

**TRAINING MATERIAL**

Learning Unit 3

ERGONOMICS AND LABOR SAFETY

UPWOOD

*Up-skilling construction workers in wood construction methods for energy-efficient buildings*

UPWOOD-PUU

*Rakennustyöläisten ammattitaito energiatehokkaiden rakennusten puurakentamisenmenetelmissä*

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# Introduction

Occupational safety obligations in the construction industry are defined by law and regulations.

In the European Union, occupational safety is regulated by a directive. The directive is part of national law and an act adopted under the Treaty on European Union is binding in its entirety.

An EU Member State may have national laws on occupational safety, which must therefore be in line with the EU directive. For example, Finland’s Occupational Safety Act 738/2002.

A Member State may issue regulations of the President of the Republic or the Council of State. For example, Finland’s government decree on the safety of construction work 205/2009.

In addition, a Member State may take a decision specifying a law or regulation. For example, Finland’s government decision on the selection and use of personal protective equipment at work 1407/1993.

# Labor safety

The construction sector is challenging from the point of view of occupational safety, as it differs from other sectors in its dynamism and mobility. The changing conditions, the turnover of workplaces, and the simultaneous operation of several contractors on a joint site pose challenges to ensuring occupational safety, as well as the health problems caused by chemical exposures in renovation construction. In addition to the risk of accidents at work, construction work involves exposure to i.e. noise, dust, variations in temperature, and weather conditions. The employer, therefore, has to constantly monitor that employees follow the instructions given and address any emerging safety risks immediately.

In addition to occupational safety, the employee must take into account that the work does not pose a danger to other employees on the construction site, follow the employer's instructions on occupational safety, and always use personal protective equipment in accordance with the regulations at the common construction site. He must maintain cleanliness and order and point out any safety deficiencies or dangers which he observes and must not remove the protective devices from the machinery or equipment.

Special care is taken when working in places where there is a risk of falling. Ensure that the ladders, workbenches and scaffolding, and harnesses used are in good condition and accordance with the regulations. Machines, tools, and work aids are used and maintained by the operating instructions and the instructions received in the work instruction.

# Ergonomics

The goal of ergonomics is to develop the way work is done in such a way that it is as suitable as possible for each person in terms of the number of repetitions and strength needs and that the work position and work environment would support work performance. A good work result is created in such a way that the employee's resources and ability to work and function are maintained for as long as possible throughout the life cycle.

The power requirement of the work can be regulated by utilizing ergonomics. The required urgency, use of force, or pace of work can be determined according to the performance of the employee.

To increase ergonomics, technical aids such as machines and equipment can be used at work. The work environment and tools are dimensioned so that the person's own power generation and trajectories are optimal. Work breaks, and breaks, are ergonomic ways to organize work.

Usability seeks ease of use for the widest possible user base. The user experience is central when looking for the usability of services, tools, machines, and equipment used at work.

Accessibility considers the needs of all user groups in the design of technology, facilities, and operations. Accessibility increases the equality of users and at the same time expands the user base of products and systems.

# Well-being at work

Occupational well-being is directed at the personnel, work environment, work community, work processes or management, and its implementation and development are the responsibility of both the employer and the employee. The promotion of well-being at work in the workplace takes place in co-operation between occupational health care, occupational health, and safety personnel and shop stewards, as well as managers, supervisors and, employees.

# Identification of risks

Risks are sought to identify, assess, and plan measures:

* Risks associated with doing the job
  + Purchases and transfers of materials and personnel
  + Scaffolding and support work
  + Installation of elements and molds
  + Demolition and excavation work
  + Electrical work
  + Fire work
  + Work on the road or track area
  + Asbestos work
  + Work near an industrial process line
* Risks due to working conditions
  + Dust, mold spores, bacteria, VOCs, and gases
  + Noise, vibration, heat, cold, and tonnage, as well as falls, falls, or slips
  + Lighting, glare, fog, or exhaust fumes
  + Exposures, toxins, gases, and solvents
* Risks related to the work environment
  + Internal and external traffic on the site
  + Use of machines and tools
  + Storage and handling of waste and hazardous substances
  + External actors (eg residents, curious, etc.)
  + Use of workspaces during work and moving machine parts
* Risks arising from work planning and management
  + Site schedule and timing of work phases
  + Contractual risks, financial risks, and price increases
  + Simultaneous work
  + Inconsistent management and quality degradation

# Perspectives for labor safety

## Construction site

On a construction site, the main contractor takes care of the general safety management of the site, and the main contractor has great powers in relation to subcontractors and subcontractors to ensure the common and public safety of the site. The main contractor directs the contractors' activities through site meetings, meetings, contracts, safety instructions, and work supervision, as well as normal means of managing the site, such as scheduling and coordinating work and work phases, organizing collaboration and information flow, and communicating workplace hazards.

## Zero Accident Vision

The goal of a company of any size or its employee cannot be anything other than Zero Accident Vision. Annoyingly, an employee still thinks that it is in the best interests of the entrepreneur or company if he or she takes risks while working where is a risk of an accident. The risk most often taken is related to a slight acceleration of work or non-use of protective equipment. Achieving the goal of zero accidents, therefore, requires that everyone who works and works on the common site commits to it. The goal is tough, but it is possible to achieve.

Investments in occupational safety are made through communication, occupational safety competitions, and general prioritization of occupational safety. Accident-free operations also require co-operation from construction and design, and zero accident vision must extend to all subcontractors and employees of every subcontractor. Three factors have played a major role in the development of occupational safety in the construction industry. The first factor is an attitude or a change in occupational safety culture, in which case employees take occupational safety seriously. Another factor is the increased use of personal protective equipment and other protective equipment and the improved ergonomics and quality of protective equipment. The third factor is the clear commitment of construction companies to the implementation of occupational safety, as it is now self-evident that occupational safety has an impact on both the company's economy and its reputation in the eyes of employees.

## 7.3 Safety observation

The construction site will focus on the implementation of quality and safe construction. A good way to identify unnecessary risk-taking, address bad routines, and prevent as many accidents as possible is to ask employees at the collaborative site to make observations of their work environment that are documented on either an electronic or paper basis. Observations related to the quality of construction include, for example, a material damage observation, which highlights deficiencies or disadvantages of protection related to the structure or building material.

The incident report addresses a potential accident hazard, such as uncleanness and disorder, hazardous work practices, or factors related to slipping and tipping over. Accident detection, therefore, prevents the accident from occurring in advance.

Both safety observations are a key part of quality construction and lay the foundation for success.

## Orientation

Orientation is a measure required by the Occupational Safety Act, documented with a signature when an employee arrives at a new job site. In the case of short-term employment of less than one week, it is appropriate to include in the orientation only the necessary employment issues, such as working hours, absences, breaks and facilities, and intensified job guidance, such as machinery, possible disturbances, and safety.

For the orientation to be successful and to be supported by the memory to be introduced, the employee is given a written document, an “orientation map” in which the items to be presented are compiled and signed by both the person to be introduced and the instructor. It is also good to present basic information about the company, its operations, and, for example, values in the document. In a short-term employment relationship, a working couple is assigned to instruct and give advice to existing staff when needed. Agreeing in advance will facilitate cooperation.

In an employment relationship of less than a month, it is good to add company information to the content of the orientation and to deal with the task more extensively in separate job guidance as part of the production package. For the first days of the employment relationship, a working couple is booked from among the company's personnel.

In a long-term and permanent employment relationship, the induction of a person must deal more broadly with the linking of the job to a production or service entity, so the company and customer information is also reviewed more thoroughly. The termination of a long-term employment relationship also entails introductory measures in addition to administrative measures. For example, informing other employees, or reorganizing tasks, and collecting feedback.

When orienting on-the-job learners and apprentices, it must be remembered that most things that seem obvious in a company may not be clear to everyone. The orientation must therefore be consistent, detailed, and documented in-depth. In particular, time must be spent on occupational safety and health and safety and at least an understanding of the basics must be ensured. Employees are informed about where the student is coming from, how long he or she is staying and what he or she is expected to attend in the workplace, and who the person in charge is.

## Job guidance

Job guidance is no longer an orientation but already focuses more on doing the work itself or doing the service. The job guidance introduces the production or service process as a whole, as well as the role and significance of the mentee in the process. The safe use of the necessary machines, equipment, materials, information systems, etc., the basics of operation, reporting, work shifts, and emergency operations are part of the basic content of the guidance.

To facilitate job guidance, a graphic description of the placement of the work task as the whole can be prepared, which makes it easier to form an overall picture and also gives a tool for the orientation. The description explains what the tasks and responsibilities of the job are, as well as a task analysis that instructs you on how to perform the work. Job counseling should be based on a written checklist or work instructions, based on which the counseling is carried out as an inclusive dialogue where possible.

## Protective equipment

The employer must assess the need for the employee's protective equipment. If the employer cannot eliminate the dangers of the work and the work cannot be performed safely, the employer must obtain it and supervise its use. It is the employee's responsibility to use the protective equipment provided to him or her by the employer.

Personal protective equipment prevents injuries, exposures, and illness in work where the health of the worker is endangered, such as radiation, noise, or a contagious disease.

The personal protective equipment used at work must comply with the requirements and be suitable for the worker using it and appropriate for the work in question, for example, protection class 3 is only suitable for the work of a traffic controller.

Separate regulations have been laid down for the use of protective equipment in shipping and construction work, and regulations related to protective equipment can also be agreed upon in collective agreements.

## Working with the harness

If technical protection cannot be implemented, a secondary alternative, personal protection, i.e. safety harnesses must be used. Full harnesses must be worn whenever the purpose of the fall arrester is to stop a worker from falling. Full harnesses include shoulder and thigh straps that together support the wearer's body, as well as a damper that absorbs the jerk caused by stopping the fall. The damper is attached to the attachment point with a connecting rope. Alternatively, the retractable gripper consists of a wire spool and a braking device built as a closed unit.

When working with a harness, it is always necessary to plan in advance how to rescue a person resting on the harness.

## Lifting aids

The condition and markings of the lifting aid must always be checked before use and if it is missing the SSK marking, it must not be used. Lifting accessories must be stored in such a way that they are not damaged or broken during storage and must be secured to the load at the planned lifting points or otherwise ensure safe lifting. A broken lifting aid must not be used.

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