disorders. The level of injury may be due to the following, among other things:

• how harmful the substance is,
• the length and intensity of exposure,
• how the substance enters the body,
• the potential of the substance to remain in the body,
• the potential of the substance to affect a certain organ.

Harmful substances may enter the body in different ways and affect different organs. Some substances, such as solvents, can be absorbed by the body through the respiratory tract and the skin. Most substances have no effect until they have

After skin contact with chemicals, when there is a risk of injury to the skin or absorption through the skin, the contact surface should be rinsed as soon as possible with large amounts of lukewarm water for a minimum of 15 minutes. Shoes, clothes and jewellery must be removed as required. When there is a risk of skin-absorption or if the chemical is only slightly soluble in water, the skin must be carefully washed with soap and water.
reached the bloodstream. It is not until they are spread throughout the body that they can affect sensitive organs and systems. Exceptions are substances that have a local effect, such as corrosive or irritating substances.

**Hygienic limits**

Hygienic limits are used to assess the air-quality at a workplace. The hygienic limit for a chemical substance stipulates the maximum permitted content in inhaled air without causing slight or harmful effects. Naturally, a clear line cannot be drawn since there are individual levels of susceptibility. The aim should always be at less that the hygienic limits.

Examples of dangerous places are anchor boxes, ballast tanks and bunker tanks. Not only chemicals present a danger to life; lack of oxygen can also kill (see tab 11, Gas onboard ships).

**Laws and provisions**

AFS 2015:7 Occupational Exposure Limit Values

A person who has ingested any unknown substance which may be toxic must be given plenty to drink (1–2 glasses). Never try to provoke vomiting when the general condition of the person has been affected (circulation, breathing, consciousness) because there is a risk of cramps. The same applies if the person has swallowed corrosive substances or oils. Thin oils may easily reach the lungs if a person vomits.
Risk appraisal

The health hazards of handling dangerous chemical substances depends largely on how work is carried out. When substances are handled correctly and with the right choice of methods and protective equipment, risks may be substantially reduced and in many cases eliminated.

Employers must have good knowledge of dangerous substances used at the workplace. Before a dangerous substance is used, the employer must make a risk appraisal and on that basis decide on the method of work and the equipment to be used, as well as planning the work so that risks may be minimised. Instructions for handling and safety must be formulated. The risk appraisal must be documented.

If there are changes in work carried out or new information shows a change in the apparent risks, a new risk appraisal must be performed.

It is also important to remember that less dangerous substances should as far as possible replace those that may be injurious to health. This should be done in accordance with environment code regulations.

Workplace routines

It is important to make a regular inventory of chemicals found at a workplace. A list must be available that provides information on what dangerous chemical products are handled there and their levels of toxicity. Names of the products must be stated in a systematic order. The list must be kept updated and contain information on the dates of latest changes. This list must be easily accessible for employees or those who may come into contact with any of the chemical products.

Any supplier of dangerous chemical products is always obliged to supply a safety data sheet. The regulations governing this may be found in directives from the EU, the National Chemicals Inspectorate and the Swedish Civil Contingencies Agency.

Make sure you control the waste. As much as possible must be recycled.
A dangerous chemical product may not be used if there is no current safety data sheet from the supplier. If there is no current safety data sheet, written information on risks and protection for the product must be otherwise available.

**Summary**

1. Go through existing products and remove any that are not necessary.

2. Study the remaining products. Demand safety data sheets for any products lacking these. Inquire at the supplier whether there are other less dangerous substances with equal production quality.

3. Assign the task of purchasing all chemical products to one person rather than several people.

4. Obtain information before the product is used. Discuss: Is the product really needed? What are the risks?

5. Compile product information together with any individual notes required.

6. Ensure that employees have access to requisite information, safety data sheets, handling and safety instructions.

7. Verify that you can take care of waste products.

**Labelling for use in work**

All chemical products that are released onto the market must be classified and labelled. In 2010 a new system of classification was introduced in the EU called CLP (Classification, Labelling and Packaging). The new system is part of the global harmonization of regulations for better protection of health and the environment, and will facilitate international trade with chemicals.

Packages and containers of dangerous chemical products must be labelled with:

- The name of the product,
- The danger pictograms and signal words required, or with the older danger symbols and danger descriptions,
- Text providing information if the product is inflammable, corrosive, carcinogenic, allergenic, damaging to chromosomes or harmful to reproduction.

If you pour a product into another container, the label must always be copied onto the new container in order to show its contents and measures to be taken in case of an accident. (You should avoid changing containers as it often causes further risks.)

The label does not replace a safety data sheet/product information sheet. A safety data sheet gives more information regarding the handling of the product.

**Laws and provisions**

*AFS 2001:1* Systematic Work Environment Management

*AFS 2014:43* Chemical Hazards in the Working Environment
Mandatory medical examination

Many directives call for medical examinations of employees handling dangerous substances. This concerns such substances as thermosetting plastic, asbestos, lead and cadmium, among others. All the medical examinations and controls to be done have been gathered into a paper from the Work Environment Authority, AFS 2005:6. The provisions set out what must be included in the examination, how it is to be done and how it is to be reported. A register must be maintained of certain medical examinations and periodical health controls. Occupational health care is a suitable partner with which to cooperate for these medical examinations and controls.

Laws and provisions

AFS 2005:6 Medical Surveillance in Working Life

Fact box – Contents and layout of safety data sheets

There are detailed instructions regarding when a safety data sheet must be supplied and its format in the REACH ordinance. This is joint EU legislation that covers all chemicals on the internal EU market.

Any company that releases a potentially dangerous chemical product on the market must always provide safety data sheets to professional users of the product. Safety data sheets must be easy to read and as clear as possible, and inform users about the product’s dangerous properties, risks and what protective measures must be taken to prevent injuries to people and damage to the environment. A safety data sheet must give an employer the facts required to determine whether there are any dangerous substances at the workplace. Employees and their representatives must have access to safety data sheets and all relevant information about the substances they use or may be exposed to in their work. A safety data sheet must be conveyed electronically or free of charge on paper at the latest by the first delivery date. It is not sufficient to merely publish a safety data sheet on the Internet. Updated sheets must be provided to all persons who have received the product during the last 12 months. A safety data sheet must have the following headings:

1. Name of substance/preparation and company name.
   Its intended use must be stated!
2. Dangerous properties.
3. Composition/information on constituents.
4. First aid measures to be taken.
5. Firefighting measures.
7. Handling and storage.
   (e.g. uses that are not advised)
8. Limitation to exposure/personal protection.
9. Physical and chemical properties.
10. Stability and reactivity.
11. Toxicological information.
15. Relevant regulations.
16. Other information.

Safety data sheets must contain the registration number of the substance (if registered), and an appendix that describes the exposure scenario. Detailed requirements for the contents and layout of safety data sheets are stated in the European Parliament’s and Council’s ordinance (EC) no. 1907/2006 on Reach, article 31 and appendix II.
Noise

Noise means unwanted sound irritating, concealing or harmful.

Noise has several harmful effects. Prolonged high levels of exposure to noise may cause injury. Damage to hearing is incurable. If sound levels are high, ear defenders must be used.

At lower sound levels, even when the noise is hardly noticeable, it may still cause feelings of unease, general discomfort and mental fatigue. This in turn may increase the danger of injury through accidents. Fatigue also makes the work less efficient.

Noise may also cause muscular tension and elevated secretion of stress hormones. Noise from fans and ventilation installations can cause stress disorders and inability to concentrate.

Even slightly impaired hearing can be very unpleasant since sounds from different sources “blend together”. A person with impaired hearing finds it difficult to follow a conversation if several people speak at the same time, music is impossible to enjoy and so on.

Employees must not be exposed to harmful levels of noise. Being exposed to noise exceeding the following intensities is considered as causing a risk of hearing damage:

<table>
<thead>
<tr>
<th>Limit</th>
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<tbody>
<tr>
<td>Daily noise exposure level for 8 hours, taking into consideration hearing protection used</td>
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<tr>
<td>Daily noise exposure level for 24 hours, taking into consideration hearing protection used</td>
</tr>
<tr>
<td>Maximum sound level (with the exception of impulse sound).</td>
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<tr>
<td>Maximum impulse peak level.</td>
</tr>
</tbody>
</table>

The limits are diffuse and there is no guarantee that hearing damage will not arise from exposure to lower sound levels.

Seafaring personnel spending time at a work place or other place where equivalent noise levels (a type of average value) exceed 75 dB(A) over a 24-hour period must be informed of the risks of high sound levels and given ear defenders by their employer. If equivalent noise levels exceed 80 dB(A) over a 24-hour period, ear defenders must be used.

Employees that are subjected to noise levels over 85 dB(A) must undergo an auditory examination at the expense of their employer.

Limits for noise on ships differ from those applied to work on land. At sea, the crew is subjected to noise around the clock whereas on land the equivalent noise level applied is for eight hours. Vibrations may also mean that the risk of hearing becoming injured is increased.
**Fact box**

Sound is a wave motion caused by a source that sets the closest particles in motion (in a gas, liquid or solid). Striking an empty barrel with a mallet produces vibrations in the barrel which set air particles in motion. The sound spreads rather like rings on water.

Two qualities of sound are frequency and sound level. Frequency is measured in Hertz (Hz), the units for cycles per second. A young person can hear sound of frequencies between about 20 Hz and 20 000 Hz. Low frequency notes are dark (basso) and high frequency notes are light (treble). Human speech is between 100 Hz and 5 000 Hz.

Sound level, as perceived by humans, is measured in decibels A, dB(A). The letter A means that the instrument used is calibrated to correspond to the hearing impression. The scale used is logarithmic; a change of 10 dB(A) up or down is a doubling or halving respectively of the sound level. Thus a sound level is doubled between 50 dB(A) and 60 dB(A), between 60 dB(A) and 70 dB(A) and so on.

If two equally strong sources of sound are added to each other the sound level will increase by 3 dB. Ten different sources of sound will increase the sound level by 10 dB. Therefore, ten machines each emitting 80 dB will together produce a sound level of 90 dB.

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*Examples of sound levels from different sources of sound.*
There should be signs indicating areas where ear defenders must be used. Areas with a very high noise level must have "no admittance" signs.

All unnecessary noise must be muffled. Creaking bulkheads, noise from ventilation and clattering equipment may keep a person awake and cause great irritation. Loose parts should be screwed down, dampening material should be affixed to reduce creaking and so on.

The Swedish Transport Agency has issued provisions and recommendations regarding noise levels onboard ships.

**Laws and provisions**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>TSFS 2009:119</td>
<td>Working Environments on Board Ships, Ch. 4 Noise and appendix 2</td>
</tr>
<tr>
<td></td>
<td>Highest noise levels on board ships</td>
</tr>
<tr>
<td>AFS 2005:16</td>
<td>Noise (applies to work on land)</td>
</tr>
</tbody>
</table>

**Noise onboard**

All noise that can be muted must be. This can be done by:

- **Acoustic insulation** – covering hard surfaces with, for example, mineral wool, putting up soundproof screens around the source of the noise or around the workplace.
- **Encasing the source of sound.** It may be possible to encase auxiliary engines or other smaller machinery.
- **Soundproofing** workrooms and staffrooms to prevent the noise from reaching areas used by the crew. Floating floors and viscose elastic dampening may be used.
- **Installing** noise suppressors, for example in the ducts of the ventilation system.
- **Elastic suspension** of machines and other sound-producing equipment. This prevents the propagation of sound and vibrations as structural sound.
- **Always purchasing** the quietest machinery and tools.

The following are examples of some of the most typical sources of noise onboard as well as different ways of suppressing the noise.
Noise suppression in control rooms

Airborne sound
Insulation of bulkhead with mineral wool.
Insulation under floor.
Sealing of cable bushings.

Insulation of bulkhead with mineral wool.
Insulation under floor.
Sealing of cable bushings.

Sealing of cable bushings.

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Noise suppression in workshops

Airborne sound
Insulation under floor and on outside of bulkheads.
Sealing of cable bushings.

Insulation under floor and on outside of bulkheads.
Sealing of cable bushings.

Insulation under floor and on outside of bulkheads.
Sealing of cable bushings.

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Sealing of cable bushings.

Noise suppression in kitchens

Airborne sound
Insulation of bulkhead with mineral wool.
Insulation under floor.
Sealing of cable bushings.

Insulation of bulkhead with mineral wool.
Insulation under floor.
Sealing of cable bushings.

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Noise suppression in control rooms

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Sealing of cable bushings.

Insulation of bulkhead with mineral wool.
Insulation under floor.
Sealing of cable bushings.
**Noise suppression on deck**

- **Tools**
  - Tools with low noise level.
  - Noise suppressors.
- **Impulse sound**
  - Avoid using hammers.
  - Protection through rubber.
- **Hydraulics**
  - Resilient mounting of pipes.
- **Refrigerator containers**
  - Soundproofing screens.
  - Do not place in working space.

**Traffic**
Planning work, considering location and time.

**Loudspeakers**
- Should be aimed away from the working area.
- Use several smaller loudspeakers, evenly distributed in the room.

**Ventilation**
- Large low-speed fans.
- Noise suppressors.
- Low speed of air-flow.
- Soundproofing ventilation ducts.

**Reflectors**
- Soundproof material in ceilings.

**Noise suppression in discotheques**

- **Impulse noise from glasses and cutlery**
  - Rubber mats in crates and trays.
  - Glasses and cutlery should be fastened.

- **Tools**
  - Tools with low noise level.
  - Noise suppressors.
- **Impulse sound**
  - Avoid using hammers.
  - Protection through rubber.
- **Hydraulics**
  - Resilient mounting of pipes.
- **Refrigerator containers**
  - Soundproofing screens.
  - Do not place in working space.

**Traffic**
Planning work, considering location and time.

**Loudspeakers**
- Should be aimed away from the working area.
- Use several smaller loudspeakers, evenly distributed in the room.

**Ventilation**
- Noise suppressors.
- Low speed of air-flow.

**Reflectors**
- Soundproofing in ceiling above bar.
- Curtains.

**Kitchen appliances**
- Choose machines with low noise levels.
Vibration

Vibration injuries caused by handheld machines is a common and serious problem.

The most pronounced type of vibration injury is "white fingers", caused by reduced blood circulation to the tissues. The fingers become numb and have twinges of aches and pains. It is mainly the fingertips that are vulnerable to this. The person affected starts to fumble. White fingers are aggravated by smoking, since nicotine causes blood vessels to further contract.

Full recovery is not possible once white fingers have been caused. It may improve somewhat if contact with vibrations is avoided.

Exposure time has a large significance in the development of vibration injuries. The time during which a vibrating machine is used plays a large role in this. In order to minimise the risk of injury, the total time of use should be as short as possible and the work should be divided into short sessions.

If exposure to vibration during an eight-hour working day exceeds the values in the table below, measures must be taken by the employer.

**Values**

<p>| | |</p>
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<tbody>
<tr>
<td>Hand- and arm vibrations</td>
<td>2,5 m/s²</td>
</tr>
<tr>
<td>Total body vibrations</td>
<td>0,5 m/s²</td>
</tr>
</tbody>
</table>

Vibration injuries may arise even though values are below those stated however, since there are individual variations in sensitivity.

Daily exposure to vibrations must not exceed the following limits:

**Limits**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand- and arm vibrations</td>
<td>5,0 m/s²</td>
</tr>
<tr>
<td>Total body vibrations</td>
<td>1,1 m/s²</td>
</tr>
</tbody>
</table>

The provisions produced by the Work Environment Authority for medical examinations in working life regulate the intervals, content and execution of examinations of employees exposed to vibrations.

It is preferable to use gloves while working with vibrating machines. Avoid cold machines. Hands should be kept warm since cold will trigger the onset of white fingers. Let the machine do the work; do not press the machine against the workpiece. Examples of machines that can give vibration injuries are pneumatic chisels, grinding machines and impact wrenches.

It is important to check the vibration level when buying new tools. Suppliers are required to provide this information. Handheld tools must have a stated vibration level. If it exceeds 2.5 m/s² this must be indicated, for example in the manual. Always buy tools with as low vibration levels as possible, preferably below 2.5 m/s².
Whole-body vibration

Whole-body vibration occurs when someone is standing, sitting or lying on a vibrating surface so that the whole body is exposed to vibrations. This type of vibration occurs on ships, but also in buses, trains, construction machinery and aircraft.

When vibration reaches the body it becomes stronger or weaker in different parts of the body. The risk of injury depends on how strong the vibrations are, how long we are exposed to them, what frequency they have and what part of the body is exposed to vibration.

Exposure to whole-body vibration can be physically and mentally harmful and give rise to fatigue and impaired performance. It can also affect joints, muscle attachments and disks in the spine. Permanent effects that are associated with exposure to whole-body vibration include pain in the back, shoulders and neck. We do not know with certainty whether such pain depends entirely on vibration, however, because poor seating and other ergonomic deficiencies in work-place design can give similar symptoms. A combination of exposure to vibration and ergonomic deficiencies can increase the risk of pain and injuries.

Laws and provisions
AFS 2005:15 Vibrations
TSFS 2009:119 Working Environments on Board Ships, Vibrations 63–65 §§

The whole body follows the vibration-movement at vibrations/oscillations under 1 Hz (oscillations/second). This may affect the sense of balance and cause sea-sickness.
Thermal climate

For our vital organs to work optimally, the body strives to maintain an inner temperature (core temperature) of around 37°C. This takes place through blood circulation, sweating and shivering. If the body’s core temperature is too high, the body sends more blood to the surface to cool by losing surplus heat. If this is not sufficient to maintain the body’s temperature balance, we start to sweat. The sweat then evaporates from the skin. This requires heat, which means that the body temperature is reduced. During hard physical work, the loss of body liquids through evaporation of sweat can be up to 4 litres per hour. If the body’s core temperature is too low, less blood is sent to the surface so that cooling from the core of the body is reduced. Arms and legs also received less blood, meaning that the functioning of hands and feet may deteriorate. Shivering is the body’s protection against over-cooling and involves involuntary contractions of muscles to increase body heat. Shivering is a clear signal that the person must do something—put on more clothes, start physical activity, go to a warmer place, or eat or drink something warm.

Working in warm conditions

Work in warm conditions on the ship may be indoors, such as in the machine room, cargo or cooking areas, or on the deck on warm days. Working in high temperatures is a strain on the body. Heat decreases performance and the pace of work and reduces our concentration, attention and judgement, which may generate risks to other people. Very high temperatures can be dangerous. When the body loses its ability to control its core temperature, heat stroke is a risk. The person stops sweating, becomes confused and if the conditions continue there is a risk of circulatory collapse, unconsciousness, and finally death.

In order to decrease the risk of accidents when working in hot conditions, the following actions may be taken:

1. Reduce the heat input from the surroundings by screening off and insulating heat sources, or by increasing the movement of air (if the air temperature is lower than 35°C, otherwise heat transfer may increase through convection).
2. Reduce the heat generated by physical work through regular breaks, or by reducing the intensity of the work.
3. Increase the person’s ability to withstand heat through heat training, using appropriate clothes (but also considering the risk of burn injuries) and maintaining the body’s liquid and salt balance.

Pregnant women and older people have reduced resistance to heat. A special risk assessment should be made in such cases to decrease the risk of ill health and accidents.

Working in cold conditions

During the winter and in Arctic waters, mooring and other deck work must be carried out in extremely cold and sometimes very windy conditions. If the body gradually loses more heat than it is able to generate, the person is affected by general cooling (hypothermia). How quickly the body is cooled depends on the air temperature, the wind speed, heat from the sun and the physical work that is being carried out. Hypothermia may also occur when the temperature is above zero if a person becomes wet, is outdoors in hard weather and strong winds or if they are forced to remain still for a long period.
When people become chilled in very low temperatures, there is a large risk of both superficial and core injuries. When the body temperature falls to 35°C, the body reacts by shivering strongly and people show reduced motor skills and worse judgement, which leads to an increased risk of mistakes and accidents. If the core temperature continues to fall towards 32°C, the body's temperature regulating system starts to fail. The body stops shivering in order to conserve all energy for the vital organs. Hands become unusable and the person becomes extremely confused. In the case of severe cooling, pulse and breathing become weaker and there is a risk of unconsciousness and death.

To reduce the risk of injuries when working in cold conditions, the following actions can be taken:

1. Reduce cooling by using insulating clothes based on the layer principle: an inner layer that transports moisture from the skin, an insulating middle layer, and an outer layer that protects against wind and rain. Clothes must be adapted to the temperature and to the activities being performed.
2. Ensure that the face, hands and feet are well protected.
3. Plan the work so that regular breaks can be taken in a warm place.
4. Avoid touching metal surfaces without gloves.
5. Keep an eye on your colleagues and look out for signs of hypothermia and cold injuries.

Laws and provisions
TSFS 2009:119   Work environment on ships
AFS 1997:2   Working in warm conditions

Lighting and vision

Good general lighting as well as local lighting is required in rooms where work is to be done. Vision is an interaction between the eye, the lighting, the object being viewed and the immediate surroundings. All these factors must be taken into account when lighting is assessed.

Good lighting provides enough light and distributes the light around the room and onto different objects in a suitable way. Lighting must not be glaring and lamps should be located so that reflections from windows and objects on desks are avoided. Light should be adjustable and easy to direct in order to avoid shadows. It should have a suitable colour and provide good colour reproduction. Eyes tire faster if they have to alternate between dark and light surfaces.

It is important to remember that with age, better lighting is needed. A 60-year-old person generally needs much stronger illumination than a 40-year-old person. Working with VDUs places special demands on lighting. The devices must be placed so that light is not reflected on the screen. The VDU should also be placed so that reflections from windows are avoided. It may be necessary to screen the workplace in order to create satisfactory working conditions.

Maintenance is very important in daily operations. All light units must be well maintained in order to give the luminous efficiency for which they are planned. In one year a lighting unit in an apparently clean environment (office type) will be so dirty that the luminous efficiency will have been reduced by 20%. The reduction may be up to 75% in a workshop. People do not notice this reduction since it is due to gradual dirt build-up, but inadequate lighting can lead to errors and, in the worst cases, accidents. It is particularly important that lighting does not disturb visual efficiency in darkness when working on the bridge at night.
Workrooms, staff rooms and cabins

The design of rooms is important for the environment onboard, as is the design of the space used for rest and leisure. The design is often the determining factor in how efficiently activities can be carried out. A large part of design and standards is set down in international recommendations, for example the recommendations of IMO regarding the highest acceptable noise level in various spaces onboard. Detailed regulations concerning the design of different types of rooms can be found in the provisions of the Swedish Transport Agency and Swedish Maritime Administration. The Swedish Transport Agency inspects and approves the drawings and other plans before the ship is built. Employees must be given the opportunity of giving their opinions during the design planning regarding, for example, living quarters for the crew. There are also rules regulating negotiations between the shipowner and the trade union of the seafaring personnel.

The safety representative must take part in the planning of new or altered rooms.

Another important area is cleaning. Regular cleaning is very important as it reduces the risk of accidents and ill-health and contributes to a more pleasant work environment.

Laws and provisions
SJÖFS 1970:A4  Accommodation and catering rooms etc. on ships
SJÖFS 1992:6  Crew accommodation on ships etc.
TSFS 2009:119 Working Environments on Board Ships
TSFS 2013:68 Accomodation quarters on ships covered by the Maritime Labour Convention, 2006

On the bridge, in the radio room and other rooms where work is mostly sedentary, equipment and tools used should be within easy reach. Chairs should be adjustable and correctly designed. It should be possible to adjust the height of work surfaces and desks.
Recreational facilities onboard should be well suited to their purpose, whether it is the library, radio and TV room or the gym.

Seafaring personnel are exposed to noise and vibrations around the clock. For this reason special demands must be put on cabins from medical, comfort and safety points of view. Total-body vibrations cause fatigue syndrome. Lounges and recreation rooms must provide the rest and calm needed by the body.
Ventilation must be given special attention in areas such as the engine room, paint shop, galley and storerooms for different chemical substances, such as solvents. There must be local extraction ventilation by stoves, dishwashers, for welding work and where paints are mixed. Non-slip floor surfaces and vibration-absorbing flooring should be installed where required.

Every seafarer who lives on board must be given his or her own cabin with a bathroom. Cabins vary in appearance depending on the ship type, its traffic area and age. This cabin is from the car ferry M/S Faust from Wallenius Lines, and has a day cabin, bedroom and private bathroom. The rules for cabin layout are found in SJÖFS 1992:6 and TSFS 2013:68.
Personal protective equipment

The need for protection
Personal protective equipment is a complement to other measures. For example, if there are no other technical solutions to a problem, the employer must provide complete protective equipment for personnel.

Personal protective equipment means exactly that. It is personal and should only be used by the person for whom it has been tried out. "Personal protection equipment" from the Swedish Work Environment Authority is a handbook with advice for personal protection equipment.

Laws and provisions
AFS 2001:3 Use of Personal Protective Equipment

Choosing protection
The main points to consider when choosing protection are:

- Be careful to find out exactly what kind of risk the equipment is meant to protect against, e.g. type of gas or type of noise.

- Check that the protection fits. It is personal and must, for instance, be chosen to suit the shape of the face. There are face protectors for different shapes of face.

- It is preferable that several different types are tried before purchasing in order to choose the best fitting protection.

- It must be easy to clean and replace parts on protective equipment.

- Protective equipment must comply with the demands made by the authorities. CE marking is the manufacturers’ assurance that the product fulfils current demands. Some personal protective equipment needs to be checked by an authority or a specially appointed body, i.e. third party testing.

- Use only filters with markings corresponding to requirements for the work being carried out, such as in accordance with the safety data sheet. Particle filters are available in three classes: P1, P2 and P3, of which P3 is the highest class. Gas filters have both high and low absorption capacity for organic vapours (solvents), inorganic vapours (chlorine and hydrosulphuric acid), acidic gases (sulphur dioxide) and ammonia. They are marked with different letters, colour codes and use-by dates for unopened packages.

Below follows some advice concerning choice of ear defenders, which are the most common protection used in many areas onboard. Other protective equipment is often specifically used for a certain task: gloves for loading, unloading, anchoring, equipment for welding, fresh air mask for tank cleaning etc.

Ear defenders – a temporary solution
Even though noise suppression measures have been taken, noise levels may be so high that there is still a risk of hearing damage. This is when ear defenders must be used. It is important to use them continually when in a noisy environment.
Choose the right ear defenders

Ear defenders muffle sound better at high frequencies than at low. The lining of the protective cover to the head is of vital importance in how well the defender will muffle low frequency noise. When earplugs are used it is important to make sure the plugs are well suited to the size and shape of the outer auditory duct.

Choose ear defenders that provide a higher dampening effect than is necessary in accordance with the noise limits. This is important for the sake of comfort and because people vary in their sensitivity to noise.

It may sometimes be an advantage to combine earplugs and ear muffs. Using earplugs throughout the day gives basic protection against background noise or unexpected sounds. Ear muffs may be worn while carrying out especially noisy work.

There are ear muffs with built-in communication. Some ear muffs can dampen all noise above 82 dB and still allow communication with other personnel.

Some ear muffs are tested for use in combination with certain glasses. These ear muffs may be used in combination with other glasses than those with which they are tested, provided the temples touch the head, are as thin or thinner than those tested or consist of elastic straps.

The fitting of ear defenders should be done very thoroughly. The fitting is especially important for rubber or plastic ear plugs.

Ear muffs must be large enough relative to the size of the ear. The head and neck strap must be adjusted for the ear muffs to be in close contact with the head. The person wearing the ear muffs must be informed that hair or caps must not come between the hearing protector and the head since this will reduce the effect considerably with regard to low-frequency noise. The best possible
dampening is obtained if the ear defenders are adjusted while in a noisy environment. Some ear muffs may have tight straps, which may be uncomfortable for the wearer. Large ear muffs with soft sealing rings do not need as much pressure from the straps to provide the same dampening effect.

Maintenance is needed to ensure that the effect of the ear defenders is not reduced after a period of use. The sealing rings should be checked often and washed. Damaged or hardened sealing rings must be changed.

Plugs made of rubber or plastic must of course be kept clean in order to avoid infections in the auditory canal. The plugs should be washed regularly with soap and water or disinfectant. Keep them in a special box, not loose in the pockets. It is important not to touch the part of the earplug that enters the ear with dirty hands due to the risk of infection.

Disposable earplugs should never be re-used.

Work clothes

Work clothes are often classified as protective equipment and if they are, the employer should supply work clothes – e.g. non-slip shoes with steel toecaps or cooks' jackets protecting against burns. The clothes often display a company image – a uniform with the company's name/logotype.

Wearing the right work clothes is important to be able to perform work in the best possible way. By tradition, many men work stripped to the waist wearing open sandals or clogs, but these are hardly examples of correct work clothes. In different areas on a ship the following are recommended:

**Engine-room**: Overalls or long-sleeved shirt and long trousers or brace trousers with knee-protectors.

**Deck**: Overalls or long-sleeved shirt and long trousers. Personnel performing tasks on the car deck, or who spend time on the car deck, must wear high-visibility clothes on their upper body that are approved in EN 471, Class 3, including high-visibility trousers with ankle reflectors, class 2 minimum.

**Kitchen**: A cook’s jacket protects against heat and burns. Long-sleeved shirt and long trousers.

**Short-sleeved shirts and short trousers** may be used when there is no risk of harmful physical or chemical factors, e.g. office work, guard duty, on the bridge.
or in the control room. It is important to make an evaluation of the work situation to dress appropriately.

**Non-slip safety shoes with steel toecaps** are part of safe clothing when working at sea.

Work clothes must be clean when they are put on. The personnel bearing responsibility for cleaning clothes and methods used must be clearly stated.

## Sea safety drills

Fire and evacuation drills must be carried out in a safe way with regard to the work environment. A risk analysis must be carried out prior to any drills. If deficiencies are noticed, it is important that they are rectified before drills begin. If there is not enough time to take the necessary measures before the drill, those parts that pose a risk of injuries must be excluded, or the whole drill must be cancelled. Any deficiencies in the work environment must be reported and necessary corrective action taken.

Everybody in the safety organization must know the following:

- Which fire and evacuation group they belong to.
- Where the fire and evacuation equipment is located.
- What responsibilities they have when the fire or evacuation alarm sounds.

The ship’s fire safety system is regulated by the ship safety law and the regulations of the Swedish Transport Agency. These are based on the international conventions regarding safety of life at sea.

### Laws and provisions

- **TSFS 2009:52** Marine equipment
- **TSFS 2009:97** Fire safety, fire detection and fire extinguishing on SOLAS ships built before 1 July 2002.
- **TSFS 2009:98** Fire safety, fire detection and fire extinguishing on SOLAS ships built on or later than 1 July 2002.
- **TSFS 2011:116** Education and qualifications for marine personnel
- **2008/106/EC** European Parliament and Council directive on the minimum level of training of seafarers
Examples of fire and safety plans
**Electromagnetic fields**

There are electromagnetic fields around all appliances, machines, cables and wires that use electricity. The nature of the field depends on the electricity used, the design of the equipment and how it is used. A lamp that is on radiates electromagnetic fields in the form of visible radiation (light) and thermal radiation (heat). Around the cord of the lamp there are electric and magnetic fields. In a microwave oven there are microwave fields and a radio or television transmitter emits radio waves.

Electromagnetic fields can influence people through currents and/or heat induced in the body when we are exposed to these fields. Such effects depend on the frequency and how strong the field is.

Injury from exposure to electromagnetic fields is very rare. It requires very high currents or voltages for injury to occur. Such strong fields are usually very close to electrical appliances and equipment which use very high currents or near radar antennas, radio and television transmitters.

At the moment there are no limit values in Sweden for low-frequency, magnetic fields. However, there is an "Authorities' principle of prudence", which means that those responsible should endeavour to reduce strong fields if measures that reduce exposure can be taken at reasonable costs and consequences. For new electrical installations, design and location should be considered at the planning stage so that exposure is limited. An example of this is a ship’s main electrical distribution board being located in a separate room as opposed to the control room.

**Work in confined cargo spaces**

**Risks**

There have been a number of serious accidents in Sweden in recent years when people have been working in confined cargo spaces, some with fatal outcomes. Most of the accidents were due to breathing equipment not being in place or used incorrectly.

Confined spaces are places where dangerous atmospheres can develop and where it is difficult to get in and out. Examples are cargo spaces and tanks of different types such as oil tanks, ballast tanks or waste tanks, but chain lockers, bow propeller chambers and storage rooms next to the hold are others.

There are different sorts of risks in confined spaces. Noxious, explosive or inflammable vapours or gases may be present in dangerous concentrations, as well as high or low concentrations of oxygen. Dust may also present a danger and work such as welding, cutting and the use of products containing solvents in confined spaces can give rise to dangerous vapours and gases.
Air normally contains 21% oxygen by volume. If the oxygen content becomes too high, flammable substances are more easily ignited. Textile fibres and even hair can absorb oxygen and the risk of them catching fire increases. High oxygen levels may be a result of leaking tubes such as when gas welding. If the oxygen level falls below 17.5% by volume, symptoms such as tiredness and increased pulse rate may result. If the level falls even lower it may be difficult to get out of the space and there is a risk of suffocation. Low oxygen levels may be the result of other gases being produced in the room. This may be done deliberately, as when a space is filled with an inert gas to minimise the risk of fire and explosions. With cargoes of organic materials such as wood products, wood chips and pellets, carbon monoxide, carbon dioxide and hydrogen sulphide may be produced which can either consume or force out the oxygen. Oxidation processes also consume oxygen from the air. Examples are open flames, welding and fires. Air in closed containers that have been unused for long periods may have low oxygen levels due to rusting, which also consumes oxygen.

**Work in confined spaces**

There are many confined spaces on a ship where work may need to be carried out on occasions. Examples of confined spaces are fuel tanks, ballast tanks and waste water tanks, cofferdams, anchor chain boxes, boilers, scavenging air ducts and crank cases. It is important that work in confined spaces is planned, assessed for risks and carried out so that risks of ill health and accidents are prevented. There must be written procedures and instructions onboard for how work in confined spaces shall be carried out and what equipment must be used. The crew must also receive training in this area.

To be able to judge the risks in a confined space, measurements may be needed of the oxygen content as well as other gases. There must be information on what hazardous substances are present. It is important to check that there are no flammable vapours, noxious airborne pollutants or a lack of oxygen in the space before anybody enters it. Personnel must use personal protective equipment when working in confined spaces. Equipment may also be needed for life saving and evacuation. It is important to choose the right type of breathing equipment, depending on what sort of work is to be carried out. Breathing masks with gas filters are generally used for short-term work with solvents, paint and similar substances, when it is certain that there is no risk of a lack of oxygen. It is important to use the correct filter for the mask. If there is a risk of lack of oxygen or high levels of noxious gases, pressurised breathing equipment will be required.

Before any work in confined spaces is started, a special work permit must be issued by the ship’s master or the person onboard who is responsible for issuing such permits. The permit must describe what risks have been examined and rectified, that the confined space is made safe with respect to air quality and lighting, and that communications equipment between those working in the confined space and those outside has been arranged and tested.

There must always be a trained safety guard at the entrance of the confined space during the time of the work, who either has eye contact or can communicate via radio with the person working in the confined space. The safety guard must have access to the same protective equipment that the person in the confined space is using for the work in order to be able to carry out a rapid rescue operation.
Solitary work

Working alone during the whole day or parts of it is becoming more and more common in different occupations, and the marine sector is no exception. This is at least partly due to the development and introduction of new technology. Many tasks previously carried out by people have been replaced with automatic control and monitoring systems. The introduction of these systems has made work easier but has also reduced the number of employees needed. At the same time more specialist knowledge is required for employees as these systems become more advanced.

These developments have been very noticeable at sea and crews on many ships have been halved in number if not more, and higher demands are put on systems competence for officers and crew. One of the consequences of smaller crews is that many routine, daily tasks onboard are now solitary work without any direct contact with other colleagues. Stress levels have increased since the tasks are allocated to fewer employees.

Solitary work is defined in Swedish legislation in the Work Environment Act, and in even more detail in the Work Environment Agency statutes in the paper on solitary work, AFS 1982:03. In Section 1 the following is stated on solitary work:

“These regulations apply to work that an employee carries out in physical or social isolation from other people (solitary work).

Physical isolation refers to a situation in which the person performing work cannot have contact with other people at the place of work without using technical communications equipment.

Social isolation refers to a situation in which a person performing work is among other people, but the conditions are such that he cannot count on their help in a critical situation.

Factors to consider in solitary work

It is important to carry out a thorough risk analysis prior to all solitary work. However, the best possible way of protecting yourself against injuries related to solitary work is to avoid the situation completely, i.e. always have at least two people to carry out a certain task. Unfortunately this is often impossible and other paths must be chosen to reduce the risks. The regulations and general advice on the work environment at sea by the Transport Agency states that when solitary work is carried out onboard there must be a communications channel established between the employee and another manned position.

One example of such communications equipment required by the law is a normal handheld radio transceiver; unfortunately these are of no use if a person is injured.
in such a way that they cannot call for help. If such an apparatus is used it is important to establish procedures with frequent communication (for example at five-minute intervals) so that somebody can react rapidly if the person does not communicate. Another alternative for communication, which is a supplement to personal equipment, is the so-called portable dead-man alarm, which independently sounds an alarm in the case of a fall or unconsciousness.

Securing cargo

Cargo onboard a ship is stowed and secured to avoid damage during transportation. If the cargo is not sufficiently well secured it may be damaged and/or shift when subjected to acceleration forces due to the ship’s movements on the sea. This can lead to injuries among the crew members, or even risks to the survival of the whole ship if shifting cargo reduces its stability.

In general all ships that transport cargo must stow and secure the load reliably for the ship to be seaworthy. It is specified for all Swedish ships that all cargo that is not in bulk must be secured, with the exception of packaged goods that are transported on ships in speed bracket E (the division of speed areas is stated in Ch. 1 Section 3 of the Ship Safety Ordinance, SFS 2003:438, and in more detail in the Swedish Transport Agency regulations, TSFS 2009:8) or goods transported on road ferries on ordinary ferry routes. Package goods are gathered into smaller load carriers such as cardboard containers or boxes, stand-alone or on open pallets.

For ships that are not Swedish, there are requirements for securing cargo before they leave a Swedish port.

It is the captain’s duty to ensure that the ship is ready for sea before the journey is started, which means that the captain has the ultimate responsibility for the cargo being correctly secured.

On ships where work is carried out in cargo compartments and holds during the sea voyage, there must be safe spaces and passages for this work to be performed in a secure and satisfactory manner.

Goods, cargo, waste

All goods that are transported at sea must be handled in the right way, through correct stowing, separation and securing, to prevent any safety risks on the ship. Dangerous goods refer to such substances and objects with dangerous inherent characteristics that may cause injuries or damage to people, animals or the environment during transport. There is a comprehensive set of regulations for these substances called the IMDG code, which describes among other things how the goods are to be marked, packed, declared and separated during sea transport.

Documentation

The ship must be equipped with an individual cargo securing manual and the cargo must be stowed and secured in accordance with the instructions in the manual. The manual must be approved by the ship’s flagging country’s administration and kept updated. For Swedish ships the cargo securing manual and any changes to it must be handed in to the Swedish Transport Agency for approval. The cargo
securing manual must contain instructions for stowing and securing cargo in accordance with the regulations in the IMO circular MSC/Circ.745. Requirements for a cargo securing manual apply to Swedish ships other than bulk loaders with a gross tonnage of at least 20. The requirement for a cargo securing manual does not apply to Swedish ships that are only used in speed area E. For foreign ships with a gross tonnage of under 500 the requirement for a cargo securing manual only applies if the ship’s flagging administration has not decided otherwise.

Load carriers that are transported from Swedish ports should be accompanied by a cargo securing certificate from the loading party with an assurance that the cargo is secured in compliance with one of the publications named under the heading "How to secure cargo".

How to secure cargo

Information and instructions on how to secure cargo in transport units and what forces the cargo may be subjected to are described in the following publications:

- IMO/IL0/UN ECE "Guidelines for Packaging of Cargo Transport Units (CTUs)",
- IMO working book "Safe packing of cargo transport units", section "Quick lashing guidelines for transport on road and sea in areas A, B & C, or
- Transport union's (Swedish) summaries for the Occupational and Work Environment Board "Securing cargo in transport units for transportation in shipping area A", "Securing cargo in transport units for transportation in shipping area B" and "Securing cargo in transport units for transportation in shipping area C".

Transport units and other goods onboard ships must be packed and secured in compliance with the ship’s cargo securing manual. See the section on documentation for more information on which ships are affected by these requirements.

Laws and provisions
SFS 2003:364 Ship Safety Act
SFS 2003:438 Ship Safety Ordinance
TSFS 2010:174 Transport of cargo on ships and terminals used by ships that load or unload solid bulk cargo, revised most recently in TSFS 2013:99
SOLAS Ch. VI, VII
IMO Code of Safe Practice for Cargo Stowage and Securing (CSS-code)
IMO Code of Safe Practice for Ships Carrying Timber Deck Cargoes

More to read
Lashing and fastening cargo, pp 2:7–8 Swedish.
2. Work on deck and in cargo spaces

Cranes and winches

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**

- Risk of injuries due to falling and slipping.
- Risk of being struck by falling goods, lifting hooks or cargo.
- Risk of injuries through crushing, mainly of feet and hands.
- Injuries through cuts and puncture wounds (especially to the hands).
- Lumbago and other acute back injuries.

**Injuries and illnesses in the long-term**

- Strain and repetitive stress injuries, mainly to shoulders and back due to work involving heavy lifting, pushing and pulling.

A good working environment requires

- Non-skid deck coating.
- Good lighting.
- Communication between crane operator and signalman.
- Sound and light signals from the crane during loading/unloading.
- Cordonning off the work-area.
- Control and maintenance of lifting devices.

**Personal safety equipment**

- Helmet.
- Safety shoes.
- Gloves.
- Personnel performing tasks on the car deck, or who spend time on the car deck, must wear high-visibility clothes on their upper body that are approved in EN 471, Class 3, including high-visibility trousers with ankle reflectors, class 2 minimum.

**Appliances to and from the loading area**

- Lifting trucks, trucks.
- Sack trucks.
- Handcarts.
- Lorries.
- Securing of goods.

On this ship
Plan the work

- Ensure the work area is cordoned off.
- Ensure no unauthorized personnel work within the loading-area.
- Goods that are to be re-loaded are placed as close to storerooms and lifts as possible.
- Ensure sufficient manning levels, especially if the work has a time limit.
- Sort the goods according to which storeroom they are to be taken to; supplies separately, spare parts separately etc.
- Work out routines for how loading and unloading is to be performed on the ship.

General instructions

- Routines for loading and unloading.
- The use of cranes and their capacity; lifting properties and range of the crane.
- Everyone who works with loading and unloading must know the various work signals used.
- Crane operators must know who is the signalman.
- Lifting techniques and work postures.
- Use of equipment to prevent falling. Maximum height without safety harnesses is 2 metres.
2. Work on deck and in cargo space

Trucks and pallet trucks

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**
- Being run into by vehicles within the dock area or on the ship.
- Goods falling, e.g. from trucks.
- Injuries through crushing, mainly feet and hands.
- Acute poisoning by exhaust fumes from petrol and diesel engines.

**Injuries and illnesses in the long-term**
- Truck drivers can sustain back injuries due to impacts and vibrations.
- Hearing damage due to excessively high noise levels on carriage deck.
- Long-term injuries, e.g. asthma and other chronic diseases of the respiratory system due to poisonous substances from truck exhaust fumes. Exhaust fumes from diesel engines also contain substances which may be carcinogenic.

A good working environment requires

- Observe caution with difference in levels.
- Non-skid deck coating.
- Shock absorbers in trucks and seats.
- Good lighting.
- Ventilation and exhausts.
- Light signals on the roof of trucks, for example rotating blinkers.

- Trucks must be equipped in accordance with the Swedish Work Environment Authority’s Regulations for Trucks (AFS 2006:5).
- Traffic mirror in blind angles, e.g. at gates or other blocked areas.
- Marking the loading area.

Personal safety equipment

- Safety helmet and ear defenders.
- Safety shoes.
- Gloves.
- Personnel performing tasks on the car deck, or who spend time on the car deck, must wear high-visibility clothes on their upper body that are approved in EN 471, Class 3, including high-visibility trousers with ankle reflectors, class 2 minimum.

Equipment

- Pallet trucks for onward transportation or as an aid to trucks.

On this ship
Plan the work

- Before any work with trucks is started, ensure that the driver has the requisite training for trucks and a personal driving licence.
- No unauthorized personnel should be in the work area.
- Goods should be placed as close to the cargo-space or lift as possible (this also applies to waste products or other objects being unloaded).
- Goods must be packed suitably for transportation by truck. Unwieldy goods should be packed on loading pallets or similar.
- Make an agreement for the maximum speed allowed during loading and unloading.
- It is an advantage to have a coordinator when using a number of trucks at the same time for loading.
- Determine how many trucks and tug-masters may be on the ship at the same time.

General instructions

- Lifting techniques/ergonomics.
- Speed limits for vehicles.
- The role of the coordinator.
- What applies to the truck, e.g.
  - Never use a forklift truck for lifting persons.
  - Never overload a fork or container truck.
  - Never lift too high a load on a fork truck.
- A cabin, approved for the truck in question, must always be used when lifting a person (infringements immediately punishable).
2. Work on deck and in cargo space
Tåg- och bildäck

Accident risks, occupational injuries and work-related illnesses in the long-term

Accident and injury risks
- Injuries through collision with vehicles.
- Risk of injuries from crushing, mainly to feet, hands or other parts of the body during stowing and placing of cargo.
- Injuries due to tripping or slipping.
- Acute poisoning by exhaust gases from petrol or diesel engines.

Injuries and illnesses in the long-term
- Hearing impairments due to high noise levels on carriage deck.
- Long-term injuries such as asthma and other chronic illness of the respiratory system due to poisonous substances in exhaust gases.
- Diesel exhaust gases contain substances suspected of being carcinogenic.

A good working environment requires

- Reducing noise levels by lining metal surfaces which rub against each other with shock-absorbing rubber, for example.
- Decreasing noise levels from the ventilating system if possible.
- Powerful exhaust ventilation.
- Non-skid deck coating.
- Traffic mirrors in blind zones, e.g. at gates and such like.
- Marking of loading lines.
- Ear defenders with built-in communications equipment.
- Traffic lights, so that drivers are given clear signals if and when they may start engines.
- Cleaning of the car decks in order to remove oil and petrol residues as well as dust.

Personal safety equipment
- Safety shoes.
- Gloves.
- Personnel performing tasks on the car deck, or who spend time on the car deck, must wear high-visibility clothes on their upper body that are approved in EN 471, Class 3, including high-visibility trousers with ankle reflectors, class 2 minimum.
- Ear defenders.

On this ship
Plan the work

- Divide loading into several batches depending on how the goods are to be handled, goods which are moved directly or goods automatically transported. Avoid carrying out several different work operations simultaneously.
- Agree on who should do which tasks before starting vehicles.
- Appoint a traffic controller who directs the vehicles and ranges on and off the deck.
- Work out routines so that the ventilation is sufficient for traffic volumes.
- Work out procedures for starting the ventilation. Discomfort from noise and air draughts should be minimised without impeding ventilation of the car deck.
- Minimise the time of exhaust discharge.
- Decide how many trucks and tugmasters may be onboard the ship at the same time.

General instructions

- Give instructions on how traffic lights and public address systems are used during loading, in order to minimise pollution from exhaust discharge.
- Give instructions on starting and using the ventilation system in order to minimise noise and air draughts.
2. Work on deck and in cargo space

Surrning och lastförankring

Accident risks, occupational injuries and work-related illnesses in the long-term

Accident and injury risks

- Injuries due to collision with vehicles.
- Blows to the head.
- Injuries through crushing, mainly to feet, hands or other parts of the body.
- Injuries from tripping or slipping.
- Lumbago or other acute back injuries.
- Acute poisoning by exhaust gases from petrol or diesel engines.

Injuries and illnesses in the long-term

- Hearing impairments due to high noise levels on ro-ro deck, sudden loud noises when lashing tools twist or connect with other metal objects.
- Long-term injuries such as asthma or other chronic illness of the respiratory system due to poisonous substances in exhaust gases.
- Diesel exhaust gases contain substances suspected of being carcinogenic.

A good working environment requires

- Good lighting so that drivers can see crewmembers.
- Good ventilation and extractors.
- Non-skid deck coating.
- Cooperation with trailer drivers and similar onboard.
- Painting lashing tools to make them highly visible.

Personal safety equipment

- Safety shoes.
- Personnel performing tasks on the car deck, or who spend time on the car deck, must wear high-visibility clothes on their upper body that are approved in EN 471, Class 3, including high-visibility trousers with ankle reflectors, class 2 minimum.
- Ear defenders must be used.

Equipment for avoiding heavy lifts and carrying

- Sack trucks.
- Trolley for transportation of lashing tools.
- Small ship’s truck.

On this ship


2.7
Plan the work

- Plan the work so that working positions are as comfortable as possible. Make sure one trailer is lashed down before the next one arrives. In this way it is possible to avoid working under the trailer.
- Place lashing tools and other equipment so that they are easy to reach.
- Plan the work in such a way that it is not necessary to do any lashing over crossing paths.
- Decide how many trucks and tugmasters may be onboard the ship at the same time.
- Ensure that the working pace is suitable for lashing to be done safely.

General instructions

- Lifting techniques and working positions.
- How lashing tools are to be used.
- How aids are to be used.
2. Work on deck and in cargo spaces

Mooring and towing

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**
- Bodily injuries through crushing or a hawser breaking.
- Injuries from tripping or slipping.
- Injuries from cuts and slashes due to worn wires and hawsers. Risk of blood poisoning.
- Burns on hands from nylon hawsers.

**Injuries and illnesses in the long-term**
- Hearing impairment due to noise from hydraulic pumps, mooring winches, hoist gears and ventilation.
- Repetitive stress injuries due to work involving heavy lifting and pulling.
- Illness due to cold and wind.

A good working environment requires

- Screening workplaces to protect against lashing hawsers.
- Windbreakers at outlook and moorage points.
- Non-skid deck coating.
- Checking and maintenance of equipment (reduces noise and accident risks).
- Worn hawsers must be replaced.
- Noise levels must be reduced if there is any suspicion of harmful noise.
- Clothing must be used according to weather conditions.
- Ensure that high risk areas such as snap back zones are clearly marked on the deck.

**Personal safety equipment**
- Gloves.
- Safety shoes.
- Ear defenders at noise levels exceeding 80 dB (A).
- Safety helmet.

**Equipment**
- Walkie-talkies make communication more efficient.
- Use hawser rolls, capstans etc. to help with heavy lifting and pulling.

On this ship
Plan the work

- Ensure that qualified quayside personnel are available to take mooring ropes. Do not use "Jump-ashore Johnnies".
- Display notices showing normal routines for mooring.
- Ensure heaving lines, compressors and warping drums are easy to reach.
- Avoid starting ventilation on the ro-ro deck when there are personnel in the mooring area.
- Measure noise levels when there is suspicion of harmful noise and take appropriate measures.
- Ensure that ear defenders are provided if employees are subjected to an equivalent sound level in excess of 75 dB(A) over 24 hours. If there is an equivalent sound level exceeding 80 dB over 24 hours, ear defenders must be used.
- If mooring is carried out under extraordinary circumstances it is necessary to plan mooring procedures and to inform those concerned of procedures in use.

General instructions

- Information regarding type of capstan; pulling, stretching and in/out cabling functions.
- Lifting techniques.
- Mooring by capstan is the most dangerous mooring task and should be performed with the utmost care. For this reason it should only be carried out by specially trained or instructed personnel.
2. Work on deck and in cargo space

Lifeboats

Accident risks, occupational injuries and work-related illnesses in the long-term

- **Accident and injury risks**
  - Injuries through falling.
  - Risk of hitting the head.
  - Injuries from crushing, mainly of feet, hands or other parts of the body.
  - Risk of dislocations, strains etc. due to unsuitable working positions.
  - Risk of injuries to hands and arms when starting lifeboat engines with a crank. Keep the thumb and other fingers on the same side of the crank-handle.

- **Injuries and illnesses in the long-term**
  - Injuries to the skin through direct contact with oils and grease.

A good working environment requires

- Optimisation of maintenance and inspections with the aid of a maintenance programme.
- Inspection and maintenance of equipment in order to reduce noise and accident risks.
- Keep the deck clean and tidy.
- Worn wires must be replaced.
- The noise level must be reduced if there is any suspicion of harmful noise.
- Clothing worn must suit weather conditions.

Personal safety equipment

- Gloves.
- Harness.
- Safety helmet.
- Safety shoes.
- Life jacket, also during training.

On this ship
Plan the work

- Arrange safe access paths to lifeboats.
- Consider whether a lifeline is appropriate (e.g. outside normal cordoned-off area).
- Consider whether assistants are needed.
- When lowering lifeboats to the height of the railing the operator needs to be experienced.
- Gloves must be worn when using a grease gun or oil can.

General instructions

- Use of davits when hoisting and lowering.
- Secure lashing of the boat.
- Use safety equipment.
- Personnel behaviour.
- Working positions.
- Due to many accidents and incidents with lifeboat hooks of the on-load release type (hook which can be released under load) and their release systems, the IMO has adopted new requirements for life boat hooks. All existing lifeboat hooks must be evaluated and tested in accordance with specific guidelines. Documentation from the manufacturer and a "Statement of Acceptance" issued by the Swedish Transport Agency or classification society must be onboard. See more information on the Swedish Transport Agency’s website: www.transportstyrelsen.se/sv/sjofart/Fartyg/Marin-utrustning/Nya-krav-pa-livbatskrokar
2. Work on deck and in cargo space

Tanker deck

**Accident risks, occupational injuries and work-related illnesses in the long-term**

**Accident and injury risks**

- Falling or slipping injuries.
- Risk of crushing injuries when handling cargo loading equipment, hoses, spray canons or fans.
- Risk of burn injuries from steam pipes, steam traps and similar.
- Inhalation of toxic gases can lead to the deterioration of the sense of smell, dizziness and poor judgement, which in turn can lead to mistakes and accidents. In the worst cases, the inhalation of dangerous or inert gases can lead to serious injuries to inner organs, unconsciousness and suffocation.

**Injuries and illnesses in the long-term**

- Chronic injuries from contact with dangerous substances through the skin or by inhalation, e.g. skin irritation, injuries to the nervous system and other vital organs, and serious secondary diseases such as cancer.

**A good working environment requires**

- Knowledge of what cargo is onboard.
- Explosion-protected work and protective equipment (EX-class and CE-marked equipment)
- Tanks, pump rooms, cofferdams and double bottoms may only be entered after gases have been measured and after the issue of a special permit for work in confined spaces.
- Hot work may only be carried out after a special assessment and after the issue of a permit for hot work.

**Personal safety equipment**

- Safety shoes.
- Safety glasses.
- Gloves.
- Helmet.
- Hearing protection.
- Breathing protection.

**On this ship**
**Plan the work**

- Ensure that the right working equipment and personal protection equipment is onboard for the cargo to be handled.
- Ensure that hoses are properly drained and purged of air before they are disconnected.
- In the case of a leak, raise the alarm and await instructions, and ensure that the right protective equipment is used before any decontamination work is undertaken. Take off any contaminated clothes and rinse the skin with plenty of water.

**General instructions**

- Measurements of gases must be carried out by authorised personnel. The results of the measurements must be documented.
3. Work on the bridge

The bridge

Accident risks, occupational injuries and work-related illnesses in the long-term

Accident and injury risks

- One-sided strains. Stationary work means strain on hips, knees and foot-joints as well as the back. Change between standing and sitting working positions (this is allowed on the bridge nowadays).
- Full-body vibrations may occur and cause symptoms of fatigue.
- Bad lighting at work with incorrect direction, intensity or colour, glaring indicator lamps and instruments can cause burning in the eyes and reduced visual efficiency in darkness. It may also cause tension and wear of joints and muscles due to poor working positions or strain.
- Computer screens reflecting light, other reflections and blinds, small text and notices inconveniently placed may cause the same problems as bad lighting.
- Inadequate rest-periods due to frequent calls at port, loading, unloading and so on may cause problems with wakefulness during bridge duty.

Injuries and illnesses in the long-term

- Prolonged and severe stress can cause feelings of irritation, haste, fatigue or boredom that, in turn, may have a negative effect on the ability to react and make decisions as well as jeopardising relations with other employees.
- Monotonous noise from windscreen wipers, for example, can be tiring.
- Dizziness and nausea due to high sea affects the sense of balance and reduces the capacity for work. Medication is available, but seasickness is something people usually have to learn to live with.

On this ship
### A good working environment requires

- Good organisation of work and a suitable guard schedule.
- Suitable pilot lights, general lighting and a light-trap with a red type of light to preserve visual efficiency in darkness. The light must not be reflected in the windows of the bridge.
- The lighting over the map-table must be daylight-type, well-screened, adjustable and with a flexible arm.
- The various instruments must be logically and ergonomically designed for vision, and centrally located with anti-reflective protecting glass and individual adjustment, which also applies to indicating and warning lamps wherever applicable.
- The bridge must have suitable matt colour.
- The windows of the bridge should be equipped with blinds of sunscreen film.
- The floor covering must be of a non-slip, shock-absorbing type.
- To facilitate changing between sitting and standing working positions beside the captain’s/pilot’s chair and any cockpit and office chairs there should also be a chair for the lookout which offers the choice of standing or sitting.

### Personal safety equipment

- Suitable clothing for the climate and weather in question when on the wing of the bridge.
- Shoes with non-slip, shock absorbing soles.

### Equipment

- Good quality sunglasses, especially if there is no tinted glass or sunscreen film.

### Plan the work

- Plan the watch schedule and relief with respect to ports of call and loading/unloading in order to allow for adequate rest periods.
- Plan the work so that working positions can be varied.
- Bring suitable outer clothes and protective clothes when relieving if they are likely to be needed during the watch.
## 4. Work in the engine-room

### Engines and motors

### Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls due to oil, slippery floor or engine parts.</td>
<td>Long-term injuries such as asthma and injuries to the lungs due to inhalation of vapours from inflammable oils. Formation of water in the lungs, pneumonia and a reduced ability to absorb oxygen. Oils also contain substances which may be carcinogenic.</td>
</tr>
<tr>
<td>Injuries due to oily tools slipping.</td>
<td>Eczema from contact with oils and allergies due to skin-contact with oils or oil vapours in large concentrations close to hot engines. The higher the temperature, the more vapours/oil will be absorbed by the body.</td>
</tr>
<tr>
<td>Dizziness and nausea due to high concentration of oil fumes next to hot engines.</td>
<td>Repetitive stress and body stress due to uncomfortable working positions and twisted, heavy lifting.</td>
</tr>
<tr>
<td>Alternating temperatures when entering or exiting the crankcase.</td>
<td>Hearing injuries due to noise from engines.</td>
</tr>
<tr>
<td>Singing around eyes due to sprays of oil.</td>
<td></td>
</tr>
<tr>
<td>Risk of injuries through crushing, mainly to feet, hands and other parts of the body when working with cranes and heavy components.</td>
<td></td>
</tr>
<tr>
<td>Risk of scalding and burns.</td>
<td></td>
</tr>
</tbody>
</table>

### A good working environment requires

- Preventive measures aimed at protecting eyes and lungs.
- Ventilation of the working area both before and after work to remove oil vapours.
- It is better to bring air in than to use an extractor device since blowing in air also cools it.
- Changing oily clothes as soon as possible, otherwise there is a risk of oil penetrating to the skin.

### Personal safety equipment

- Disposable clothes impermeable to oil.
- Working gloves or oil-resistant gloves, depending on the nature of the work.
- Safety shoes with anti-slip soles.
- Ear defenders if repairs are being done while nearby engines are active. Earplugs should be used in very cramped spaces.
- Eye protectors if needed.
- Fresh air supply where the conditions require its use, or a half-mask with the appropriate filter A2/P2. The P2-filter must be designed for work in mist (SL marking).
- It is also possible to choose an A3/P3-filter which may be used for an extended time, but this filter is more difficult and heavier to breathe through.
  
  \[ P = \text{particle filter}, A = \text{gas filter} \]

### Equipment

- Engine manufacturer’s special tools, jack.
- Tackles, lifting yokes, wires and slings of required standard. There should be a control programme.
- Organise a procedure for the work.
Plan the work

- Plan repairs in good time so that it is possible to prepare the work well.
- Try to plan larger repairs for when the ship is in the shipyard to avoid arduous work situations.
- If possible: stop the engine and cool it down well before work starts in order to lower the temperature and ensure that any fumes have left the workplace.
- Clean and wipe off oil.
- Obtain manuals and drawings.
- Make sure that suitable and approved tools are on hand.
- Plan the work so that the correct lifting tools, tackles and wires are used to avoid heavy lifting and uncomfortable working positions.
- When using a grease gun and/or oilcan, gloves should be worn.
- Make sure that no unauthorised person can start the engine while the work is being done.
- In ships with several main engines the work in the crank-house should be done when neither of the main engines is running.
- If the work is done under extreme circumstances, e.g. while in operation, only trained and experienced personnel may do the work since it is almost impossible to communicate when the ship is in operation.
- Make sure that open hatches and similar on deck are blocked.

General instructions

- Manuals
- Tool sets.
- Lifting techniques and working positions.
- Instructions regarding the use of test-props and exhausts.
4. Work in the engine-room

Pumps and separators

Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dizziness and nausea due to oil fumes.</td>
<td>Long-term injuries such as asthma and other chronic diseases due to poisonous substances in oils. Oils also contain substances that may be carcinogenic.</td>
</tr>
<tr>
<td>Depending on which chemicals are used for washing, there are risks of injuries from corrosive substances, allergies, dizziness, poisoning and discomfort due to fumes and sprays.</td>
<td>Eczema through contact with oils or allergies due to direct skin-contact with oils.</td>
</tr>
</tbody>
</table>

A good working environment requires

If possible

- Cool down the object you are working on before starting to work.
- Extract fumes when dismantling.
- Separate objects you are working on since there is always a risk of oil fumes spreading from neighbouring objects.

Different methods for washing separators:

- Automatic washing by special washing machine. Direct contact with oils is almost totally avoided.
- Washing of parts in ultrasound tank. *Gives limited direct contact with oils.*
- Manual washing in washroom. *Gives the greatest direct contact with oils.*

Personal safety equipment

- Gloves and eye protectors, depending on what chemicals are used for washing.
- Whenever there are oil fumes use protection when breathing, at least a half-mask with an adequate filter A2/P2.
- The P2-filter must be designed for work in mist, i.e. marked SL. It is also possible to choose an A2/P3-filter this can be used for longer but is usually heavier to breathe through.

Equipment

- Lifting tools when dismantling and assembling objects.
- Pallet trucks when there is enough space and where there are few differences in levels. Alternatively a sack truck or other truck specially adapted to the task.
- Special tools for dismantling and assembling supplied by the equipment manufacturer.

On this ship
Plan the work

- Plan the work in good time in order to cool down the object before starting work.
- Ensure the object worked on is blocked when work is in progress.
- Obtain manuals and drawings.
- Ensure that suitable and approved tools are available.

General instructions

- Manuals, operating instructions.
- Tool settings.
- Lifting techniques.
4. Work in the engine-room

Hydraulic system

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**

- Risk for injuries from crushing, mainly of feet, hands and other parts of the body when working with hydraulic systems, both during and after repairs.
- Injuries to body and/or face if hit by oil jet.
- Slipping/falling due to oil and slippery floors or machine parts.
- Burns due to skin-contact with hot oil.

**Injuries and illnesses in the long-term**

- Eczema due to skin-contact with hydraulic oil.
- Air passages/lungs affected by inhalation of oil vapours/steam.

A good working environment requires

- When dismantling heavy components such as large hydraulic cylinders, they must be secured by wedges, props, straps or the like.
- Regular checks and regular maintenance of joints, hoses, valves etc.

**Personal safety equipment**

- Gloves.
- Eye protectors.

On this ship
Plan the work

- Obtain system plans so that work can be done at the right place.
- Cordon off the area while work is being done.
- Put up signs informing about the work being done.
- Ensure the correct spare parts are available. Incorrect spare parts will often mean a sub-standard and even hazardous result.
- Work on hydraulic systems must only be done by personnel trained specifically for this task or by personnel who are very familiar with the system.
- Disconnect the electrical supply to the hydraulic pump before starting work on it.
- Make sure the system is de-pressurised and drain oil from cylinders and other parts of the system.
- Secure heavily stressed parts so there is no risk of anyone being crushed.
- Isolate the parts of the system where work is to be done for instance, by some kind of locking or by simply disconnecting them from the rest of the system.

General instructions

- Mode of operation of the hydraulic system.
- Hazards of hydraulic systems.
- Spare parts to be used.
4. Work in the engine-room

Cold-storage plants

Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute poisoning, after refrigerant has been subjected to high temperatures, e.g. during welding, soldering or through fire.</td>
<td>Strained working positions due to the systems often being located in small rooms with limited space for repairs.</td>
</tr>
</tbody>
</table>

A good working environment requires

- Ensuring there is plenty of room for maintenance and repairs when rebuilding or working on a new construction.
- Avoid water penetrating the plant; the smallest drop of water will bring about the need for even more repairs.
- Keep a journal of repairs made and how much refrigerant has been replenished. In this way it is possible to judge whether the system is refrigerant.
- Put up signs where the system is located. The signs should carry warnings regarding poisonous gases being emitted when heated and also that smoking tobacco may lead to poisoning.
- Regular inspection for any leakages.
- If the level of refrigerant is kept low, leakage may be easier to spot in some plants. The level must be as low as possible while running the plant for normal production.
- Keep pipes and joints dry so as to make leakage easier to spot since an oil film will be formed by the leak. There is always some oil present in the refrigerant circulating in a system.

On this ship
Plan the work

- Get safety data sheets concerning the type of refrigerant used in the plant.
- Empty parts where welding and soldering are to be carried out. Air the space before welding or soldering.
- The personnel who care for, maintain and repair a cold-storage plant must know the system well and also be well informed regarding health hazards relating to refrigerants.
- Minors (under the age of 18) should not work with refrigerant unless they are specially trained for such work.

General instructions

- Avoid any heating of refrigerant. During welding, soldering, fire and other intense heating, extremely poisonous gases are formed from refrigerant. Poisonous gases may also form during smoking since the air passes through the glowing tobacco.
- Safety data sheets.
- Working positions.
4. Work in the engine-room
Toilet system and drains

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**

- Cuts and puncture wounds during manual work with stoppages in drains.
- Risk of infections in punctures and cuts, and rashes.
- Inhalation or exposure through the skin.

**Injuries and illnesses in the long-term**

- Eczema and skin rashes caused by physical contact with waste water.
- Risk of infectious liver inflammation (Hepatitis A).
- Discomfort in the airways and infections due to inhalation of bacteria.
- Effects of chemicals used for disinfection.
- Gastro-intestinal disorders, central nervous system effects and joint pain.

Black water, grey water and sludge

- Black water is waste water from toilets and sculleries.
- Grey water is waste water from showers, wash basins and washing dishes.
- Sludge is filter residues from fuel oil and lubricating oil, but the term is often used for all water containing oil.

A good working environment requires

- Vaccination.
- Stock of the most frequently used spare parts. On a passenger ship, the stock is kept in a place so that carrying can be minimized.
- A laundry room for protective clothing close to the places where such clothing is used.

**Personal safety equipment**

- Full rubber suit with cuffs at ankles and wrists.
- Respiratory protection.
- Visor (if there is a risk of splashing).
- Rubber boots.
- Gloves.

**Equipment**

- Tools that make it possible to avoid having hands in places where there is a risk of cuts or puncture wounds.
- Disinfectant for washing wounds.

On this ship
Plan the work

- Everyone who works with sewage installations or connects drain pipes and so on must have the necessary vaccinations: tetanus and hepatitis A.
- Plan your work so that contact with sewage water, as far as possible, can be avoided.
- Obtain safety data sheets for any chemical additives, so that these can be included in work planning.

General instructions

- The ship’s sewage installation and sewage systems.
- Safety data sheets/product information sheets for the chemicals used.
- Protective suit, gloves, boots, etc. must be washed before removal.
4. Work in the engine-room

Working with fuel valves

Accident risks, occupational injuries and work-related illnesses in the long-term

Accident and injury risks
- Eye and skin injuries due to oil jets and splashes.
- Fire hazard.

Injuries and illnesses in the long-term
- Injury to the lungs through inhalation of aerosols, oil fumes. Inhaling aerosols can lead to water in the lungs, pneumonia and a reduced ability to absorb oxygen.

A good working environment requires
- Adjusting and inspecting fuel vents must be done in separate areas to avoid exposing other personnel to aerosols or other chemicals. The fewer people nearby, the better.
- The work should be carried out using a local extractor, a fume cupboard. The general ventilation must be good.
- When making hydrostatic tests on fuel vents, calibration liquids should be used instead of marine diesel oil since they do not irritate the skin and respiratory organs so much.

Personal safety equipment
If the work is not done in a sealed space:
- Eye protectors.
- Half-mask with A2/P2 filter.
- The P2 filter must be marked SL. It is also possible to use A3/P3 filter. It lasts longer, but is heavier to breathe through.

On this ship
Plan the work

- Formulate instructions and post them by the workplace.
- Safety data sheet for pressure-testing liquid.

General instructions

- Instructions for the task and for the local extractor system.
- Smoking is not allowed near to the task in hand, or in the proximity.
### Accident risks, occupational injuries and work-related illnesses in the long-term

#### Accident and injury risks
- Dizziness and nausea.
- Major fire hazard.

#### Injuries and illnesses in the long-term
- Eczema/skin rashes due to skin contact with oils.
- Irritation of the respiratory organs due to inhaling oil mist.

### A good working environment requires
- Closure of the sounding pipe by counterweight.
- Maintenance of the counterweight.
- Cleaning of the area surrounding the sounding pipe.

### Personal safety equipment
- Oil-resistant gloves.
- Half mask with approved filter A2/P2 filter.
- The P2 filter must be intended for work in mist, i.e. it should be marked SL. It is also possible to choose an A2/P3 filter; it lasts longer, but is heavier to breathe through.
General instructions

- If possible, avoid contact with oils and other fluids.
- The sounding pipe and the surrounding area must be wiped off after bearing.
- Good hygiene for hands; use of hand lotion.
### 4. Work in the engine-room

#### Degreasing

**Accident risks, occupational injuries and work-related illnesses in the long-term**

**Accident and injury risks**

- Danger of explosion and/or fire.
- Acute poisoning from solvents.
- Irritation and corrosion injuries to eyes, skin and respiratory organs.
- Corrosion injuries from alkalis.

**Injuries and illnesses in the long-term**

- Injuries to the brain and nervous system due to long-term exposure to organic solvents. Some solvents can penetrate the skin, bringing about the same effect.
- Eczema and allergies.

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**A good working environment requires**

- Replacing hazardous substances with less hazardous.
- Sealed systems are preferable since they reduce the emissions of fog, mist, chemicals and sprays.
- Washing machines and sealed vats are examples of sealed systems. Open systems are, for instance, buckets and open washing tables.
- Local extractors and ventilation by washing machines, vats, baths and washing tables irrespective of the method of washing in use.
- Protection from splashes and drops from rotating brushes.
- Instead of pouring into cans, a pump should be used to avoid splashing.
- Vats, baths and buckets must be equipped with covers.

**Personal safety equipment**

- Gloves.
- Protective goggles.
- Filter mask or breathing protector (check the product information sheet regarding which type of filter should be used).
- Protection suit for chemicals.
- Protective apron for chemicals.

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**On this ship**

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Plan the work

- Safety data sheets must be available so that the work may be planned with respect to the products used for degreasing.
- Always use the least dangerous substances.
- Investigate the highest temperature to which the substance may be heated. Degreasing agents may emit vapours which are highly inflammable or which may explode.
- Ensure that degreasing is done at the lowest possible temperature to avoid vapours. Some water-based products can be used at higher temperatures without vapours being emitted. Vapours containing chemical substances are always created near the boiling-point.
- Note that some water-based degreasing agents contain solvents.

General instructions

- Safety data sheets.
- Instructions for degreasing.
- Plan the work so that it is carried out in accordance with directives.
- Smoking is absolutely prohibited. This is partly due to the fire hazard and partly since certain degreasing agents emit vapours that may produce poisonous gases in burning tobacco.
- When soaking parts a cover must be placed over the vat to prevent vapours being released.
- If at all possible, avoid blowing with compressed air. If this is unavoidable, work by a good extractor.
## 4. Work in the engine-room

### Connecting of shore-based electricity

#### Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working with high voltage involves large safety risks. Wrong handling can result in serious personal injuries or death by current passing through the body, the effects of an electrical arc or mechanical forces in a short circuit (e.g. whiplash from a conductor), falling accidents, or a combination of these.</td>
<td>Electric shock can cause acute injuries as well as chronic injuries, and the effects may not be apparent until much later.</td>
</tr>
<tr>
<td>The body can conduct current. The extent of an injury depends on the size of the current, how long it flows through the body, the body's conductivity and which path the current takes through the body.</td>
<td>Current through the body can lead to the formation of blood clots which can damage blood vessels, either immediately or after a long period of time.</td>
</tr>
<tr>
<td>Current through the body can affect cardiac rhythm and, in the worst case, lead to a cardiac arrest.</td>
<td>Current through the body can stop the heart and breathing.</td>
</tr>
<tr>
<td>Current through the body can also cause damage muscles, joints, nerve paths and internal organs.</td>
<td>Electric shocks can cause post traumatic stress with symptoms such as nightmares and insomnia, anxiety and impaired concentration.</td>
</tr>
<tr>
<td>Current through the body can lead to serious skin burns.</td>
<td>Electric shocks can cause neurological side effects, including reduced strength in arms and legs and pain where the current passed in and out of the body. The symptoms can be chronic.</td>
</tr>
<tr>
<td>A light arc generated by high currents can lead to very severe burns.</td>
<td>Electric shocks can have chronic effects on the brain, causing attention problems, fatigue and headaches.</td>
</tr>
</tbody>
</table>

#### A good working environment requires

<table>
<thead>
<tr>
<th>A good working environment requires</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling of high voltage only under controlled forms, with documented procedures and approaches. Work may only be performed by qualified personnel.</td>
<td>Restricted access for unauthorized persons.</td>
</tr>
<tr>
<td>Monitoring of the system and equipment, as well as communication between the persons concerned.</td>
<td>That all concerned are given training in first aid and measures to be taken in connection with electrical accidents.</td>
</tr>
<tr>
<td>Warning signs on electrical equipment and the site where connection is made onboard.</td>
<td>Medical examination in the event of electrical accidents and, if necessary, medical care.</td>
</tr>
</tbody>
</table>

#### On this ship

<table>
<thead>
<tr>
<th>On this ship</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>That all accidents must be reported to the work supervisor.</td>
<td>That crisis support is available for those who have been involved in an accident.</td>
</tr>
</tbody>
</table>
Plan the work

- Clear division of responsibilities.
- All persons affected must be made fully aware of the risks that the work may involve.
- Work must be carried out according to a checklist that has been approved by the supervisor.
- All work must be planned and documented.
- Every person who carries out connection of shore-based electricity must be qualified for the work and have first aid training for electrical injuries and CPR.
- The place of connection must have warning signs and/or be sealed off to unauthorized persons.
- The work may not be performed alone.

Personal safety equipment

- When working with high voltage (>1000V) where there is a risk of light-arcs, only work clothes and helmets with visors that are certified for such purposes may be used. The equipment must be flame-retardant and light-arc tested under the EBR standard IN 033, 531 or SS-EN ISO 11612, arc test with energy transfer. It is important that as many clothes as possible, from underwear to outer clothes, meet the requirements because layers on layers of clothing are needed for adequate protection.
- Work clothes that cover the whole body.
- Heat resistant working shoes with steel toe-caps.

Equipment

- Lifting equipment approved for handling heavy cables.
- Written procedures and instructions on how the work is to be carried out.
5. Work in the supplies department
Ovens, frying tables, stoves, deep-fryers, cooking pans, refrigerators and slicing machines

**Accident risks, occupational injuries and work-related illnesses in the long-term**

**Injuries and illnesses in the long-term**
- Injuries to the back and shoulders due to heavy lifting and bad working heights (aggravated by draughts and changing temperatures).
- Risk of cancer from long-term exposure to smoke from deep-fryer and frying table.
- Infections due to cuts.
- Circulatory problems in legs.
- Stress due to time pressure (aggravated by noise).

**Accident and injury risks**
- Injuries due to burning and scalding.
- Injuries due to falling and tripping.
- Cuts to hands and arms.
- Slipping.

**A good working environment requires**
- Water evacuators with taps, placed close to the oven, cooking pans and water baths beside or within the working area, reduce the need for heavy lifting. They can also be mobile.
- Stoves with heat regulated plates to prevent burns.
- Avoid floor level differences and sloping floors that collect water.
- Vertically adjustable ovens.
- Slip-proof and shock-absorbing surface on floor.
- Powerful ventilation with local extractors over the oven, frying table and cooking pans.
- A worktable that is adjustable for different levels with a rounded edge towards the user.
- The oven should be equipped with removable interior fittings and be placed under an extractor hood. It should not be necessary for the user to reach higher than shoulder height.
- The microwave oven should be positioned in such a way that the user does not have to reach higher than shoulder height. The oven door must close tightly in order to prevent radiation. A casement door simplifies the work.
- The frying table and cooking pans should be vertically adjustable and possible to lock at various levels.
- Narrow roasting tables simplify cleaning.
- The cooking pans should be equipped with mixers or movable mixers. It should only be possible to remove the lid when the mixer has stopped. Placing should be such that both the work and the cleaning can be done from different quarters. A cooking pan that is not too deep is easier to clean.
- The deep-fryer should not be placed close to a water evacuator because of the danger of explosion and fire. A deep-fryer with a mechanical hoist reduces heavy lifting.
- Heat-radiating equipment should be placed beneath an extractor hood.
- Fridge-freezers should be placed in such a way that lifting, if possible, is done below shoulder height and over knee height. Compressors for equipment such as the refrigerator should be placed outside the working area to minimise noise. When refurbishing, a central refrigerating machine for compressors, refrigerators and freezers should be installed.
### Personal safety equipment
- Gloves when working with ovens, arm protectors, steel or titanium gloves when cutting.
- Non-slip and shock-absorbing shoes.
- Emergency eye-wash flasks.

### Equipment
- A cart or wheeled rack for the oven simplifies transportation.
- Vertically adjustable table for cutting, kitchen and bakery.
- Shifting rack.
- Self-directing knife when cutting and knife with finger protector.
- Skid-safe surface of mincing board to keep it fixed in position.

### Plan the work
- The area surrounding machines must be kept in order; all waste must be wiped off.
- Frying oil must be changed often in order to avoid waste ending up on the heating elements. Discarded oil must be immediately poured into a closed metal container.
- Plan the work so that conditions are in compliance with requirements for the tasks e.g. requirements for location of equipment, tools and the number of people working at the same time.
- If necessary, draw up a safety manual for the kitchen.
- Plan the work so that stress can be avoided as far as possible.
- Make sure the shifting rack is fixed to the oven.
- Make sure the correct knives and tools for the tasks are available and that they are sharp and well maintained.
- Plan the work so that it is possible to take breaks and alternate with other, diversified work.
- Ensure that steel gloves of all sizes are available when cutting needs to be done.
- Plan cutting work so that conditions are in compliance with requirements for the tasks this may be the location, tools and number of people working at the same time.

### General instructions
- Good order and cleanliness in order to prevent injuries due to slipping, falling and stumbling as well as strained working positions due to lack of space.
- Use steel gloves when cutting, paring and dressing.
- Lifting technique, working levels and working positions.
- Opening the oven door should be done gradually to reduce the heat and steam being let out.
- Local safety instructions (this is particularly important for the instruction of new personnel).
- When building new sections or rebuilding, make sure the work depth of the cold buffet, to take one example, is not to great. Refer to the section on ergonomics.
5. Work in the supplies department
Washing up and cleaning work

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**
- Injuries from cuts.
- Colds and infections due to wet or damp environment with great changes of temperature.
- High risk of hearing injuries.

**Injuries and illnesses in the long-term**
- Mainly injuries to the back, shoulders and arms due to extended time working in uncomfortable positions.
- Circulatory problems in legs.
- Irritation of lungs and mucous membranes due to inhalation of water vapour and detergents.
- Skin irritation and eczema.
- Hearing injuries.
- Stress due to time pressure (aggravated by noise).

A good working environment requires

- Furnishing and equipment that enables good working positions at good levels (above knee height and below shoulder height).
- The dishwasher must be soundproofed. The room for washing dishes should be separate and well soundproofed.
- Choose the least irritating detergent.
- Furnish the places for rinsing and washing so that a fast flow of dishes is facilitated.
- Non-slip surface on floor.
- Extractor from dishwasher and extractor hood over drainage.
- Good ventilation.

Personal safety equipment

- Ear defenders or plugs.
- Non-slip and shock-absorbing shoes.
- Gloves that protect against water and foods, preferably worn with a cotton glove underneath.
- **Before** work: lotion to protect against water and foods. **After** work: moisturising lotion.
- Water-repelling apron.

Equipment for reducing heavy lifting and carrying

- Rolling trolley with brakes.
- Container with brakes.
- Relief areas.
Plan the work

- Plan the work so that it is possible to relieve each other and rotate jobs.
- Draw up routines for maintenance and cleaning of equipment, ventilation and extractors.
- Obtain safety data sheets for washing and cleaning detergents used.
- Investigate the need for relief areas.

General instructions

- Good order and cleanliness to prevent injuries from falling and tripping as well as strained working positions due to lack of space.
- Safety data sheets.
- Lifting techniques and working positions.
- Hand hygiene, use of gloves and hand lotion.
5. Work in the supplies department

Provisioning

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**Accident risks, occupational injuries and work-related illnesses in the long-term**

**Accident and injury risks**
- Injuries from falling and tripping.
- Danger of being crushed by pallets and goods falling down from pallet hoists.
- Lumbago and other acute injuries of the back.
- Knife cuts.

**Injuries and illnesses in the long-term**
- Mainly injuries to the back, shoulders, neck and arms due to lifting and carrying heavy weights for an extended period of time.
- Noise from rattling vehicles and from metal striking metal.
- Colds and infections due to differences in temperature and draughts.

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**A good working environment requires**

- Enough space in storeroom and passages.
- The storeroom should be located near a lift.
- Shelving system without deep shelves that do not require strained lifting, i.e. few lifts under knee height and over shoulder height.
- A level floor and non-skid surface.
- Good lighting to make moving around risk-free in both storeroom and passages. It should be easy to see and avoid any risks posed by slippery floors, differences in levels, protruding shelves, goods haphazardly placed and other obstacles.
- Maintenance and adjustment of lifts to avoid any differences in level between the lift and the floor.
- Warm clothes should be kept so that they are easy to put on before entering a cold room.

---

**Personal safety equipment**

- Safety shoe with non-slip sole.
- Gloves.
- Safety knife (with folding blade).
- When taking on board provisions over the car deck, all personnel on the car deck must wear high-visibility clothes on their upper body that are approved in EN 471, Class 3, including high-visibility trousers with ankle reflectors, class 2 minimum.

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**Equipment**

- Rolling container with brakes.
- Rolling table with brakes. The rolling table may be equipped with a device to enable lifting goods to a suitable height.
- Sack container, cage container with brakes.
- Pallet lifter.
- Electrically driven truck.
- Pallet.
- Knife. Choose a suitable safety knife for cutting cardboard containers.
- Driving ramp or glide path between different levels. It is important that roller containers are easy to drive and that the wheels are large enough.
**Plan the work**

- Before any work with trucks is started, ensure that the driver has the requisite training for trucks and a personal driving licence.
- Investigate whether it is possible to have goods delivered in such a way that stress may be avoided. For example, avoiding extra transportation and reloading.
- Deliveries to minimise transport and in safest way.
- Pack the goods so that the heaviest are at the bottom and no pallet is loaded higher than 150 cm.
- Ensure that there are enough personnel available this is especially important since provisioning is done under great time pressure.
- Make sure the heaviest goods and those used most often are placed on shelves above knee height and below shoulder height.
- Plan the unpacking so that reloading is avoided. Consider whether it is possible to use a system where the cages (or other transit aids) may also function as shelves to avoid reloading.
- Plan the safest access route. No unnecessary obstacles, the floor must not be slippery, enough space, preferably no differences in levels.
- Gradients steeper than 2 cm/meter should only be over short distances. This is hard to avoid completely on many ships, but the supervisor is always responsible for planning the work according to the circumstances onboard. When it is impossible to avoid differences in levels or if access to the cargo hold is only possible via stairs or similar, the supervisor must consider how to facilitate the work. This may be done by using aids such as ramps or tackles (for heavy lifting), or by changing the number of people doing the work relative to the volume and weight.
- When re-building or building from scratch, compile up a logistics drawing of routes for provisioning preparation serving handling of dishes handling of waste, i.e. including all transportation of material.

**General instructions**

- Suitable tools and aids and how to use them.
- The shortest route with the fewest differences in level.
- Lifting techniques and working positions.
- Loading the lift (over-loading).
- Clothing: warm jacket when entering freezing chamber or cold storage room.
5. Work in the supplies department

Filling up goods

Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Injuries from falling and tripping.</td>
<td>▪ Mainly injuries of the back, shoulders, neck and arms due to lifting and carrying heavy loads for an extended time.</td>
</tr>
<tr>
<td>▪ Danger of being crushed by pallets and goods falling from a pallet hoist.</td>
<td>▪ Noise from rattling vehicles and from metal striking metal.</td>
</tr>
<tr>
<td>▪ Lumbago and other acute injuries to the back.</td>
<td>▪ Colds and infections due to different temperatures and draughts.</td>
</tr>
<tr>
<td>▪ Knife cuts.</td>
<td></td>
</tr>
</tbody>
</table>

A good working environment requires

▪ A shelving system without deep shelves that does not require strained lifting, i.e. lifting below knee height or above shoulder height.

<table>
<thead>
<tr>
<th>Personal safety equipment</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Safety shoes with non-slip sole.</td>
<td>▪ Rolling table with brakes.</td>
</tr>
<tr>
<td>▪</td>
<td>▪ Pallet hoist.</td>
</tr>
<tr>
<td>▪</td>
<td>▪ Pallet.</td>
</tr>
<tr>
<td>▪</td>
<td>▪ Knife. Choose a safety knife for cutting cardboard containers.</td>
</tr>
<tr>
<td>▪</td>
<td>▪ Cutting board.</td>
</tr>
</tbody>
</table>

On this ship
**Plan the work**

- Before any work with trucks is started, ensure that the driver has the requisite training for trucks and a personal driving licence.
- Heavy goods and rapid turnover goods should be placed between knee and shoulder height.
- Make sure the access route is free of obstacles.

**General instructions**

- Lifting techniques and working positions.
5. Work in the supplies department

Selling over the counter and working at the cashier’s desk

Accident risks, occupational injuries and work-related illnesses in the long-term

- Severe back injury.
- Exposure to substances that may cause allergic reactions.
- Psychological strain in connection with conflicts with customers or threats of violence.

Injuries and illnesses in the long-term

- Mainly injuries to shoulders, wrists and arms due to strained working positions.
- Injuries to the back due to twisting.
- Varicose veins and swollen feet due to working in a standing position.
- Mental stress in connection with conflicts with customers and threat of violence.
- Eye fatigue and stress.
- Infections and stiffness of body due to draughts.

A good working environment requires

- Facilities in the area for resting (break room) and access to toilets.
- Furnishing counter booths with plenty of space for legs, the possibility to turn around and to perform work close to the body.
- Chair with adjustable height, seat and back.
- Floor with shock-absorbing surface.
- Free-moving drawers.

Personal safety equipment

- Shock-absorbing shoes.

On this ship

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2011-01
**Plan the work**

- Plan the number of personnel working at the cash desks according to the time of day and expected stress.

**General instructions**

- Working positions.
- When new cash desks are planned employees should be given the opportunity to try them out before they are ordered. Refer to the section on ergonomics.

**Handling conflicts:**

- Instructions on how to behave towards customers during a conflict.
- Knowledge of how to avoid a conflict.
- Knowledge of how to handle a conflict, how to get support and backup from superiors and colleagues.
- Follow-up and working through conflicts.
5. Work in the supplies department

Working in the bar

Accident risks, occupational injuries and work-related illnesses in the long-term

- Straining the wrist repeating the same movement over and over again (pushing a button).
- Injuries to the back due to strained working positions for extended lengths of time.
- Varicose veins and swollen feet due to working in a standing position.
- Discomfort and risk of infection due to draughts and varying temperatures.
- Hearing impairment from noisy surroundings, e.g. discotheque.
- Mental stress in connection with conflicts with drunk and disorderly customers and threats of violence.
- Stress due to working under time pressure (aggravated by noise).
- Risk of alcohol abuse etc.

Risk of slipping.

A good working environment requires

- Ingredients which are often used should be placed within easy reach.
- A limit to the noise from discotheque music and a reduction in the noise-level behind the counter of the bar. An audible signal indicating when noise levels are harmful may be appropriate.
- Drawers should slide easily.
- Good ventilation and extractors.
- Guidelines for work priorities.
- Policies and routines for handling conflicts.
- Policy on alcohol.

Personal safety equipment

- Shock-absorbing shoes.
- Ear defenders.

Equipment

- Dosing machine similar to a bar gun for soft drinks.
- A special mat that absorbs shocks and decreases the risk of slipping.

On this ship
Plan the work

- Make sure the goods and other necessary tools are available before starting work.
- Plan the work so that there is time to replenish goods if necessary. If this is not possible, have someone else replenish the goods.

General instructions

- Working positions.

Handling positions:
- Instructions regarding how to behave towards customers during a conflict.
- Knowledge of how to avoid a conflict.
- Knowledge of how to handle a conflict, how to get support and backup from superiors and colleagues.
- Follow-up and working through conflicts.
- When rebuilding or building from scratch, ensure that products most frequently used are handled as bulk products (e.g. containers for beer and sodas).
5. Work in the supplies department

Making beds

Accident risks, occupational injuries and work-related illnesses in the long-term

- **Accident and injury risks**
  - Lumbago and other acute injuries to the back.

- **Injuries and illnesses in the long-term**
  - Injuries to the back after long-term strain. Especially vulnerable areas include the lumbar region, the shoulders and the arms. The work requires that the person making the bed twists and bends forward at the same time and the bedding is handled far in front of the body.
  - Discomfort when inhaling dust from the bedding.

A good working environment requires

- Furnishing the cabins and sleeping-berths so that it is possible to make both the upper and lower berths from a good working position.
- The mattresses must fit the berth, allowing room for tucking in the sheet.
- Linen of good quality to minimise dust.
- Variation of work.
- Continuous changing of worn linen, quilts, mattresses and cushions.

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Personal safety equipment

- If necessary, respiratory protective equipment against the dust.

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Equipment

- Adapted procedures and modern equipment (e.g. Eesibed or equivalent).
- Modern linen trolleys adapted to the environment on ships.

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On this ship

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Plan the work

- Plan the work so that personnel only make beds for a limited time.
- If possible, introduce job-rotation so everyone has varied work with several different tasks.
- Plan the work so that the linen is handled as little as possible.

General instructions

The person making the beds must be instructed in:
- The importance of varying the work with other tasks.

Working positions:
- How to avoid twisting the body, as much as possible.

- Getting as close to the berth as possible and maintaining a steady foothold; i.e. using a footstool or similar when making the upper berth.
- Placing one knee on the lower berth when making it.
- Raising the upper berth (whenever possible) while making the lower berth.
# 5. Work in the supplies department

## Cleaning

### Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lumbago and other acute injuries to the back.</td>
<td>- Injuries to the back, neck, shoulders, arms and wrists after working for long periods in strained working positions.</td>
</tr>
<tr>
<td>- Slipping injuries after cleaning.</td>
<td>- Eczema/allergies.</td>
</tr>
<tr>
<td></td>
<td>- Irritation of respiratory organs and mucous membranes after inhaling fumes from irritating detergents.</td>
</tr>
<tr>
<td></td>
<td>- Skin problems.</td>
</tr>
</tbody>
</table>

### A good working environment requires

| Choosing the least irritating detergents. | Minimising contact between skin, water and detergents. |
| Training in suitable cleaning methods. | Measuring detergents correctly. |

### Personal safety equipment

| Gloves suitable for detergent. Cotton gloves should be worn under rubber gloves. | Mops for cleaning. |
| Respiratory protective equipment when especially strong detergents are used refer to product information sheet. | Vacuum cleaner for stairs and other areas that are difficult to access. |
| Non-slip shoes. | Special dusters for mirrors and shiny surfaces. |

### Equipment

| Telescopic tubes, telescopic handles and other tools that can be adapted to the individual. | Vertically adjustable cleaning carriage. |
| Wringing device. | |

### On this ship

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Plan the work

- Maintenance and continuous revision of plans for cleaning individual areas.
- Seal off work-area until the floor is dry.
- Read safety data sheets for detergents used.
- Choose tools and methods in relation to different cleaning tasks. Make sure that tools, detergents and equipment are within easy reach when they need to be used.
- Tools and machinery must be kept in good order.

General instructions

- Manuals for equipment.
- Working positions and lifting techniques.
- Measuring and use of detergents.
- Safety data sheets.
- When re-laying floors and laying new floors make sure instructions for cleaning are set down in writing. A central vacuum cleaner should be installed.
6. Working with maintenance

De-scaling

Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye-injuries from rust scale, metal fragments and metal waste.</td>
<td>Hearing impairment due to noise.</td>
</tr>
<tr>
<td>Scratches and wounds on hands that can easily lead to infections.</td>
<td>Irritation and long-term injuries such as bronchitis caused by metal dust.</td>
</tr>
</tbody>
</table>

A good working environment requires

| Low vibration tools. Always use as low vibration tools as possible. |
| Limit time on de-scaling duty. |
| Use pneumatic tools that do not have exhausts which chill hands. |

Personal safety equipment

| Ear defenders. |
| Protective goggles. |
| Respiratory protective equipment for dust (at least P2 filter). |
| Anti-vibration gloves. |

Equipment

| Special supports that protect knees and whole body while working in a kneeling or lying position for extended time periods. |
| Modern equipment that allows variation in working positions (for example, refer to SAN News no. 2/2009). |

On this ship
Plan the work

- Investigate the vibration level of tools and plan the length of time appropriate for working with them. Compare with the rule of thumb below.

Rule of thumb for preventing injuries from vibrating tools:

<table>
<thead>
<tr>
<th>Vibration level of the tool</th>
<th>Longest effective working time per day</th>
<th>The schedule is only intended as a guide and is only applicable when work is done on a daily basis or for several consecutive days. When doing immediate tasks or for limited times it is possible to work for longer periods than stated above.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 m/s² (140 dB (HA))</td>
<td>30 minutes</td>
<td></td>
</tr>
<tr>
<td>6 m/s² (135 dB (HA))</td>
<td>1,5 hours</td>
<td></td>
</tr>
<tr>
<td>3 m/s² (130 dB (HA))</td>
<td>4 hours</td>
<td></td>
</tr>
<tr>
<td>1 m/s² (125 dB (HA))</td>
<td>Small risk</td>
<td></td>
</tr>
</tbody>
</table>

- According to the EU Machine Directive, manufacturers must provide information on the vibration level of tools.

- Make sure the tool is correct for the work and that it is in good working order.

- If there is any risk of spark formation, de-scaling must not be carried out in the vicinity of flammable or explosive substances.

- Plan the work so that strained working positions are avoided. Consider the possibility of dividing the work so that de-scaling can be done at fixed workplaces and in the least strained working positions possible.

- Consider the possibility of erecting work platforms to achieve better working positions.

- If possible, dismantling and removal should be done without any heavy lifting.

- Plan the work so that others are not disturbed.

- Agree on or plan so that the crew can rotate between different assignments in order to prevent particular individuals being over-strained.

- Draw up maximum working times for each tool in relation to its vibration level.

General instructions

- Inform employees about contraction of blood vessels when smoking, increasing the risk of injuries caused by vibrations.

- Working positions.

- Knowledge of tools.
6. Working with maintenance

Painting

Accident risks, occupational injuries and work-related illnesses in the long-term

### Accident and injury risks
- Danger of explosions and fire.
- Acute poisoning from solvents.
- Irritations and injuries of skin, eyes and respiratory organs due to corrosive substances.
- When spray painting: If skin is in the path of spray near the nozzle, there is a danger of blood poisoning and injuries to skin and tissues.

### Injuries and illnesses in the long-term
- Brain injuries due to long-term inhalation of organic solvents. There is no risk if the correct respiratory protective equipment is used.
- Developing skin allergies and asthma.
- Repetitive stress damage due to working positions and heavy lifting strains on the body for long time periods.

A good working environment requires

- Replace toxic paints with less toxic types.
- Ventilation and/or local extractors, depending on the type of painting being done and the method used. Otherwise, use respiratory protective equipment.
- Seal off the area to unauthorized personnel.
- Special training and medical examinations when working with thermosetting plastic paints.

Personal safety equipment

- The personal protective equipment necessary is determined by the code number of the paint.
- See "Plan the work".
Plan the work

The basic principles are:

- Get safety data sheets for products used onboard. They will also indicate the personal protective equipment to be used.
- Always choose the least toxic paint or product.
- Make sure the person painting has the necessary training and instructions.
- Make sure painters have access to an emergency eyewash bottle as a precaution during work.
- Place paint pots etc. so that heavy lifting below knee-height and over shoulder-height is avoided.

Paint stores

- In order to avoid harmful concentrations of fumes from organic solvents in the paint store, ventilation must be constantly activated.
- Avoid open containers of paint and thinners.
- Brushes kept in thinners must be in a closed container.
- Smoking and open flames in the paint store are forbidden.
- Clean brushes and tools in ventilated areas.

Respiratory protective equipment

- Make sure painters and assistants are instructed in the maintenance of respiratory protective equipment.
- Ensure that the correct filters are in stock.
- The filter must be changed, at the latest, when it is possible to smell the paint.
- Masks with filters must be kept in closed containers so filters do not degrade.

Plan the work, considering whether it is indoors or outdoors and which method of painting will be used:

Spray painting

- Protective clothing, eye protector and respiratory protective equipment must always be used. Use a compressed-air mask.
- Assistants must use the same personal protective equipment as the painter.
- If possible, avoid spray painting since it causes high concentrations of droplets and mist.

Indoor

- Ensure that adequate air circulation can be provided by mechanical ventilation.
- Use a gas filter mask, compressed-air mask, gloves and overalls in accordance with the instructions for the code number.
- Plan the work to avoid other work in the room while the paint is drying.

Outdoor

- Use gas filter mask, compressed-air mask, gloves and overalls in accordance with the instructions for the code number.
- Ensure the painter is well instructed and knows the danger symbols as well as the code number of the paint used. Read the safety data sheet to ensure that work will be done in accordance with the directives.
- Ensure the painter knows what to do in the case of an accident see safety data sheet.
- Inform about good working positions.
6. Working with maintenance

Welding

### Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Electrical shocks, e.g. when working without gloves or in wet clothes/shoes.</td>
<td>- Increased risk of illnesses in lungs and air passages such as bronchitis and lung cancer.</td>
</tr>
<tr>
<td>- Burns from welding sparks and ultraviolet light.</td>
<td>- Increased risk of reduced fertility and injuries to the foetus.</td>
</tr>
<tr>
<td>- Metal fume fever.</td>
<td>- Stress and repetitive stress injuries to the back, arms and shoulders due to poor working positions.</td>
</tr>
<tr>
<td>- Weld flash, inflammation of the cornea or conjunctiva due to ultraviolet radiation, e.g. from an electric arc during welding.</td>
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<tr>
<td>- Inflammations of the throat or hoarseness.</td>
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</table>

### A good working environment requires

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<table>
<thead>
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<tbody>
<tr>
<td>- Choose welding electrodes with low smoke formation. Smoke category 1 indicates the lowest smoke formation and smoke category 7 the highest.</td>
<td>- There must always be a local extractor and it must always be in use.</td>
</tr>
<tr>
<td>- Good general ventilation.</td>
<td>- Remove surface treatment from as large an area as necessary to avoid smoke and gases during welding. Oil and grease must be washed off.</td>
</tr>
<tr>
<td>- Seal off the working space.</td>
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</tbody>
</table>

### Personal safety equipment

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>- Welding helmet and visor, different types of welding call for different types of welding glasses.</td>
<td>Compressed air equipment is to be preferred. A half mask with P2 filter removes some of the pollutants.</td>
</tr>
<tr>
<td>- Leather gloves.</td>
<td></td>
</tr>
<tr>
<td>- Respiratory protective equipment.</td>
<td></td>
</tr>
<tr>
<td>- When welding stainless steel, aluminium and galvanised or coated surfaces respiratory protective equipment should be used.</td>
<td></td>
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</tbody>
</table>

### Equipment

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<table>
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<tbody>
<tr>
<td>- Sack truck for transportation of the welding equipment.</td>
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<tr>
<td>- Eye-ointment.</td>
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</tbody>
</table>

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**On this ship**

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Plan the work

- Find out in which surroundings and on what surfaces any welding is to be done. Ensure there are no flammable or explosive goods nearby.
- Welding in wet areas puts special demands on the welding equipment used.

Welding in a workshop:
- Workplaces for welding require local extractors. Adjust it for the welding task in question, as close to the welding flame as possible.

Welding indoors:
- The general ventilation must be activated and the system set so that exhaust air is not recycled. If the welding is only occasional and no local extractor available, a mobile extractor may be used. The mobile extractor may either be connected to the general ventilation or be equipped with a gas and dust filter.

Welding outdoors:
- Check that the welder is not exposed to welding smoke.
- Plan the use of respiratory protective equipment as described under "Preventive actions".
- Make sure the area is closed off and that signs are put up when major welding work is carried out.
- All flammable materials must be removed or screened off.
- Station a fire watch in high-risk areas. The fire watch checks the work not the welder.
- The fire watch must use the same type of personal safety equipment as the welder.
- Plan the work so that strained working positions are avoided.

General instructions

- Electrical safety when putting down electrodes and tools and handling welding cables.

Fire safety and fire hazards:
- Flammable materials in the area.
- Welding on surface treatment.
- The positions of personnel in relation to evacuation routes and fire-fighting equipment.
- Checking the welding equipment: cables, connections, insulation, earthing, welding grips, feed wheels, valves to welding gases, hoses, check valves, gas cylinders.

- Ventilating system, general ventilation and local extractors, including mobile extractors.
- Working positions and use of supports when welding lying down or kneeling.

In case of injuries to the welder:
- Use of first aid equipment.
- Burns rinse with cold water and contact person in charge of medicine cabinet.
- Weld flash is treated with eye-lotion.
6. Working with maintenance

Working from scaffolding

Accident risks, occupational injuries and work-related illnesses in the long-term

- Accident and injury risks
  - Injuries due to falling from heights.
  - Drowning
  - Injuries due to being hit by falling objects.

- Injuries and illnesses in the long-term
  - Repetitive stress injuries due to strained working positions.

A good working environment requires

- Safety equipment.
- Plan the work to limit the use of scaffolding. It is best if this work can be done in a port or shipyard.

Personal safety equipment

- Safety helmet
- Gloves
- Protective equipment against falls if the work height exceeds 2 m.
- Self-inflating life jacket if there is a risk of falling into water.
  - Or, depending on how the work is to be done:
    - Protective goggles.
    - Respiratory protective equipment.
    - Special tools.

On this ship
Plan the work

- Ensure that scaffolding, ropes and grab lines are inspected.
- Ensure that personnel working on scaffolding are supervised.
- Comfortable working positions are obtained by frequently moving the scaffolding.
- Plan how to transport material and tools to the scaffolding.
- Personnel with fear of heights should not be made to work on scaffolding.

General instructions

- Agree on communication between workers and supervisors.
- Agree on necessary safety equipment depending on the nature of the work.
- Instructions regarding good working positions.
6. Working with maintenance

Cleaning and panning

Accident risks, occupational injuries and work-related illnesses in the long-term

<table>
<thead>
<tr>
<th>Accident and injury risks</th>
<th>Injuries and illnesses in the long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irritation and injuries from corrosion of the mucous membranes, skin, eyes and respiratory organs.</td>
<td>The development of skin-allergies and eczema.</td>
</tr>
<tr>
<td></td>
<td>The effects of solvents, depending on the product.</td>
</tr>
<tr>
<td></td>
<td>Repetitive stress injuries due to strained working positions.</td>
</tr>
</tbody>
</table>

A good working environment requires

- Replace harmful products with less harmful products.
- Measuring devices for correct measuring can prevent unnecessary contact with the detergents.

Personal safety equipment

Water resistant:
- Gloves.
- Rubber boots.
- Waterproof suit. The suit must extend over the rubber boots.
- Face protection/safety goggles or visor.

Equipment

- Cart for buckets.
- Telescopic shaft to ensure that work can be carried out in a comfortable working position.

On this ship

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Plan the work

- Get safety data sheets for all products onboard.
- Always choose the least dangerous products.
- When very alkaline or very corrosive products are used, emergency eyewash flasks must be kept near the workplace.
- Make sure products used on the ship are labelled with clear instructions for measuring.
- Make sure measuring devices are available for correct measuring of the substance.
- Make sure cleaning tools are in working order and in good conditions.
- Plan the work so that work positions are varied and avoid prolonged strains.

General instructions

- Correct measuring of detergents prevents unnecessary effects on skin and eyes. It is important to instruct personnel in measuring, cleaning methods and the safe use of tools. Will the product be used directly or over a longer time period?
- Ensure that the person cleaning with soap/chemicals has read the safety data sheet.
- Instructions regarding good working positions.
6. Working with maintenance

High-pressure washing

Accident risks, occupational injuries and work-related illnesses in the long-term

Accident and injury risks
- Accidents through the operator or other person being hit by the water jet, or if the pressure hose cracks.
- Injuries and irritation to lungs and mucous membranes e.g. pneumonia, bronchitis, other illnesses of the respiratory organs, damage to the nose, coughing and irritation of the throat due to inhalation of spraying steam.
- Irritation and corrosive injuries to eyes and skin.

Injuries and illnesses in the long-term
- Eczema, rashes and skin allergies.
- Straining of muscles and joints which in the long term may cause "white fingers", tennis elbow and repetitive stress injuries.
- Hearing impairments due to high noise levels.
- Risks stem both from the substances used in high-pressure washing and the materials being cleaned.

A good working environment requires
- Respiratory protective equipment in accordance with the product information sheets.
- If possible, avoid corrosive detergents (i.e. very alkaline substances or strong acids) and those containing organic solvents and chlorine. Are there environmentally friendly alternatives?
- Exhaust gases if internal combustion engines are used indoors.
- A good foundation or good platform to stand on.
- Maintenance of the high-pressure brush, hose couplings, hoses, dead man's grip and cables.
- When cleaning the floor use a covered spray nozzle.

Personal safety equipment
- Air-supplied respiratory protective equipment.
- Waterproof suit.
- Eye protectors.
- Ear protectors.
- Gloves.
- Safety shoes with non-skid sole.

Equipment
- Shoulder strap or similar to get a firm grip, and to ensure that muscles and joints have minimal strain.

On this ship
Plan the work

- Ensure that there are no unauthorized personnel in the working area.
- Get safety data sheets for the detergents being used.
- Always choose the least harmful detergents necessary to fulfil the technical and environmental demands of the task.
- Choose the lowest pressure possible.

However, the pressure must not be so low that the cleaning takes much longer to carry out.

- Check the surface where the high-pressure washing is to be done. Make sure there is a good foundation or good platform to stand on. Never use ladders.

General instructions

- Ensure that any person doing high-pressure washing is familiar with the equipment and the product information sheets for the relevant detergents. Go through the equipment and product information sheets together, ensuring that the work is planned and performed in accordance with directives.

- The water jet must not be aimed at electrical systems or motors since they may short-circuit or become damaged.
- Make certain that ladders are not used. Use scaffolding instead.
- Working positions.
7. Working with dangerous equipment and dangerous substances
Hoists

**Accident risks, occupational injuries and work-related illnesses in the long-term**

**Accident and injury risks**
- Risk of being struck by falling goods or lifting hooks.
- Risk of injuries through crushing.
- Risk of being hit by cables or grommets.

**Injuries and illnesses in the long-term**
- Uncomfortable working positions when securing grommets or cables to lifting hooks e.g. twisting the body, lifting when bending forward and securing to lifting hook above shoulder height.
- Repetitive stress and straining of the body when moving heavy loads.

**A good working environment requires**
- Fixed lifting mountings if heavy materials are to be handled.
- Fixed lifting mountings, e.g. swing booms and catheads. Possibly fixed placement of tackles if lifting is frequent (e.g. lifting soot filters).
- Installing catheads with carriages if transportation of heavy materials is common.
- Scheduled inspection of the ship’s lifting appliances. The inspections must be documented.

**Personal safety equipment**
- Helmet.
- Leather gloves.

**On this ship**
Plan the work

- Investigate from where and to where the lifting must be done. Is transport necessary?
- Ensure that the correct lifting equipment is available: wires, grommets, lifting yokes, tackles etc.
- Make sure there are suitable lifting yokes for lifting special loads e.g. cylinder heads for engines.
- Personnel not taking part in the work must be kept outside the working area and well away from any danger.
- It must be possible to secure the lifting hook.

General instructions

- Give instructions regarding which tools should be used and for which tasks, including tools used for special lifting tasks.
- Explain how the load is to be handled, how lifting appliances must be mounted etc. No personnel are allowed in the danger zone, the load must not be able to fall on or swing towards anyone.
- Check that mounting arrangements for tackles and similar have adequate strength for the weight in question.
- Check that tackles, grommets etc are in working order.
- Give instructions on lifting techniques and working positions.
7. Working with dangerous equipment and dangerous substances

Cleaning and other work in tanks

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**

- Very varied, depending on whether the tank is used for cargo, ballast or other goods, the contents of the tank, material/surface coating, location, temperature etc.
- Suffocation due to lack of oxygen.
- Fire, explosion.
- Injuries to the lungs, e.g. pulmonary oedema. This type of injury is rather treacherous. It may not be obvious during the working day, but in the night a person may wake up with a fever, respiratory problems, feelings of suffocation and vomiting.
- Acute poisoning through the skin, respiratory organs or stomach and intestinal tract.
- Injuries from corrosive substances on unprotected parts of the body.
- Injuries from falling due to slippery surface.

**Injuries and illnesses in the long-term**

- Normally these should not occur if all safety regulations have been observed and the correct personal safety equipment has been used.
- Possible injuries are to organs, nerves, foetuses and the generation of allergies or tumours.

A good working environment requires

- Solitary work cleaning tanks and other solitary work in tanks is forbidden. There must always be a guard nearby and communications equipment.
- Information, instructions and the correct equipment to minimise the dangers when cleaning tanks.
- Working alone should be avoided if there is the slightest danger. If necessary, a guard should be posted.

**Personal safety equipment**

- Varied, depending on the contents of the tank. For example: Respiratory protective equipment, full or half-mask with the appropriate filter or compressed air breathing apparatus. Eye protectors, safety gloves, boots, safety clothing.

**Equipment**

- Rinsing machines.
- Portable fans to supplement the general ventilating system.
- All the gas meter equipment, with fittings, needed for the specific substance/cargo.

On this ship

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7:3
Plan the work

- Plan the work well and use relevant checklists and work permits.
7. Working with dangerous equipment and dangerous substances

Asbestos

Accident risks, occupational injuries and work-related illnesses in the long-term

**Injuries and illnesses in the long-term**

- Asbestos fibres are released when asbestos is processed. The asbestos fibres are inhaled through the respiratory organs to the lungs. The thinnest fibres can reach all the way to the pulmonary alveoli. Thicker fibres are caught and carried by the cilia up into the pharynx together with the mucous normally found in the bronchi. If the mucous is swallowed the fibres end up in the stomach.
- Pleural plaque is a thickening of connective tissue around the asbestos fibre between the two membranes of the pulmonary sac. The growth is slow and only visible on X-ray after 25–30 years. The illnesses below also have a long period of incubation and take a long time to develop wholly.
- Pleurisy (water in the pulmonary sac) danger of decreased pulmonary function.
- Pulmonary fibrosis asbestosis, steam-fitters’ asthma.

**A good working environment requires**

- Training and the correct equipment are required for work with asbestos. The Work Environment Authority’s provisions include rules on work with asbestos.

**Personal safety equipment**

- Close-fitting safety clothing, e.g. disposable overalls with hood, shoe protectors or boots and safety gloves.
- Respiratory protective equipment with P3-filter.
  - half mask when working less than 1 hour.
  - full mask with overpressure, battery-operated, when working 1-2 hours.
  - full mask using compressed air when working more than 2 hours.

**Equipment**

- Various hand tools.
- Vacuum cleaner with filter (99.97% degree of separation).
- Waste sack.
- Marking tape.
- Plastic sheeting.
- Plastic bag with cured gloves.

**On this ship**

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Plan the work

- All work with asbestos must be planned in consultation with the employer/shipowner and the safety committee/safety representative.
- When working with decontamination from asbestos the workplace must be screened off/closed, personnel not participating in the work may not stay in the work area.
- Use the checklist for working with asbestos (may be found in "Working with asbestos", Prevent).

General instructions

- The presence of asbestos on Swedish ships must be documented.
- If presence of asbestos is suspected, consult documentation before starting work.
- The shipowner must get permission from the National Work Environment Authority to work with asbestos if it is calculated for more than one man-hour.
7. Working with dangerous equipment and dangerous substances

Synthetic inorganic fibres

Accident risks, occupational injuries and work-related illnesses in the long-term

Injuries and illnesses in the long-term

- Synthetic (man-made) fibres may be divided into two groups: inorganic and organic. Synthetic inorganic substances include rock wool fibres, glass fibres, slag wool fibres, fire-resistant ceramic fibres and graphite and carbon fibres.
- The effects on health of fibres are determined by their size, shape and constituents. The thinnest fibres may reach all the way into alveolar sacs deep in the lungs. Long-term or repeated exposure may give permanent reactions such as changes to the connective tissue in lungs, tumours or eczema.
- Thicker fibres are trapped by the cilia and are transported up to the pharynx together with the mucus which is normally in the bronchi. If the mucus is swallowed the fibres will follow it to the stomach, where carcinogenic fibres may cause cancer in the digestive organs. Other poisonous substances, such as heavy metals in slag wool, may be absorbed through the digestive organs.
- Skin irritation may arise after direct contact with fibre materials. Skin reactions may also be caused by the additives which occur in fibre materials. For example, allergic reactions may occur after exposure to additives of epoxy plastic and formaldehyde resin.
- Smoking tobacco increases the risk of injuries and diseases in the breathing organs.

A good working environment requires

- The right equipment and knowledge of the risks is required to handle materials that contain synthetic inorganic fibres. Regulations regarding this are stated in instructions from both the Swedish Transport Agency and the Work Environment Agency.

Personal safety equipment

- As a general rule, it is sufficient to use a half-mask with a Class P2 dust filter. When working with fire resistant ceramic fibres, special fibres or crystalline fibres, either a half mask or a full mask with a Class P3 dust filter should be used, or a filter respirator with a fan.
- Protective glasses should be used if work is carried out above head height.
- When dusty work is being carried out, protective clothing should be used that covers sensitive parts of the skin such as the neck and forearms.

Equipment

- Equipment for cleaning and collecting waste matter and similar materials that contain synthetic inorganic fibres.
- Vacuum cleaner with filter (99.95% collecting efficiency).

On this ship

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7.7
Plan the work

- Plan work well and use appropriate checklists and work permits.
- When working with fire resistant ceramic fibres, special fibres or crystalline fibres, a measurement of exposure must always be made. The exposure measurement must be carried out as soon as possible and at the latest three months after work was either started or changed so that previous measurements are not applicable. Subsequent measurements must be carried out at least once every 12 months.
- Work with certain synthetic inorganic fibres requires a medical examination.
7. Working with dangerous equipment and dangerous substances
Thermosetting plastics

Accident risks, occupational injuries and work-related illnesses in the long-term

**Accident and injury risks**

- Thermosetting plastics is a collective name for plastics that are formed by the reaction of two or more components that produce a final product with a cross-linked structure. Some thermosetting plastics can also be formed by heating or radiation. Thermosetting plastics that are correctly mixed and fully hardened pose no health risks in normal use.

- Health risks are mainly associated with the manufacture and application of thermosetting plastics, and the dust and vapours which may be released when processing them.

- Certain plastics, such as epoxy, phenol and acrylic plastics, can cause strong allergic reactions in the skin.

- The hardening agent also includes many chemical products that can be irritating to the skin, airways and eyes, and can also cause skin allergies.

- When a thermoset plastic is subjected to high temperatures during grinding, welding and cutting, different types of isocyanates and other air pollutants are formed even at low temperatures (150°C) that can cause itching, irritation of mucous membranes, severe coughing, sore throat, shortness of breath and pressure on the chest.

- If swallowed, isocyanates produce a burning sensation in the mouth and throat and stomach pains.

- Splashes in eyes produce sharp pain and tears, and the risk of inflammation of the cornea. When using cyanoacrylate glue that cures quickly, there is a risk that fingers and eyelids are glued together.

**Injuries and illnesses in the long-term**

- **EPOXY.** Some epoxy plastic components can cause skin irritations and allergic contact eczema after short or long exposure. The risk of skin effects varies depending on the epoxy plastic component that is handled (resins, diluents and hardeners) and is greater if the skin is irritated or damaged. Exposure to hardeners containing organic acid anhydrides (OAA), which are often used in epoxy resins, can cause asthma and allergies in the airways.

- **URETHANE.** The inhalation of di-isocyanates is often the greatest health risk during the manufacture of urethane plastics. Di-isocyanates can be an irritant to the eyes, skin and airways and can cause asthma or bronchitis-like symptoms and impaired breathing. The risk of hypersensitivity is large. Repeated skin contact with isocyanates can cause eczema.

- **ACRYLATE.** Most acrylate plastic components can be an irritant to the eyes, skin and airways and can cause allergic contact eczema. The risk of allergy is especially large when working with cyanoacrylate glue, which can also cause airway allergies.

On this ship
A good working environment requires

- Special theoretical and practical training for those who perform work and those who supervise work.
- Special medical examinations with medical history, skin examination and spirometry tests before work is started.
- A certificate of fitness and regular medical examinations are required for certain thermosetting plastic work (at least every two years). It is inappropriate for people with allergies or other problems with skin or airways to work with thermosetting plastics.
- A risk assessment must be carried out before a person starts working with thermosetting plastic components. The risk assessment is the basis for how work will be performed and how the workplace is laid out.

There are documented procedures, rules and safety instructions for all types of thermosetting plastic work.

There is a risk that isocyanates are released during grinding, welding, soldering and other processes where paint or varnish is heated to over 150 degrees. An extractor fan that removes all dust, fumes and vapours must be used. Personal protective equipment must always be used. The safest method is to use a pressurised respirator mask until the vapours been removed.

That the number of people who are likely to be exposed to harmful thermosetting plastic components is limited. That the work area can be separated by plastic or temporary walls.

Personal safety equipment

- At least a half mask with filter, but in confined spaces a pressurised respiratory mask must be used.
- Full suit of disposable protective clothing or protective clothing which is easy to wash.
- Personal protective gloves made of durable, impermeable material.
- If work involves a risk of splashing, safety goggles or a visor must be used.

Equipment

- Mechanical stirrer with splash guard for mixing two-component paint.
- Disposable container.
- Local extractor. Also for hand-held grinders and similar.
- Waste container with lid and warning text.
- Covering material for the floor where the work is performed.
- Cleaning products containing a suitable solvent for the paint.

General instructions

- There are specific provisions for some allergens in AFS 2014:43. These apply to epoxy resins in glues, paints, varnishes and casting resins. Polyurethane plastics (PUR), which are present in foam plastics, varnishes, adhesives, casting cores and insulating materials. Acrylate plastics that may be a component of paints and varnishes, floor screeds, casting resins, super-glue and locking fluids. Amino plastics and phenoplastics that may be components of adhesives, lacquers and binders in brake pads, abrasive discs and mineral wool mats.
Systematic Work Environment Management (SAM)

Systematic Work Environment Management refer to work by employers in examining, executing and following up activities in order to prevent accidents at work and to achieve a satisfying work environment.

Employers must take all measures necessary to prevent employees from being exposed to ill health or accidents.

In all shipping companies and onboard all ships where employees work for an employer, there must be systems for examining, executing and following up activities. All shipping companies and ships must document in writing risk assessments, summaries of injuries and near accidents, action plans and instructions. If there are more than ten employees onboard or at a shipping company, there must also be written documentation of policies, procedures, allocation of tasks and the annual follow-up of SAM. Written instructions must always be available when there are serious risks of ill-health and accidents.

Systematic work environment management must be assessed on the basis of operations onboard, risks involved, near-accidents/injuries, access to Company health care and the number of employees. Those who engage personnel are obliged to follow the regulations for Systematic work environment management if personnel are engaged to perform work. For example, this may involve examining working conditions, assessing risks, taking measures or giving instructions.

All applicable work environment regulations for a ship must be available for everyone onboard: Chapter 5 Section 2 of the Ship Safety Act (SFS 2003:438).

The captain must notify the safety officer of the person onboard to whom descriptions of work environment issues shall be given: Chapter 5 Section 4 of the Ship Safety Act (SFS 2003:438).

The shipping company must notify employees onboard which company official is to be given descriptions of work environment issues: Chapter 5 Section 4 of the Ship Safety Act (SFS 2003:438).

Occupational injury reports are checked especially with regard to whether an investigation has been carried out and whether proposed measures to prevent other similar accidents have been executed (if they can be executed). If the measures could not be executed immediately they must be noted in an action plan that contains a description of the problem, what must be done, the person responsible for the measures being carried out and a time plan.

This is Systematic Work Environment Management

- Work environment management must be included as a natural part of daily activities. They must cover all physical, psychological and social conditions that have significance for the working environment.

- The employer must give employees and the safety officer the opportunity of participating in work environment management.
• There must be a work environment policy that describes necessary working conditions, work environment goals and the intentions of the company in preventing ill health and accidents at work.

• There must be procedures that describe how work environment activities will be carried out.

• The employer must distribute tasks for activities in such a way that one or more managers, supervisors or other employees are given the task of working to prevent risks at work.

• The employer must ensure that the experience of employees and their knowledge of the risks at work are sufficient for the prevention of ill health and accidents.

• The employer must regularly examine working conditions and assess the risks of somebody being affected by ill health or accidents at work. This also applies to hired personnel and contractors.

• If any employee should be affected by ill health, an accident or serious near-accident at work the employer must investigate the reason in order to prevent future risks. The investigation must be documented.

• The employer must carry out measures needed to prevent ill health and accidents at work. Measures that are not carried out immediately must be stated in an action plan. The plan must state when the actions will be executed and who will ensure that they are carried out. The action plan must be dealt with by the safety committee.

• Measures carried out must be followed up to ensure that they have had the intended effect.

• Every year the employer must make a documented follow-up of work environment management.

• If there is insufficient internal competence to carry out the work environment management or for work with job re-design and rehabilitation, the employer must engage Company health care.

**Checklists**

There are three examples of checklists in this section on SAM (Systematic Work Environment Activities). The checklists are primarily intended to provide information for discussions about how systematic work environment management can be carried out at each shipping company/ship/place of work. Does SAM have the scope and does it work in compliance with regulations? In what respects can SAM be improved regarding procedures, areas of responsibility and allocation of tasks?

Certain issues may be irrelevant for the operations under discussion; in which case, ignore them. Other issues may need to be supplemented. SAM must be structured and have the functions required for the shipping company/ship/place of work in question.

Checklists are useful in educational contexts, in safety committees and on other occasions when work environment is on the agenda.

Checklists A and B can be used when checking SAM on ships/at shipping companies. The information for checklist C has been taken from Prevent educational material about SAM.
More to read
SFS 1977:1160  Work Environment Act
SFS 1977:1166  Work Environment Ordinance
SFS 2003:364   Ship Safety Act
SFS 2003:438   Ship Safety Ordinance
AFS 2001:1    Systematic Work Environment Management
TSFS 2009:119  Working Environments on Board Ships
SJÖFS 2005:25  Safety Measures on Board Ships

More information
Swedish Work Environment Authority, www.av.se
www.forsakringskassan.se
www.transportstyrelsen.se
# Systematic Work Environment Management

## – contents and structure

Ship/place of work: ________________________________ Date: ____________

Participants (possibly): ________________________________

<table>
<thead>
<tr>
<th>Issue</th>
<th>Not checked</th>
<th>OK</th>
<th>Faults</th>
<th>Action</th>
<th>Person responsible/final date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Work environment policy</strong>&lt;br&gt;Is there a policy and is it accessible for everybody?  &lt;br&gt;Is the policy documented?  &lt;br&gt;Does the policy contain procedures for work environment management?  &lt;br&gt;Is there a policy for job redesign and rehabilitation?  &lt;br&gt;Is there a policy for discrimination?</td>
<td></td>
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<tr>
<td><strong>2 Cooperation</strong>&lt;br&gt;Are there good conditions for cooperation?  &lt;br&gt;Safety committee? Safety representative?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3 Documentation</strong>&lt;br&gt;Are action plans, risk assessments, accidents and near accidents documented?  &lt;br&gt;Are policies, task allocation and follow-up work documented (if more than 10 employees)?</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### 4 Task allocation

Have supervisors been appointed for the different tasks included in SAM?

Is time set aside so that those responsible for SAM have the opportunity to carry out their work?

Have those responsible been given education about SAM work?

Have those responsible been given economic resources so that they are able to remedy work environment problems and carry out improvements?

### 5 Employee competence

Do employees have sufficient competence?

### 6 Risk assessment

Are dangerous tasks at work listed?

Are risk assessments made when there are changes in activities, tasks at work, work materials, new employees?

Are there procedures for when and how risk assessments must be made?

Are risk assessments documented?

### 7 Action plan

Is there an action plan for the development of work environment management?
<table>
<thead>
<tr>
<th>Issue</th>
<th>Not checked</th>
<th>OK</th>
<th>Faults</th>
<th>Action</th>
<th>Person responsible/ final date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>8 Near accidents and injuries at work</strong></td>
<td></td>
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<tr>
<td>Have any near accidents/ injuries at work occurred during the last 12 months?</td>
<td></td>
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<tr>
<td>Have measures been taken?</td>
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<tr>
<td>Is a summary made every year?</td>
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<tr>
<td><strong>9 Annual follow-ups</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Has a follow-up been made of work environment management?</td>
<td></td>
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</tr>
<tr>
<td>Have those measures carried out been followed up?</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Are there procedures for how follow-up work must be carried out?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Is follow-up work documented?</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>10 Company health care</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Are external companies/ specialists engaged when necessary, for example CHC?</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
1. Systematic work environment management

1a We work systematically with our work environment, i.e. we investigate, carry out and follow up our activities in order to prevent ill health and accidents and achieve a generally satisfactory work environment (2 §)¹.

2. Incorporated in activities

2a Systematic work environment activities are a natural part of overall operations at our company (3 §)¹.

2b The work environment is ultimately the responsibility of the management at our company (1 §)¹.

2c We clearly allocate tasks in operations to managers and others in order to prevent risks at work and achieve a generally satisfactory work environment (6 §)¹.

2d We allocate tasks to a sufficient number of people (6 §)¹.

2e We ensure that our managers and supervisors have the particular knowledge required for their tasks in the systematic work environment management (7 §)¹.

2f We ensure that those given tasks related to the work environment have sufficient resources and authority (6 §)¹.

2g We ensure that all employees have sufficient knowledge of the work and risks to be able to avoid ill health and accidents and achieve a generally satisfactory work environment (7 §)¹.

2h We safeguard work environment demands when changes are made to operations (3, 8 §)¹.

2i We safeguard work environment demands when procuring machines, equipment in general, consultancy commissions, chemicals etc. (3 §)¹.
3. Overall assessment

3a Our work environment management include all aspects (e.g. knowledge and other resources, methods/technology and organisation) that are significant for the work environment (3 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

3b Our work environment management include physical and psychological working conditions (3 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

4. Cooperation

4a We give our employees the opportunity of participating in work environment management (4 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

4b We give our safety representative(s) the opportunity of participating in work environment activities (4 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

5. Investigation – Measures – Follow-up

5a We regularly investigate working conditions in our operations and assess the risks of ill health and accidents at work (8 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

5b For the purpose of prevention, we investigate the reasons behind ill health, accidents and serious near accidents at work (9 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

5c We immediately rectify any shortcomings we find in our investigations, if this is possible (10 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

5d We draw up action plans for those measures that we cannot take immediately (10 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

5e We plan and carry out measures so that they are compatible with our goals for operations and the work environment (3 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

5f We follow up the results of work environment management in relation to our goals (10 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
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</thead>
</table>

6. Support for work environment management

6a We have a clear perception of what the working environment must include (policy) in order to avoid ill health and accidents and to achieve a generally satisfactory work environment (5 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

6b We use the Work Environment Act, Work Environment Regulations and regulations from the Work Environment Authority as support for our work environment management (5 § Work Environment Regulations).

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

6c We have procedures that describe how our systematic work environment management are to be carried out (5 §)¹.

<table>
<thead>
<tr>
<th>Very high degree?</th>
<th>Rather high degree?</th>
<th>Rather low degree?</th>
<th>No, not yet?</th>
</tr>
</thead>
</table>

6d We document our risk assessments (8 §)¹.
Each year we draw up a summary of ill health, accidents and serious near accidents that occur at work (9 §).  

In general we have the documents required for support in our work environment activities (5, 6, 11 §).  

We engage Company health care or other equivalent external expert help if our own competence is not sufficient for systematic work environment management (12 §).  

At least once a year we follow up how work environment management are functioning (11 §).  

We improve our systematic work environment management if we discover that they are not functioning well (11 §).  

You may write comments here about the responses above. If there is not sufficient space, write in a special appendix.  

Signature  

Position  

Telephone  

Employee’s representative  

Date  

Date  

The employer must allocate and appoint people responsible for tasks required in the successful execution of systematic work environment management. In principle the tasks are the same for small and large shipping companies, even though the scope may vary. In a small company one person may be sufficient to carry out the tasks, e.g. the owner/employer. Shipping companies with more than 10 employees must document the allocation of tasks.

Discuss/investigate:

**Who does what?**

Shipping company/company: ________________________________

Managers responsible for activities at the company/department/unit
Name: ________________________________

Coordination of systematic work environment management
Name: ________________________________

Policy, goals, procedures
Name: ________________________________

Allocation of work environment tasks
Name: ________________________________

Annual follow-up of systematic work environment management
Name: ________________________________

Coordination of work environment management with others working at the same workplace
Name: ________________________________

Documentation procedures
Name: ________________________________

Work environment investigation
Name: ________________________________

Risk assessments
Name: ________________________________

Action plan
Name: ________________________________

Induction of new employees
Name: ________________________________
Information and education
Name: 

Work instructions and safety instructions
Name: 

Maintenance, inspections, measurements and other checks
Name: 

List of harmful and inflammable products, chemicals and product information sheets
Name: 

Purchasing procedures
Name: 

Check of environmental impact in conjunction with changes
Name: 

Follow-up and summary of accidents, serious near accidents and occupational illnesses
Name: 

Rehabilitation and job re-design
Name: 

Equality plan and discrimination issues
Name: 

Threats and violence. Safety procedures, crisis readiness, education
Name: 

Substance abuse
Name: 

Other issues
Name: 

Notices must be put up at the workplace stating who the safety representative is and who are on the safety committee

Safety officer
Name: 

Members of the safety committee (if relevant)
Name: 

Strain ergonomics

With excerpts from the general recommendations for the Swedish Work Environment Authority’s provision on ergonomics for the prevention of musculoskeletal disorders.

Heavy lifting and poor working positions are the cause of many work-related and repetitive stress injuries.

Heavy lifting can sometimes be avoided by having a good organisation of work and by having storerooms and similar located so that goods do not need to be moved several times. Lifting aids must be available where required and where their use is practical.

The crew must be trained in good lifting techniques, how lifting should be done, posture, what is considered heavy lifting, the weight of the load and the frequency of lifting, aids etc.

The movements of the ship must also be taken in account when lifting. Is it justified to lift? Should more people than normal do the lifting? Can the lifting be done in stages to simplify the procedure?

Planning

• Consider whether the lifting should be done by two or more people, or if it should be done using suitable technical equipment instead.

• Consider whether the person doing the lifting is trained, experienced and suitable for the task.

• Consider whether the person is wearing suitable working clothes, shoes and gloves for the task.

Manual handling or lifting should be avoided in the following circumstances:

• The load is too heavy.

• The load is too cumbersome.

• The load cannot be handled close to the body.

• The load may harm the person.

• If the strain on the person will be too great due to a poor or unstable working position, e.g. during rough seas.

• If there is a risk of the centre of gravity of the load suddenly shifting so that the stress on the person lifting it changes.

• If the environment prevents the use of a good, safe lifting technique. For example: narrow spaces, slippery or greasy floors, poor lighting, disorganisation, unstable floor or too large difference in levels. Cold and draughts may also increase the risk of injuries when lifting.

• In connection with too long a distance for transportation.

• When there is a great strain due to many previous lifts or protracted strain.


What is heavy lifting?
Det är inte möjligt att ange exakta gränser för vad som ska betraktas som tunga lyft. Om en belastningsskada kommer att utvecklas varierar från individ till individ. Följande modeller bygger på erfarenhet och forskning och kan ge relativt god vägledning vid bedömning av arbetsuppgifter. De återfinns i Arbetsmiljöverkets föreskrift Belastningsergonomi.

The principles of assessment models
The correlation between work and the risk of strain injuries is often rather complicated. Assessment models are simplified in order to ensure that they can really be put into practice. They only deal with a few aspects of each type of stress and therefore cannot be used as exact limits for stress. However, they do give adequate guidance to serve as a starting point for practical work involving change, both at existing workplaces and in the planning of new workplaces and tasks.

The fact that the models are simplified means that if they are applied uncritically they may provide either an over-estimation or under-estimation of the actual risks. In order to make a complete assessment more factors need to be taken into account and more precise models used. This requires sound knowledge of stress ergonomics.

The models use a three-zone system (red-yellow-green) in order to provide a straightforward indication of work conditions that are clearly dangerous and those with negligible risks, as the case may be.

The colours in the models have the following meaning:

Red area = unsuitable
The strain of the work is of such a magnitude and character that all or the majority of those working run the risk of being affected by long-term or short-term strain injuries.

The conditions should normally be remedied immediately in order to eliminate or reduce the risks, if there are no special reasons to wait before taking measures. Such reasons may include major practical difficulties in doing something about the problem, or that specially selected employees receive specific information regarding the risks and training to minimise them.

Yellow area = assess further
The strain of the work is of such a magnitude and character that a significant number of those working run the risk of being affected by long-term or short-term strain injuries.

In order to thoroughly determine the degree of risk, more precise inquiries and assessments need to be made. It is primarily time factors (pace, frequency, duration etc.) that may need further investigation.
Green area = acceptable

The strain of the work is of such a magnitude and character that a no or few people working there run the risk of being affected by strain injuries.

Consequently, for most of the employees the strain does not imply any risk of injury. For certain risk categories (e.g. pregnant women, minors or employees who have recently been ill) some caution is advised. General measures are not normally required, although in some cases individual measures should be taken.

Models for assessment of working positions – sitting, standing and walking

An assessment model for identifying unfavourable working positions is described below. It is impossible to determine the degree of injurious effect regarding each working position, since they are often hard to distinguish between. However, there are often one or two positions which dominate and which influence ergonomic stress more than others, e.g. those which are most common during the working-day or the ones which involve extreme positions, even if only for a short time. These are the ones the model is intended to assess. The first thing to do, then, is to decide what working positions the model is designed to assess. Then it is time to look in the plan and see if the positions in question can be classified as red, yellow or green for one or more parts of the body.

In principle, it is enough if one sentence in a box is ticked for the whole box to be considered red or yellow. The more assessments there are in a red area, the greater the need to take measures.

The parts of the body mentioned in the model are those under observation and not necessarily those that are injured. For instance, "unstable foundation" according to the model means a risk of back-problems rather than problems with legs.

The model assumes a full work shift. A shift usually means 4–8 hours in a 24-hour period. The concept "a considerable part of the work shift" in the model implies that the work position is held without pause, or with very short pauses, for more than half of the work shift. "Periodically" means that the working position is changed with other work positions to such a degree that the entire time it is held does not exceed one half of the work shift.

Note that the model does not take into consideration whether the work demands a large or small amount of physical exertion. At high demands of exertion any one of the yellow or green tasks may become red.

The aspect of time is always important: no work position that can be taken naturally is, in itself, injurious to health. Risks arise when it is taken too often or for too long.
## Work positions – sitting, standing and walking

<table>
<thead>
<tr>
<th>WORK POSITION</th>
<th>Red</th>
<th>Yellow</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITTING</td>
<td>Work positions – sitting, standing and walking</td>
<td>Work positions – sitting, standing and walking</td>
<td>Work positions – sitting, standing and walking</td>
</tr>
<tr>
<td>Neck</td>
<td>- inclined, without freedom of movement</td>
<td>- inclined, without freedom of movement</td>
<td>- in a central position and able to move freely</td>
</tr>
<tr>
<td>Back</td>
<td>- inclined, without freedom of movement</td>
<td>- inclined, without freedom of movement</td>
<td>- freedom of movement</td>
</tr>
<tr>
<td>Shoulder/arms</td>
<td>- hand at or over shoulder height</td>
<td>- hand at or over shoulder height</td>
<td>- height for work and area of reach adapted to the task and the individual</td>
</tr>
<tr>
<td>Legs</td>
<td>- inadequate room for the legs</td>
<td>- inadequate room for the legs</td>
<td>- free space for the legs</td>
</tr>
<tr>
<td>STANDING/WALKING</td>
<td>work positions – sitting, standing and walking</td>
<td>work positions – sitting, standing and walking</td>
<td>work positions – sitting, standing and walking</td>
</tr>
<tr>
<td>Neck</td>
<td>- inclined, without freedom of movement</td>
<td>- inclined, without freedom of movement</td>
<td>- in an upright position and able to move freely</td>
</tr>
<tr>
<td>Back</td>
<td>- inclined, without freedom of movement</td>
<td>- inclined, without freedom of movement</td>
<td>- in an upright position and able to move freely</td>
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<td>- inadequate room for the legs</td>
<td>- inadequate room for the legs</td>
<td>- freedom of movement</td>
</tr>
</tbody>
</table>

*) Indicates pedalwork that is leg-controlled.
Model for assessment of lifting

The model for assessment of lifting found below is mainly focused on two main factors; the weight of the load and how far in front of the body the centre of gravity of the load is. Consequently, important factors like frequency, duration and height of lifts, the ability to grasp the load etc are missing in the model. If these and other factors are to be included in the analysis additional assessments have to be made. The model applies to both men and women.

Model for assessment of a symmetrical lift with two hands in a standing position under perfect conditions for lifting. The horizontal distance is the distance between the small of the back and the centre of gravity of the load at the time of lifting.

One of the conclusions drawn from this model is that it is generally unsuitable to handle loads heavier than 25 kg.
Important influencing factors

Among the many factors that should be taken into account when assessing risks, particularly if the first assessment indicates a yellow area, the following are the most important. The more "aggravating" factors that are found, the lower the recommended maximum weight in comparison with the conditions for lifting.

In the task:

- if the work is done over a long time period, often, under pressure of time, if the handling is machine-controlled or similar, or if you are unable to independently decide when it is time to take a break,
- if the handling has to be done with an inclined or twisted torso or, even worse, with the torso simultaneously inclined and twisted,
- if the object is carried for long distances,
- if the handling has to be done with precision.

With the object:

- if the object is hard to grip or if it cannot be handled close to the body; if it is large, unwieldy, hot, cold, sharp, wet, lacking any natural or specially designed handles etc.,
- if the object is fragile, unstable or if the contents move or can be displaced; e.g. containers of liquids, sacks of potatoes.

At the workplace;

- if there is insufficient space so that the worker is prevented from lifting with a correct posture; too narrow, too close to the ceiling etc.,
- if there are obstacles in the form of difference in level, e.g. stairs and thresholds, or if there is a mess,
- if the floor is slippery, uneven, sloping or unstable,
- if there are unsatisfactory climatic conditions.

Concerning the person doing the lifting:

- if the person has unsatisfactory physical qualifications, e.g. regarding muscular strength, condition or bodily control,
- if the person is not proficient in careful work techniques,
- if the person is wearing unsuitable clothes or shoes.
**Strain ergonomics working at cash tills**

The word ergonomics means knowledge of work and relates to the interaction between people and the physical, psychological and social work environment. It is important that there are opportunities to influence the technical and organizational design of work on the basis of people's needs and abilities.

**Sustainable work at cash tills**

Earlier studies have indicated that work at cash tills is associated with high levels of problems in the neck and upper extremities. Despite new alternatives to this work being introduced in commercial enterprises, the ordinary cash till will remain in use for many years in the future. New requirements for the handling of cash, credit cards and other services involve new physical and cognitive requirements for cash till work. For these reasons it is essential that work at cash tills is carried out in the best possible ergonomic way.

The concept of "work style" is used to describe how psychological and ergonomic factors interact in the occurrence, development or maintenance of strain injuries. Through influencing the work style via suitable work organizations, the physical design of cash tills and training in working techniques and attitudes towards work at cash tills, it should be possible to reduce the risks of strain injuries.

**Planning**

Work at cash tills can be made easier by the employer organizing work in a shop in the right way. Work at cash tills needs to be for short shifts to avoid strain injuries. This refers to the total time spent working at a cash till as well as the length of separate shifts.

After working at a cash till you need a break for rest, or other varied tasks. It is important that you have the opportunity to switch between standing, sitting and walking during the day. Those who work at cash tills often experience stress.

Stress contributes to strain problems and the employer must work to reduce stress factors. Such factors include time pressure, monotonous and repetitive work, lack of influence and control of the working situation, and being physically restricted to the place of work. Make a risk assessment of the factors that may contribute to strain problems.

One way of organizing work may be that everybody who works in the shop has their own area of responsibility, such as being in charge of sweets or other goods. When employees switch between working at cash tills and other tasks, the risk of strain problems is reduced.

**Stress**

Working on a cash till can periodically involve high stress levels. Stress can contribute to strain problems, so the employer needs to work towards reducing stress factors that exist. Such factors include time pressure, monotonous and repetitive work, lack of influence and control of the working situation, and being physically restricted to the place of work.
Let the customers help you
Let your customers do some of the work at the cash till. If they put the goods with the bar code in the right direction, stand opposite the cash till when they pay and receive their receipt, you will not have to lift your arms and stretch unnecessarily. Put the change and the receipt on the cash tray and let the customer pick them up.

How many hours can monotonous, repetitive and restricted cash till work continue?
Normally, the maximum is four hours per working day. All types of work at cash tills may only be carried out for a maximum of seven hours during a working day. It is important that a shift at a cash till is not longer than two hours without a rest, break or other variation. Rests, breaks and other work between shifts on a cash till need to be scheduled and must be at least 20 minutes long. Only those who work a maximum of two days a week are permitted to have monotonous, repetitive and restricted work at a cash till for longer than four hours each working day.

Lift up your shoulders towards your ears, lower them slowly and press downwards with your hands.

Stretch your neck by pulling in your chin and feel the back of your neck being stretched.

Roll your shoulders upwards, backwards and downwards.

It is good to move now and then during your work at a cash till. Here are examples of some movements you can do. Illustration by Stina Söderholm.
When it is work at a cash till monotonous, repetitive and restricted?
Monotonous, repetitive work/repetitive work at cash tills arises when personnel at cash tills need to handle large flows of goods, i.e. when a large number of goods pass through a till in one steady stream. Large flows of goods mean that similar movements are repeated over and over again without any breaks for recovery. The only break is when the customer pays.

Restricted work at a cash till means that personnel on the till have little or no opportunity to influence factors such as the flow of work, the pace of work, the internal order of tasks, how and when work is carried out and times for breaks and recovery. Stress occurs during delays or disruptions in the flow.

Training is important
Your employer must ensure that if you work at a cash till you will receive training in order to make your work as easy as possible on your body. You must know how important it is to vary your position when working and to take short breaks so that your muscles can recover sufficiently. If new technology is introduced in the shop, you have the right to know exactly how it should be used so that you do not need to lift and stretch. Good working technique takes time to learn. Practice until you can work in a natural way.

Models for assessing work areas
The outer work area for your hands in the horizontal plane is limited by the range of your arms, while the main part of work with your hands should be within the inner work area. The longer the tasks take and the more precision they require, the more important it is that work is carried out with completely relaxed arms and shoulders close to the body, i.e. centrally in the inner work area, see figure below (AFS 2012:2 on ergonomics for the prevention of musculoskeletal disorders).
Computer work

Problems associated with computer work
Nearly 70% of all professionals use computers and between 15–20% use a computer for most of the working day. Computer work can cause both temporary pain and permanent injuries. Pain in the neck, shoulders and arms is common. Psychological stress and stress-related problems can arise. Computer work is tiring for the eyes and can lead to problems in the form of dryness, sensitivity to light, and headaches.

How to avoid strain disorders from computer work
The keywords are variation and recovery. No matter how well designed computer workplaces are, there will be risks of disorders and problems if you work long shifts without a break. Making frequent breaks from computer work for other tasks or other activities is vital, and provides time for physical and mental variation and recovery. It is also important to organise the workplace and work thoroughly.

Think of the following when doing computer work:

- Equipment design, location and use: monitor, keyboard, mouse, desk and chair.
- The design and location of the workplace: lighting, windows, ventilation, noise, acoustics and other factors.
- Organisation and variation of work, both physically and mentally. Limit working hours at the computer, and give yourself the chance to manage and plan your work. Add breaks for mental and physical recovery.
- The functionality of the computer system and software, i.e. its design and function being well adapted to the user, the tasks and activities.
- Awareness of the above items. Both the employer and the employee need to know these factors.

Regulations
AFS 1994:48 Machines and certain other technical devices. Monitors are covered by these regulations when they are part of the control system of a machine.
AFS 1998:4 The use of work equipment
AFS 1998:5 Working at a monitor

There are also a number of standards from an ergonomic perspective.
This tab is for the work environment agreement that applies between the Swedish Shipowners’ Employer Association as the one party, and the Swedish Ship Officers’ Association, the Merchant Marine Officers’ Association, SEKO seafarers and Unionen as the other parties.

The agreement was made in 1995 and has not been revised since then.

This means that the agreement, although formally applicable, in practice has been replaced to a large extent by legislation and other legal texts in the area of the work environment, which have been treated in other tabs in this file.

For this reason, SAN recommends that users of this file search for information and guidance under the tabs 1–9 in the first instance.

The Work Environment Agreement was written in September 1995 and will be revised during the wage negotiations in 2016.
Arbetsmiljöavtal

upprättat vid förhandlingar mellan Sveriges Redareförening (SRF), Sveriges Fartygsbefälsförening (SFBF), Svenska Maskinbefälsförbundet (SMBF), Svenska Sjöfolksförbundet (SSF) och Tjänstemannaförbundet HTF (HTF) angående antagande av arbetsmiljöavtal.

Närvarande

För SRF: Håkan Gezelius
För SFBF: Thomas Sjöstedt
För SMBF: Hans Holmquist
För SSF: Göran Hansson
För HTF: Hans Bennedicks

INLEDNING
Parterna är överens om att arbetsområden upptagna i det mellan parterna upprätta branschprogrammet skall prioriteras.

Arbetsmiljöstyrning
Systematiskt arbetsmiljöarbete krävs för att nå helhetslösningar inom arbetsmiljön i kombination med hög kvalitet samt rationell och lönsam verksamhet. Därvid skall särskild vikt fästas vid kraven i t.ex. ISM-koden, internkontrollbestämmelserna ISO 9000 och andra för branschen relevanta kvalitetssäkringssystem.

Arbetsorganisation och arbetsinnehåll
En god arbetsmiljö som erbjuder personlig utveckling, ökat ansvar och stimulans är betydelsefull för att främja utvecklingen i rederierna.

Projekt alternativt försöksverksamhet kan vara en lämplig form för samarbete i syfte att minska t.ex. belastningsskador och andra typer av arbetsskador.

Ledarskapsutveckling
På alla nivåer ombord och iland ges chefer de kunskaper, befogenheter och res-surser, som erfordras för att fullgöra arbetsgivarens skyldigheter vad avser arbetsmiljöfrågor i vid mening.

Rehabilitering
Rederiernas arbete med aktiv rehabilitering förutsätts ske i en väl planerad och organiserad form.

§1 Arbetsmiljöavtal
Utöver vad som föreskrivs i lag och författning antar parterna med giltighet fr.o.m. den 1 september 1995 följande arbetsmiljöavtal. Med detta avtal vill parterna ge uttryck för en gemensam målsättning om en god arbetsmiljö.
Arbetsgivaren bär huvudsansvaret för arbetsmiljöarbetet. De anställda och deras skyddsombud utgör en viktig resurs i arbetsmiljöarbetet.

Företagets främsta uppgift är att bedriva en effektiv, konkurrenskraftig och lönsam verksamhet. Arbetsmiljö och arbetsorganisation är därvid en naturlig del eftersom sundra och säkra arbetsplatser skapar bättre arbetsförhållanden för de anställda och minskar frånvaron med ökad produktivitet och förbättrad kvalitet som följd.

Arbetsmiljöfrågorna skall hanteras i linjearrangeationen av ansvariga chefer i samverkan med berörda anställda. Samverkansformer utformas så att de väl anpassas till den verksamhet som bedrivs.


§2 Riktlinjer för det lokala arbetsmiljöarbetet

Företag och anställda skall samverka för att uppnå en tillfredsställande arbetsmiljö och en väl fungerande företagshälsövård. Arbetsgivaren har huvudsansvaret för att nödvändiga åtgärder i syfte att uppnå detta mål vidtas och fullföljs.


Sjöfartens Arbetsmiljönämnd (SAN) kan användas som rådgivande organ i det lokala arbetet.

Anmärkning

§3 Företagshälsovård
Parterna är överens om att företagshälsovården utgör en värdefull resurs för företaget och dess anställda i arbetet med att utforma ändamålsenliga och säkra arbetsmiljöer. Företagshälsovården är också en viktig resurs i rehabiliteringsarbetet, som ”enligt gällande lagstiftning” skall ske i samverkan mellan arbetsgivaren, arbetstagaren och försäkringskassan.

Arbetsgivaren och de anställda ombord och i land skall samverka för att uppnå en väl fungerande företagshälsovård i rederiet.

Företagshälsovårdsavtalen omfattande såväl grund- som eventuella tilläggstjänster tecknas med företagshälsovårdscentral, som tillhandahåller erforderlig kompetens i enlighet med bilaga 1, punkt 4 till detta avtal.


Målsättningen skall vara att företagshälsovården utifrån ett helhetsperspektiv med beaktande av medicinska, tekniska och psykosociala aspekter främst skall syssla med förebyggande hälsovård, viss sjukvård och rehabiliteringsverksamhet.

I företagshälsovården anses roll ingå att medverka till att sunda och säkra arbetsförhållanden skapas inte minst i samband med större förändringar i företaget. Härvid är det av vikt att företagshälsovården ges möjlighet att medverka i ett tidigt skede. I anslutning till lokalt upphandling skall företagshälsovården i egenskap av expertresurser engageras och därvid ges tillfälle att yttra sig och komma med förslag.

I samband med större förändringar inom rederiet bör det vara värdefullt att utnyttja företagshälsovården.

§4 Utbildning
Företaget och berörd lokal facklig organisation beslutar i samverkan om lämplig utbildning för personal i arbetsledande ställningar, skyddsombud och ledamöter i skyddskommittéer eller motsvarande arbetsmiljöorgan samt för andra befattningsshavare med beslutsfunktioner som påverkar arbetsmiljöfrågorna. Utbildningen skall vara anpassad till sjöfartens förhållanden och den uppgift den anställde har inom arbetsmiljöområdet. För skyddsombud på fartyg genomförs sådan utbildning i SSFs regi. Övrig utbildning tillhandahålls av SAN eller annan utbildningsanordnare, t.ex. sjöbefälsskolorna, i den omfattning parterna bestämma. Företagshälsovården och arbetsmiljöområdet är kompetens och utbildningsresurser bör därför observeras.

Rätt till ledighet och ekonomisk ersättning regleras bl.a. i fartygssäkerhetslagen/arbetsmiljölagen, lagen om facklig förtroendeman och studieledighetslagen.

För utbildning används företrädesvis utbildningsmaterial som utarbetats av Arbetarskyddsnämnden eller annat material som parterna gemensamt har godkänt.
§5 Centralt arbete
Parterna är överens om att följa tillämpningen av detta avtal och utvecklingen av arbetsmiljöfrågorna inom sjöfartsbranschen.

Sjöfartens Arbetsmiljönämnd (SAN) har en rådgivande funktion vad avser övergripande policyfrågor och utbildning.

Det är ett gemensamt intresse att i samförstånd söka lösa uppkomna frågor.

§6 Förhandlingsordning
Tvisteförhandling och rättegång

Tvist om tillämpningen av fartygssäkerhetslagen och/eller arbetsmiljölagen med tillämpliga författningar eller annan säkerhetslagstiftning avgörs enligt för varje författning gällande hänvändelseordning.

Tvist om tolkning eller tillämpning av lokala överenskommelser baserade på detta avtal avgöres genom förhandlingar mellan berörda parter.

Kan tvisten inte lösas hänskjuts frågan till förhandling mellan berörda förbund (central förhandling). Begäran om central förhandling skall i förekommande fall framställas inom tre veckor från den lokala förhandlingens avslutande.

§7 Giltighetstid
Detta avtal gäller tills vidare med en ömsesidig uppsägningstid om tre månader.

Göteborg som ovan

SVERIGES REDAREFÖRENING
Håkan Gezelius

SVERIGES FARTYGSBEFÄLSFÖRENING
Thomas Sjöstedt

SVENSKA MASKINBEFÄLSFÖRBUNDET
Hans Holmquist

SVENSKA SJÖFOLKSFÖRBUNDET
Göran Hansson

TJÄNSTEMANNAFÖRBUNDET HTF
Hans Bennedicks
Bilaga 1

Allmänna råd för lokalt arbetsmiljöarbete

1 Utgångspunkter
Den lokala samverkan mellan arbetsgivare och arbetstagare skall bedrivas enligt riktlinjerna i gällande lagstiftning och detta arbetsmiljöavtal kompletterat med nedanstående allmänna råd.

2 Former för samverkan
Formerna för samarbetet mellan arbetsgivare och arbetstagare i arbetsmiljöfrågor utformas med hänsyn till rederiets storlek och det sätt på vilket verksamheten är organiserad. Integrerade beslut i rederiets linjearkiv organisation skall gälla. Berörda chefer skall ha för ändamålet erforderlig utbildning och delegation samt därmed åtföljande resurser och befogenheter.

3 Information och dokumentation, ISM-koden
Enligt Arbetarskyddsstyrelsens författning om internkontroll av arbetsmiljön skall nyanställda och anställda vilka varit frånvarande från arbetsplatsen en längre tid ges introduktion, instruktioner och övrig information som de behöver om verksamheten med särskilt beaktande av arbetsmiljöaspekterna. För sjöfarten tillämpas reglerna i ISM-koden. Det är viktigt att chefer och arbetsledare har goda kunskaper om arbetsmiljön i företaget. Den lokala arbetsmiljön skall dokumenteras skriftligt.

4 Företagshälsovård

Företagshälsovårdens målsättning
Företagshälsovården skall vara tekniskt, medicinskt och psykosocialt förebyggande samt rehabiliterande. Företagshälsovården skall inrättas på att skydda de anställda mot hälso- och skaderisker; främja deras hälsa och arbetsförmåga; bidra till trygghet och tillfredsställelse i arbetet samt medverka till att arbetet anpassas till deras arbetsförmåga.

Företagshälsovårdens kompetens/integritet
Företagshälsovården skall ha en rådgivande opartisk expertfunktion i det förebyggande arbetsmiljöarbetet och i rehabiliteringsarbetet. Företagshälsovården skall ha medicinsk, teknisk och psykosocial kompetens för detta arbete.

Företagshälsovårdens innehåll
• Medverka i det lokala skyddsarbetet.
• Medverka i anpassnings- och rehabiliteringsarbetet.
• Ge analyser och åtgärdsförslag vid arbetsolyckor, arbetssjukdomar, långtidsjukdomar m.fl.
• Ge råd och utbildning i psykosociala arbetsmiljöfrågor, arbetsledning, kommunikation, mobbing.
• Medverka i policy/utbilda/agera beträffande drogmissbruk, alkoholfrågor, tobak, friskvård.
• Medverka och utbilda beträffande tekniska arbetsmiljöfrågor: ventilation, värme, belysning, buller, kemteknik, nybyggnader, internkontrollprogram.
• Handlingsprogram för samverkansorganisationen.
• Samverka med skyddskomitéerna, Försäkringskassan, Sjöfartsverket, Yrkesinspektionen, sjukvården, yrkesmedicinska kliniker, arbetslivstjänster, miljö- och hälsoskyddsämnder och Sjöfartens Arbetsmiljönämnd (SAN).

Upphandling av företagshälsovård
Arbetsgivarens upphandling av företagshälsovård sker i samråd med berörda parter. Eventuell anbudsförfrågan skall formuleras i samråd med samverkansorganisationen. Inkomna anbud på företagshälsovård skall diskuteras i samråd mellan parterna, men slutligt beslut skall fattas av arbetsgivaren.

5 Information
Arbetsgivare och arbetstagare samverkar om hur informationsspridning skall tillgå. Informationen i arbetsmiljöanknutna frågor ut i företaget kan t.ex. omfatta följande:
• lagregler och föreskrifter på arbetsmiljöområdet,
• hälsorisker respektive olycksfallsrisker i företaget,
• det lokala arbetsmiljöarbetet i rederiet,
• företagshälsovården,
• introduktion av nyanställda.

6 Utbildning
Utbildning i arbetsmiljöfrågor ges anställda, som har funktioner som påverkar dessa frågor. Berörda anställda är:
• chefer och arbetsledare,
• skyddsombud, skyddskommittéledamöter m.fl.,
• övriga anställda med särskilda behov av att kunna tillämpa gällande lagstiftning t.ex. inköpare, inspektörer, byggansvariga, arkitekter, konstruktörer (motsvarande), konsulter etc.

Utbildningens innehåll skall bestämmas av tidigare given utbildning samt den arbetsmiljökompetens som i övrigt finns hos berörda anställda.
7 Hjälpmedel
Inom arbetsmiljöområdet finns en omfattande litteratur som kan ge många råd och tips för hur arbetsmiljöarbetet kan bedrivas. Vilket utbildningsmaterial som skall användas bestämmer arbetsgivare och arbetstagare lokalt. En rekommendation är dock att som utbildningsmaterial bl.a. använda det material som framtagits av:

- Sjöfartsverket, bl.a. dess författningar (SJÖFS).
- Sjöfartens Arbetsmiljönämnd (SAN).
- Arbetarskyddstyrelsen, bl.a. dess författningar (AFS).
- Arbetarskyddsämnden, t.ex. SAN-Nytt.
- Bättre arbetsmiljö land/sjö (BAM, BAM-Sjö).

8 Tidsåtgång av utbildning
Arbetsmiljöutbildning liksom all annan utbildning har som mål att ge kompetens. Det är därför svårt att ange tidsramar för utbildningens omfattning. Tidigare inhämtade kunskaper liksom arbetsmiljöförhållanden i rederiet är faktorer som kan påverka tidsåtgången.

Målsättningen bör vara att bibringa den enskilde en arbetsmiljökompetens som innebär att denne efter de behov befattningen kräver kan orientera sig i regelsystemet inom arbetsmiljöområdet samt ges en god inblick i det enskilda företagets arbetsmiljö.

9 Vem svarar för utbildningar?
Företaget kan själv anordna utbildningar. Sjöfartens Arbetsmiljönämnd liksom Sjöfartsverket och företagshälsovården kan medverka i utbildningsinsatserna. En plan för utbildningen bör upprättas och skriftligen dokumenteras.

Bilaga 2

Utdrag ur branschprogram för arbetsmiljön inom sjöfarten
I branschprogrammets avsnitt om ”Målsättning och ambitioner” för arbetsmiljöarbetet listades de områden som sjöarbetsmarknadens parter ansåg borde prioriteras. Många av dessa problemområden har tagits upp som ett resultat av tidigare undersökningar och forskningsprojekt som initierats av SAN. I anslutning till att parterna antog arbetsmiljöavtalet kom man också överens om att foga detta avsnitt som bilaga till avtalet.

Initiativ till genomförande av de i det följande angivna åtgärderna skall i första hand tas lokalt men kan också tas av SAN om sjöarbetsmarknadens parter begär det. Som framgår av arbetsmiljöavtalens kan SAN också bistå det enskilda rederiet med råd, utbildningsinsatser m.m.

**I Grundprinciper för att åstadkomma en bättre arbetsmiljö ombord och iland**

Även om åtskilligt återstår att göra vad gäller förbättringar av den fysiska arbetsmiljön på fartygen är det viktigt att också vidta åtgärder som syftar till att förbättra den psykosociala arbetsmiljön.

En förutsättning för att sådana insatser skall lyckas är att företagsledningen manifesterar sitt stöd och sitt engagemang för genomförande av de projekt som beslutats. Sker inte detta äventyras engagemanget hos övriga chefer och arbetsledningen i rederiet samtidigt som övriga anställda till följd av detta snabbt tappar intresset för att medverka. Investerade medel ger då endast begränsad återbäring om ens någon.

De säkerhetskraav som anges av myndigheterna är minimikrav. Målen för att förbättra arbetsmiljön bör sättas med utgångspunkt från hur den egna personalen uppfattar arbetet och sin miljö och att man söker åtgärda vad rederiledningen och de anställda anser vara problem.

Stora insatser kan göras för att utveckla ledarskapet i företagen och förbättra kunskaperna i personalledning hos chefer på alla nivåer i land och ombord. Hög sjukfrånvaro och hög personalomsättning kan i många fall relateras till en dålig arbetsledning. Alla åtgärder på detta område bör prioriteras men förutsättar också kunskaper om ekonomi i arbetsmiljöfrågor.

Andra målgrupper för olika former av riktad utbildning är exempelvis skyddsom- bud, fackliga förtroendemän respektive personal såväl iland som ombord som skall medverka i projektarbete.

En framgångsrik rederiverksamhet förutsätter en positiv symbios mellan rederiets administration iland och de fartyg rederiet opererar.

På arbetsplatserna iland har de strukturella förändringarna med t.ex. nya företagsformer och datorisering i många fall skapat nya arbetsförhållanden präglade av styrning och specialisering. Många tjänstemän tycker sig ha ett arbete som präglas av bundenhet och monotona arbetsuppgifter. En stor grupp arbetar med dator/bildskärm i någon form. Den nya tekniken har generellt i arbetslivet medfört en ökad frekvens av belastningsskador och överkänslighet/allergiproblem.
Många tjänstemän, särskilt personer i nyckelbefattningar, anser sig ha ett psykiskt belastande arbete. En vanlig orsak är att de åläggs fler och fler uppgifter utan att samtidigt få de resurser som krävs för att tillfredsställande kunna klara av uppdragen. En sådan situation leder många gånger till s.k. burn-out. Rollkonflikter, brister i arbetsorganisationen m.m. är ofta orsak till arbetsrelaterad frånvaro.

På många arbetsplatser såväl iland som ombord på t.ex. stora passagerarfartyg finns också behov av ett aktivt arbete för jämställdhet mellan män och kvinnor.

2 Utveckling av arbetsorganisationen ombord och iland

Kostnaderna för att driva sjöfart under svensk flagg har under de senaste 15 åren varit i ständig stigande. För att minska besättningskostnaderna har i synnerhet lastfartygsrederierna vidtagit olika rationaliseringsåtgärder. Denna utveckling har å andra sidan medfört en utjämning av den traditionella gränsen mellan befäl och övrig personal. Vidare pågår sedan många år en aktiv strävan att föra tillbaka uppgifter från stabsfunktioner till linjefunktioner.


3 Utveckling av den fysiska arbetsmiljön

Projekt som syftar till att förbättra den fysiska arbetsmiljön inom följande områden bör prioriteras:
**Däckstjänst:**
- Framtagning av från arbetsmiljösynpunkt säkrare lasthantering med särskild tonvikt på tanklaster och farligt gods i bulk.
- Åtgärder som syftar till minskning eller minimering av avgaser från fordon som transporteras på Ro/Ro-fartyg och färjor.
- Framtagning av omställbara radarskärmar som är synergonomiskt bättre än de som nu finns.
- Bättre arrangemang avseende belysning på bryggan.
- Uppbyggnad av referensarbetsplats i form av lastkontrollrum för tankfartyg och anläggning för simulering av lasthantering för utveckling av säkrare arbetsplatser på sådana fartyg.
- Framtagning av referensarbetsplats i form av en ergonomiskt väl planerad och utrustad brygga.
- Framtagning av referensarbetsplats med säkrare och mera lätthanterliga däcksarrangemang för t.ex. förtöjning, ombordtagning av förråd, utrustning för tankrengöring respektive lastsurringar.

**Maskinrumstjänst:**
- Åtgärder för att åstadkomma bättre ventilation i verkstäder, separatorrum etc.
- Åtgärder för att bättre kunna arrangera tillfällig belysning och arbetsplattformar vid arbete inuti huvudmaskiner.
- Framtagande av metoder för att minska exponering och direkttakt med bunkeroljor, hydrauloljor, smörjoljor och andra slag av petroleumprodukter och kemikalier.
- Utveckling av maskinell utrustning med syfte att minimera behovet av manuella arbeten vid rengöring av maskindelar etc.
- Utveckling av referensarbetsplats med bättre total maskinrumslayout med goda transportvägar, god framkomlighet, bättre åtkomlighet för underhåll och reparationer så att arbeten i onaturliga arbetsställningar kan undvikas och utrustad med lämpliga lyft hjälpmedel.
- Framtagning av referensarbetsplats i form av ett ergonomiskt väl planerat och utrustat kontrollrum.

**Intendenturtjänst:**
- Översyn av köksutrymmena för att pröva möjligheterna att integrera grovdisken med det löpande matlagningsarbetet. Utveckla samarbete mellan matsalspersonal och kökspersonal vad avser disken.
- Utveckling mot bättre ergonomiska lösningar och minskade olycksfallsrisker vad gäller spisar, bänkar, tunga köksredskap, skärmaskiner etc.
- Framtagning av ergonomiskt bättre arbetsplatser för snabbköpskassörskor och åtgärder för att bättre organisera arbetet i snabbköpskassor.
• Bättre kassaregistersystem typ fickdator med vars hjälp serveringspersonalen redan vid gästens bord kan knappa in beställningar och information till kök, kassaregister och spritkassa, ett system som minskar serveringspersonalens gående.

• Bättre metoder för bäddning av kojer.

• Pröva möjligheterna att på ett bättre sätt än nu påverka, utveckla och förändra arbetsmiljön med särskild inriktning på arbetsmetoder och arbetsorganisation för, i första hand, städpersonal, diskare respektive köksmän inom färjetrafikkens kortlinjer.

• Framtagning av bättre städutrustning samt bättre organisation av städuppläggnings utrustning med hänsynstagande till behovet av lämpliga utrymmen för utplaceringsstädutrustning.

• Uppbyggnad av referensarbetsplats för kök och kallskänk på färjor respektive på lastfartyg.

Åtgärder av gemensamt intresse för alla avdelningar ombord:

• Bättre personlig skyddsutrustning som uppfattas som bekväm och lätt att använda.

• Olika former av bullerdämpande insatser.

• Åtgärder som syftar till att begränsa de ombordanställdas utsatthet för kemiska hälsohoter.

• Framtagning av bättre internkommunikationsutrustning som kan användas även i maskinutrymmen.

• Informations- och utbildningsinsatser typ interaktiva utbildningsprogram i arbetsmiljöfrågor till de ombordanställda.

• Åtgärder för att utveckla och förbättra boende och fritidsmiljön på fartyg mot bakgrund av att långa vistelsetider ombord.

Åtgärder av gemensamt intresse för personal ombord och iland:

• Förbättring av ventilationsanläggningar för att åstadkomma ett gott termiskt klimat ombord och minimering av luftforurenningar.

• Översyn av arbetsplatser med syfte att förhindra eller minimera uppkomsten av belastningsskador.

• Åtgärder med syfte att minska förekomsten av allergier.

• Utveckling av rutiner för bättre introduktion av t.ex. nyanställda, omplacerade och långtidssjukskrivna.

• Åtgärder för att främja jämställdhet mellan kvinnor och män.

• Framtagning av datorprogram för beräkning av sjukfrånvarostatistik, personalomsättning etc.

• Åtgärder för att komma tillräcke med problem som följer av övervikt, brist på motion, felaktiga kostvanor, rökning, missbruk av alkohol, stress och oregelbundna arbetstider.
4 Rehabilitering
De åtgärder vi föreslagit i det föregående avses också leda till en ökad insikt hos såväl rederiledning som anställda om vikten av att genom rehabiliteringsåtgärder, som sätts in på ett så tidigt stadium som möjligt efter en sjukskriven t.ex. efter en arbetsoolycka, få tillbaka en anställd i arbete utan onödig tidsfördröjning.

De praktiska förutsättningarna för att sätta in rehabiliteringsinsatser ombord på fartyg är som regel mycket begränsade. Det beror bl.a. på fartygens driftförhållanden och de därmed sammanhängande säkerhetskraven, hyttkapacitet, avlösningssystem och därav följande svårigheter att ordna deltidsarbete.

Detta utesluter emellertid inte att andra rehabiliteringsåtgärder kan vidtas för att få tillbaka en anställd i arbetslivet genom nära samverkan mellan den anställda, representanter för arbetsgivare och arbetstagare, företagshälsovård (där sådan finns) och berörda myndigheter som försäkringskassa och arbetsförmedling. Rederiets samverkansorgan för arbetsmiljö- och företagshälsovårdsfrågor bör inrätta en anpassningsgrupp med uppgift att hantera dessa frågor.

5 Summering
Sammanfattningsvis bör förslagen angående utveckling av arbetsorganisationen ombord och i land syfta till att:

• öka de anställdas engagemang i arbetet och förståelsen för helheten i företagets verksamhet och för ekonomi i arbetsmiljön,
• minska personalomsättningen genom att bredda och utveckla arbetsuppgifterna för olika befattningar och öka de anställdas möjligheter att påverka sin egen arbets situation,
• öka kunskaperna om personalfrågor så att dessa hanteras rätt på alla nivåer i företaget.

De föreslagna åtgärderna beträffande utveckling av den fysiska arbetsmiljön för leda till:

• minskat antal arbetsoolycker,
• färre arbetsskador,
• minskat antal sjukkrivningar.

Målet med rehabiliteringsverksamheten skall vara att:

• rutinmässigt omgående etablera kontakt med sjukskriven personal och därefter fortlöpande uppehålla denna kontakt med målsättningen att snarast, med eller utan rehabiliteringsinsatser åstadkomma en snabb återgång i arbete.
• engagera den anställda till en aktiv medverkan i rehabiliteringsarbetet, sträva efter att öka den enskildes självkänsla och därmed öka tilltrons till den egna förmågan att komma tillbaka i arbetslivet.
Information about sanction charges

The following information is for you as an employer, and provides an outline of sanction charges, what may happen if you do not comply with the Swedish Work Environment Authority’s provisions, and what will happen if you become liable to pay a sanction charge.

You are responsible for the work environment at the workplace
The Swedish Work Environment Authority’s provisions are binding regulations that describe the requirements which need to be met by the work environment. The provisions supplement the Work Environment Act, which contains fundamental regulations regarding how to avoid accidents, illness and ill health in a workplace.

According to the Work Environment Act, it is your responsibility as an employer to ensure that everyone in your workplace complies with the provisions. If you do not comply with all regulations, the Swedish Work Environment Authority may make a claim against you as an employer, and you may, in certain cases, be forced to pay a sanction charge.

New in 2014: Sanction charges instead of fines
Several regulations in our provisions were previously associated with penalties. This meant that one could be sentenced to pay a fine if these regulations were contravened.

A government report has established that fines are not the most effective way to ensure that regulations concerning the work environment are followed. The Riksdag (the Swedish Parliament) therefore decided to make an amendment to the law and as of 1 July 2014, more regulations are associated with a sanction charge.

What is the purpose of sanction charges?
The purpose of sanction charges is to decrease the number of contraventions to our regulations, in order to improve the work environment in Sweden’s workplaces.

Sanction charges and fines – what is the difference?
A sanction charge is a charge, while a fine is a penalty one is sentenced to in a court of law.

Violation of a regulation penalized by a fine is considered to be a criminal act. That type of work environment infringement is therefore handled by the police and, in turn, handled by a prosecutor and a court of law.

Sanction charges – for which regulations?
You may be liable to pay a sanction charge if you do not comply with some of the regulations in our provisions. Please see our website for more information about which regulations are concerned.

Inspectors check that regulations are complied with
One of the Swedish Work Environment Authority’s tasks is to make sure that businesses and organisations comply with the Work Environment Act and the regulations contained therein. This oversight occurs during inspections. One or more inspectors check if there are any risks in the work environment and investigate how you as an employer manage work environment issues.

During the inspection, you will be informed of the conclusions the inspectors have drawn about the work environment and which deficiencies need to be addressed. If one of the deficiencies is that you have not complied with a regulation associated with a sanction charge, the inspector will report this to the Swedish Work Environment Authority. The matter is then investigated internally.

A decision is made after the inspection
If it is determined that you must pay a sanction charge, we will send you a charge injunction. You must approve it before a certain date. The statement will indicate the amount of the charge. After your approval, the matter is forwarded to the County Administrative Board, and the charge will be paid to them. In other words, you will not know during the inspection if you will be subject to a sanction charge.
Who can be liable to pay a sanction charge?
It is the employer who can be liable to pay a sanction charge. It can be companies, organisations, municipalities, county councils or the government.

How is the amount of the sanction charged determined?
The amount of the sanction charge varies. Most sanction charges are differential, meaning that large companies pay more than small companies.

How is the sanction charge determined?
The charged of the sanction is calculated based on the number of employees in the business or organisation. Both regular employees and temporary workers are included in this calculation, regardless of whether they work full-time or part-time.
We count all employees belonging to the same organisation registration number – not just those who work at the inspected workplace. Employers with 500 or more employees pay the maximum charge regardless of how many employees they have in total.

You have the right to have your case tried in a court of law
Although it is the Swedish Work Environment Authority that determines whether or not you must pay a sanction charge, you have the right to have your case tried in the Administrative Court. If the Administrative Court rules that the sanction charge must be paid, you may appeal the decision to the Administrative Court of Appeal. The Administrative Court of Appeal determines whether or not you will be granted an appeal.
Read more about sanction charges on our website, www.av.se/lagochratt/sanktionsavgifter
- How to prepare for an inspection.
- Examples of case progression.
- Special regulations for manufacturers/importers of equipment and property developers.

Do you have any questions?
You can reach our Customer service Monday-Friday, between 8:00 and 16:30, at +46 10-730 90 00.

To e-mail the answering service, please use the web form found at www.av.se/omoss/kontakt.
Changes

2008-01 Issues of edition 2:1

2009-04 Copyright page
1:4 Contents
1:18-19 Changes primarily due to Swedish Maritime Administration being replaced by Swedish Transport Agency as authority
1:21-23
1:26-28
1:48
1:53
1:61
1:9-11 New text on ILO
1:12-13 Facts on the Swedish Transport Agency
1:29-37 New text on the Discrimination Act, which replaces the Equality Act and other discrimination laws
1:44 Swedish Civil Contingencies Agency (MSB) replaces Swedish Rescue Services Agency
1:63-64 New text on work in confined spaces
1:64-65 New text on cargo securing
8:3 Updated text under "More to read"
8:5-7 Checklist A, new column text

1:15 Text added under heading Documentation
1:22 New regulation TSFS 2009:52 Marine equipment
1:25 Text added under heading Pregnant and nursing employees
1:45 New text, fact box on safety data sheets
1:61 New regulations TSFS 2009:97 and TSFS 2009:98 on fire prevention, fire detection and fire extinguishing
5:10 New text under heading General instructions
5:11 New text under heading Equipment
5:13, 6:1 New text under heading Equipment
7:7 New manual on Synthetic inorganic fibres
7:9 Heading Isocynates changed to Thermosetting plastics
8:2 Items 2, 5 and 7 corrected
8:3 Items 1 and 5 corrected
10:7 New text

2011-01 1:10 Addition regarding MLC coming into force.
1:13 In TSFS 2009:119, the regulations are listed from...
1:27 Items 6, 15 and 16 corrected.
1:45 New text about safety data sheets, new symbols.
1:64  New text about solitary work.
1:66  New regulation TSFS 2010:174 Transport of cargo on ships and terminals used by ships that load or unload solid bulk cargo.
2:4   New first item under Planning work.
2:10  New first item under Planning work.
5:6   New first item under Planning work.
5:8   New first item under Planning work.
5:9   Changes to text under Risks of accidents and injuries and A good work environment requires.
7:3   New first item under A good work environment requires.
9:7-9:9 New text on work at cash tills.

2012-04  AFS 2004:4 has been replaced by AFS 2011:19 Chemical work environment risks on pages 1:41, 1:44, 1:64, 8:3.
AFS 2005:17 has been replaced by AFS 2011:18 Hygienic limits on pages 1:41–42, 1:64, 8:2.
Copyright page.
1:4   Contents.
1:10  New text first paragraph.
1:12–13, 24 Changed from seamen to engine seafarers.
1:33  New web address.
1:46  New text about limits.
1:52  New text about whole body vibration.
1:61  New text about sea safety drills.
1:63  New text about electromagnetic fields.
1:64–67 Re-pagination.
2:12  New item under joint instructions.
4:9–10 New text on black water.
4:17–18 New text connecting of shore-based electricity.
7:9–10 New text.
8:3   New web address.
9:9   New picture.
9:10  New text on computer work.

TSFS 2010:20 has been replaced by TSFS 2011:116 on pages 1:13, 1:25 and 1:61.
SFS 2007:237 has been replaced by SFS 2011:1533 on pages 1:13 and 1:34.
SJÖFS 2005:7 has been replaced by TSFS 2012:67 on page 3:2.
"Safety officer" has been replaced with "safety representative".

Copyright page.
1:4   Contents.
1:910 New text on international regulations.
1:23  New text and image on SAN News.
1:38  New image text for top image.
1:40  New text on ergonomics for the prevention of musculoskeletal disorders.
1:45  Text removed on isocyanates.
1:59  Text removed on hearing damage.
1:64  New text on confined spaces.
1:67  New text on thermal climate.
2:13  New sheet on tanker deck.
9:1  New sub-heading.
9:5  New image.

2014-03  The ordering goods information sheets have been removed from pages

1:3  New text about tabs 9 and 11.
1:4  Contents.
1:6  New text and picture about mooring work.
1:9-10 New text about the conventions.
1:13 SJÖFS 2006:33 has been removed.
1:25 New text about risk assessment of the work environment.
1:28 Text about pregnant and nursing employees has been moved.
1:33 New text under the heading provocations, threats and violence. New heading about first aid and crisis support.
1:34 New text after the item on New orientation.
1:53 New regulation TSFS 2013:68.
1:67 Addition that TSFS 2010:174 has been changed.
2:9 New item under the heading A good work environment requires.
6:4 Items three and four and the picture removed.
8:2 Text about systems maintenance removed.

2015-02  Copyright page.
1:4 Contents page.
1:10 EC regulation 336/2006 replaces TSFS 2009:119
1:11 Changes to text on safety officers.
1:12 New text on the Transport Agency.
1:19 Text removed on safety officer.
1:26 New heading and text on accidents and incidents.
1:36 Adjustment of link.
1:44 Text removed on symbols.
1:45 Old hazard symbols removed.
1:53–55 Text on thermal climate moved.
1:57 New images.
1:61 New image.
1:64 AFS 1986:26 has been removed.
1:66 New last paragraph under the heading lashing.
11:1–2 New information sheets on sanction charges.
The words “product information label”, "safety label" and/or "product information sheet" have been replaced by "safety data sheet" on pages 1:22, 4:8, 4:12, 4:16 and 6:12. The word "harbour" has been replaced by "port" on pages 1:13, 1:16, 1:21, 1:36, 1:66, 1:67 and 6:7. AFS 2011:18 has been replaced by AFS 2015:7 on pages 1:41, 1:42 and 1:65. AFS 2011:19 has been replaced by AFS 2014:43 on pages 1:41, 1:44 and 1:65. "Vest with reflective markings" has been replaced by "Personnel performing tasks on the car deck, or who spend time on the car deck, must wear high-visibility clothes on their upper body that are approved in EN 471, Class 3, including high-visibility trousers with ankle reflectors, class 2 minimum" on pages 2:1, 2:3, 2:5 and 2:7.

1:13 New sentence under Supervision by authorities. "Law on resting time for seafarers" has been replaced by "Act on Rest periods for Seafarers".
1:22 New text on Work Environment Agreement.
1:26 New text, last two paragraphs.
1:28 Addition on individual risk assessment in the first paragraph.
1:29 Swedish Maritime Administration underlined Minors.
1:29 New text under Discrimination.
1:30 AFS 1980:14 and AFS 1993:17 have been replaced by AFS 2015:4.
1:33 New link to the Work Environment Authority theme page.
1:48 Swedish Maritime Administration deleted from last paragraph before Laws and provisions.
1:60 New text under Work clothes/Deck.
1:61 Sentence deleted.
1:63 Link to Work Environment Authority theme page removed under Electromagnetic fields.
2:12 New link to Swedish Transport Agency website.
5:5 Addition under Personal safety equipment.
5:11 Addition under Personal safety equipment.
5:11 Addition under "A limit to the noise.."
6:1 "Discomfort due to tobacco smoke" removed.
7:5 Swedish Maritime Administration deleted from rules on asbestos work.
7:10 AFS 2005:18 has been replaced by 2014:43.
8:3 Two lines removed from "More to read".
9:1 "Directive" has been replaced by "provision".
9:10 "Further reading” paragraph removed.
10:0 (continuation of tab 10) Last sentence added.
This study material consists of two parts. The first one, Better work environment at Sea, gives some basic facts regarding the working environment and describes how working with the working environment on board shall be done, the demands made by laws and other regulations etc. The second part consists of working environment manuals. There are manuals concerning most tasks on board and they describe the various dangers and what is needed in order to conduct the work as safely as possible. The working environment manuals can be used in several ways. They may be copied and distributed among the personnel concerned. Foremen and safety representatives can use the manuals when instructing the personnel and also as a type of checklist when investigating the working environment.