# Developing Innovative and Attractive CVET programmes in industrial shoe production

## Train-the-Trainer Manual

## - Health and Safety Management

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# Content

# 1 Introduction

## 1.1 Aims of the DIA-CVET Project

The aims of the Erasmus+ project «Developing Innovative and Attractive CVET programmes in industrial shoe production» are

- to develop, pilot and implement comprehensive courses for the Spheres of Activity (SoA) of foremen in industrial shoe production on European level; available in English (EN) as well as in DE, RO and PT,
- and to develop a sector qualification framework level 5 and 6 and to reference existing or newly drafted national qualifications from Germany, Portugal and Romania.

## 1.2 Manuals to Guide Tutors and Trainers

The purpose of the manuals is to prepare designated trainers for their role and to provide content and support. Due to the nature of the SoA of foremen, they do not include specific forms of training; but we suggest a blended approach. Successful Continuous Vocational Education and Training (CVET) programmes combine theoretical lessons with application of the acquired Knowledge, Skills and Competences (KSC) in real work environments. The tasks of a trainer are to

- impart SoA-specific KSC,
- demonstrate operations which the learners are expected to learn to perform,
- introduce the learners to each new task and supervise them during their first approaches,
- organise and supervise blended activities (i. e. projects),
- guide them towards an independent performance of the tasks of the respective SoA.

The manuals are not meant to replace a textbook. They are meant to provide support to the trainers to plan and execute their teaching. The trainers are invited to gather more information from other sources.

## 1.3 Refer your training to the business process of industrial shoe production

Industrial production is a complex process, where the Sphere of Activity, described in this manual, is embedded in the business process. Before you start the training on a specific SoA, please make sure that the learners are familiar with the other SoA of industrial foremen in shoe production.

For example, the learners should be introduced to the types of products the company manufactures and their intended use, the different customer segments, the distribution channels etc. They should be aware of the product creation and manufacturing processes, i.e. product design, pattern making, purchasing department, production planning, and all production departments to warehouse and logistics.

The production process (not part of DIA-CVET, for insights see: http://icsas-project.eu/) is in the core of the business process; the SoA of DIA-CVET play a preparatory, supporting or accompanying role (see Fig. 1).

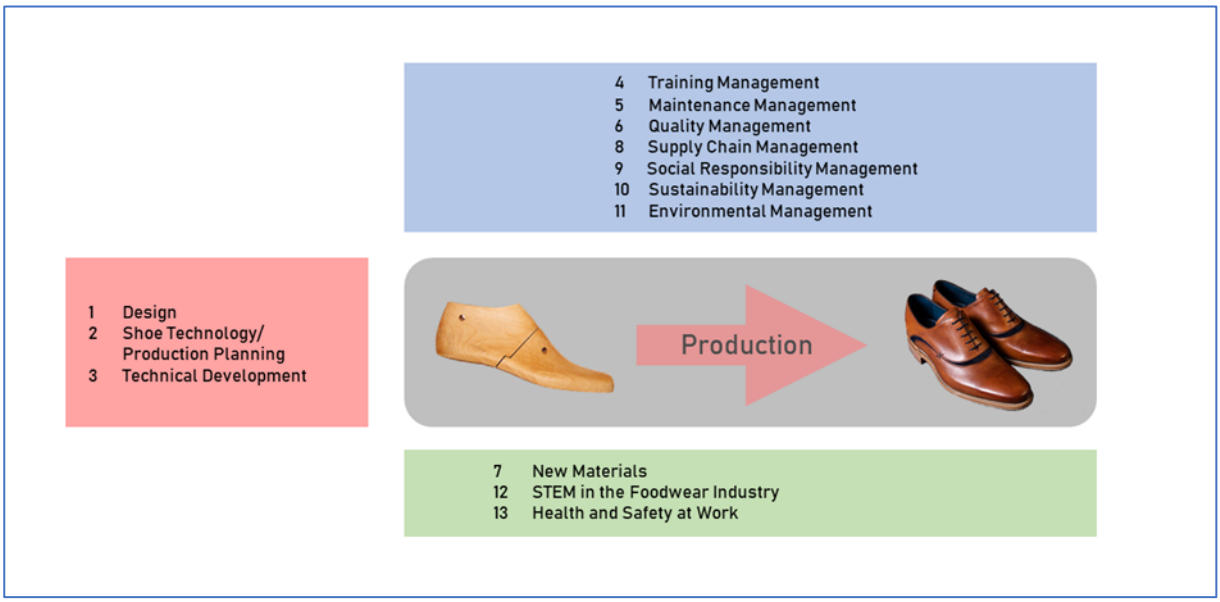



*Fig. 1 Spheres of Activity of DIA-CVET and their relation to the production process.*

# 2 Health and Safety Management

## 2.1 Introduction

Throughout time, safety has been a primary concern of Man. There is no lack of references in various ancient civilisations, from the Middle Ages to the present day, as the need to ensure minimum working conditions arose. The great impact on working conditions occurs at the end of the 18th century, with the industrial revolution, and the subsequent creation of the factory system, new production and labour relations, and the development of legislation on protection at work. Thus, safety began to be regarded as a matter of analysis in an economic system increasingly subjected to competition, with the use of workforce in factories. The development of safety is associated with the growth of technology and industrial production.

From the last quarter of the 19th century, legislation across Europe became significant with strong social content, enforcement mechanisms, as the state took on a regulatory role in labour relations.

Alongside this dimension, the scientification of work developed - the scientific organisation of work which comprises the study of the relationship between work and the worker, the approach to the interaction between task, machine and worker, as well as the study of ergonomics.

Since the mid-20th century, industrial and process automation, as well as the growing application of computerisation have forced a restructuring of the world of work. The working environment has undergone remarkable transformations, which have led to an increase in safety management models, policy instruments, planning and definition of responsibilities.

Actions to prevent occupational risks and promote health are now integrated in the business management philosophy, which allows for a broad intervention of prevention services and a focus on the need to valorise human factors and structuring actions for occupational safety.

Companies value the fact that Occupational Health and Safety (OHS) prevents injuries and illnesses of workers, resulting from their work, but it is also a key element of a company's success and for the direct impact on its reputation and its products or services.

The application of an OHS management system provides an effective framework to prevent or minimise accidents and health problems based on the fundamental principles of OHS:

- Commitment and leadership to improve OHS;
- Effective OHS policies and procedures;
- Proactive risk assessment programmes;
- Competent and skilled workers;
- Effective risk control measures;
- Continuous monitoring and evaluation processes.

Therefore, adopting an internationally recognised standard enables organisations of all dimensions, in any sector, to demonstrate health and safety concerns in their business practices, which also relate to compliance with OHS Legal Requirements. ISO 45001:2018 has been developed to support organisations as they implement or improve their OHS Management Systems.

## 2.2 OHS and Company Strategies

The company is characterised as a system whose purpose is the transformation of various elements to produce a good or provide a service, considering the parameters defined by the market.

The company operates in two dimensions.

- General context: the environment, culture, technology, social, political, legislative and economic aspects.
- Specific context: referring to the productive sector and markets in which it operates.

The organisation of the company is based on its fundamental strengths:

- **The strategic mission** – main reference for the whole organisation from which objectives and lines of force that the company intends to follow are defined. It must integrate concepts and practices for the internalisation of social responsibility for the improvement of working conditions.
- **Financial policy** should consider that good OHS standards are a good investment, in adopting loss reduction strategies, in integrating prevention into decisions on investment in new businesses, buildings, processes, etc. Marketing should also integrate OHS standards into product and service specifications.
- **Human resources management** should prioritise safety and health from the selection and integration of candidates to professional development, training, performance evaluation, among others, promoting a positive OHS culture.
- **The production policy and operating procedures** – Management instruments for coordinating people and structures, integrating strategic decisions which are decisive for OHS. The type of production process - defined in relation to the market and the dimensions of production, assumes great functional flexibility.
- **Production processes and technology – increasing technology, process automation and aspects to consider, such as type of** work, workforce, working conditions, ...
- Logistics plays a key role in the full adoption of procurement procedures for equipment and materials considering certification standards.
- **Information systems** should identify relevant data for prevention and enhance appropriate indicators.
- **Maintenance of equipment** also plays a fundamental role in correcting dysfunctions as well as technological innovation that guarantees OHS conditions.

The company's activity is relevant to OHS because it determines the conditions and risks affecting OHS in the workplace and the working environment. Risk prevention is of vital importance for the performance of company strategies and the achievement of indicators/outcomes.

Projects and prevention programmes must safeguard the company's OHS standards.

Accidents at work and occupational illnesses have a major impact on the running of the company and represent increased costs. The accident at work is an indicator that there are dysfunctions, operational requirements that are not being met, undesirable events that have negative economic, social and personal effects on the company - loss of productive capacity, turnover, degrees of incapacity, compensation...

It is important, therefore, to understand what the consequences of the accident are for the person, the family, the company and the State.

Investments in prevention improve safety and the quality of work, alongside with the reduction of job dissatisfaction. It is crucial to understand how effective the prevention measures are and to assess the resulting costs.

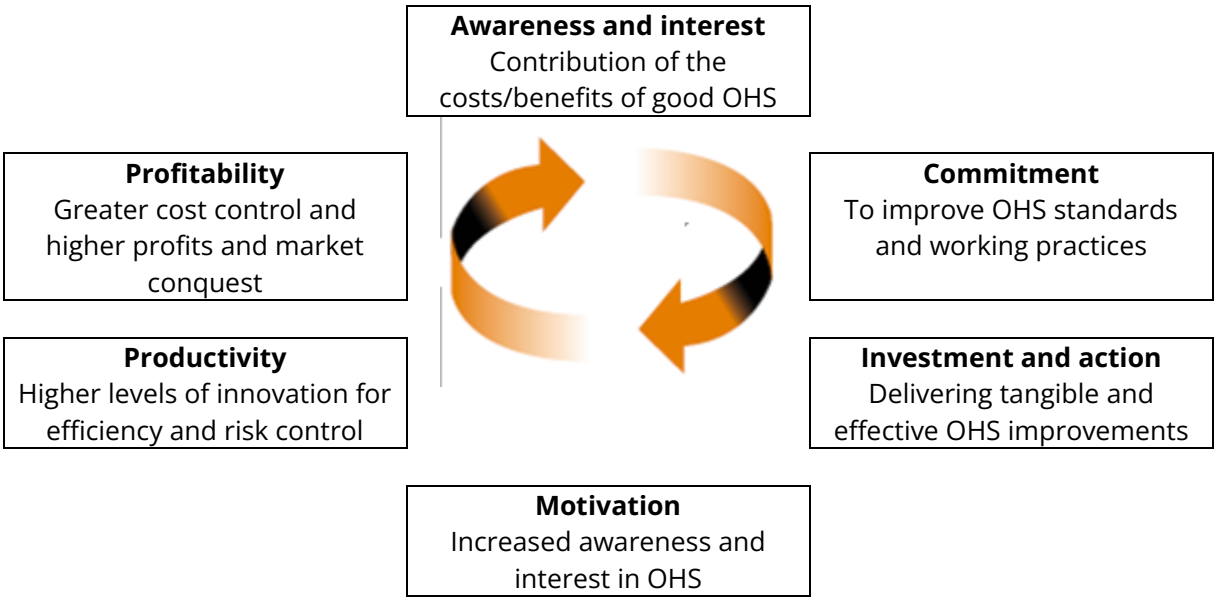



*Fig. 2: Management strategies - http://osha.europa.eu*

## 2.3 OHS Management

**Objective:** Implementation of a set of actions applied throughout the company's activity to prevent occupational risks and their consequences.

Nowadays, an integral approach must be developed in order to eliminate all risks, promote quality improvement at work, the quality of the production process and the quality of products or services. It must also foresee an integral articulation between prevention and the set of policies of the organisation.

Prevention is part of the overall management system of the company and is assumed as part of its culture. It represents a systematic intervention in processes, identifying possible shortcomings, dangers, risk assessment and control, and monitoring of actions.

Prevention planning, early decision on priorities, allocation of resources, training needs, appropriate risk assessment methodologies, measures with behavioural impact and the definition of mechanisms and criteria to eradicate or minimise risks are determinant.

**The employer** must establish organisational and communication systems that facilitate the integration of safety into the overall management system.

**The employees of the company** must be informed, consulted in advance and participate in the internal debate.

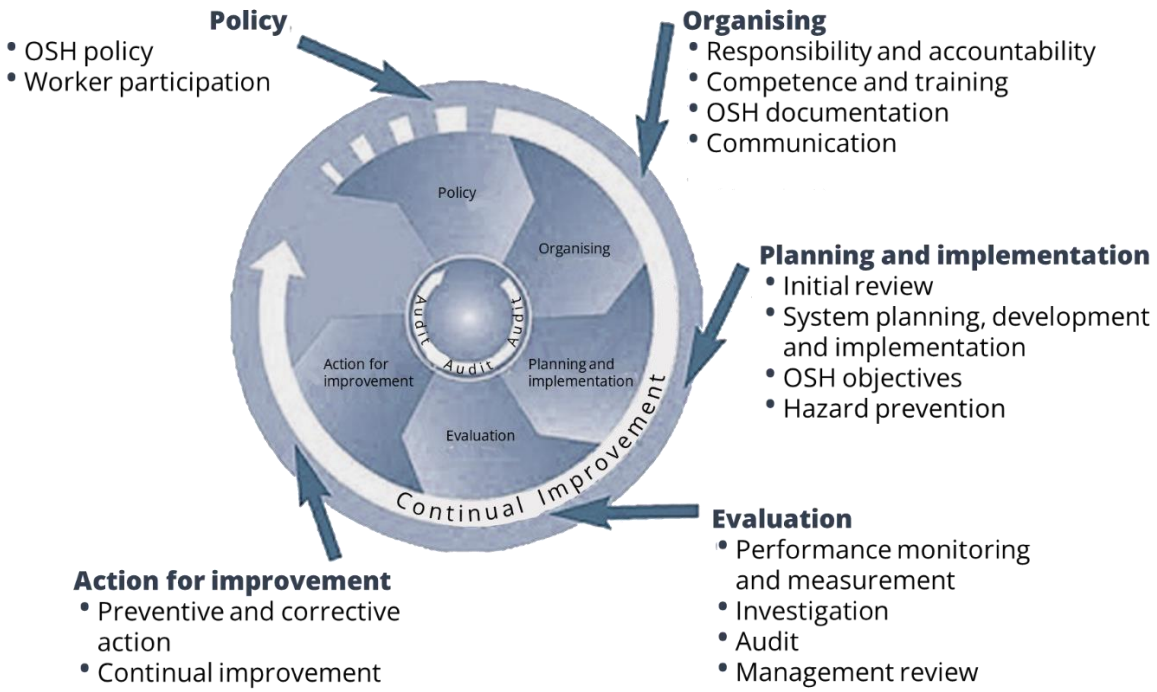



*Fig. 3: Main elements of the OHS management system*
*Source: international labour organisation https://www.ilo.org/ (adapted)*

By implementing an occupational health and safety management system in accordance with current international and national standards, the entity may obtain certification, i.e. recognition of the system by an independent entity. Example from *ISO45001:2018 standard:* determines the requirements to be considered in OHS management. The company may determine the methodologies to be applied.

**Key functions of prevention management:**

- Ensure compliance with laws and regulations;
- Identify, assess and control risks:
    - Collect relevant information;
    - Identify possible hazards;
    - Assess risks arising from hazards;
    - Plan actions to eliminate or reduce risks;
    - Documenting the risk assessment.
- Design, plan and develop prevention and protection measures;
- Train employees;
- Monitor the implementation of preventive and corrective measures for occupational health and safety risks;
- Prevent injury and illness in the workplace;
- Reduce the incidence of occupational diseases and accidents;
- Minimise costs;
- Improve business efficiency;

- Adapt to changes in laws and regulations, safety requirements and changes within the organisation (e.g. new technologies, organisational changes, etc.);
- Monitor and carry out occupational safety audits;
- Coordinate health and safety tasks with external service providers.

## 2.4 Legal Framework in the Promotion of OHS

### International Agreements in the Evolution of OHS

An adequate policy of prevention of occupational accidents and diseases averts employers and other social security systems from suffering avoidable losses and ensures the preservation of the life and physical integrity of workers. Nowadays, this is a worldwide concern. Hence, the role that international and national organisations have played over recent times in the creation of **normative instruments** that allow for the Promotion of Occupational Health and Safety, in all their related aspects, with the ultimate purpose of protecting workers, is extremely important.

The focus on prevention, regarding the protection of workers, their lives and their physical and moral integrity happens after the intervention of the International Labour Organisation (ILO: 1919), priority is given to Health and Safety at Work, both in terms of general measures and specific conditions adapted to each profession, branch of activity and products handled or manufactured.

### The OHS Legislation in Portugal

OHS Legislation receives a major boost with the **membership of Portugal to the European Community (EC).** The European directive on health and safety at work (Council Directive 89/391/EEC), adopted in 1989, marked an important stage towards **improving OHS and ensuring minimum health and safety standards across Europe**, although Member States have the option to maintain or introduce more stringent measures.

Portugal, as a Member State, establishes the **Legal Regime of the Framework for Occupational Health and Safety,** which results from the need to fully comply with the obligations arising from the ratification of the ILO Convention n.º 155 and the need to adapt domestic legislation to the Directive n.º 89/391/EEC, and the need to institutionalise effective forms of participation and dialogue for all those involved in the field of workers' safety, health and the working environment.

Law n. º 102/2009 of 10 September: Establishes the Legal Regime for the Promotion and Prevention of Occupational Health and Safety (LRPPOHS, altered by Law nº 3/2014 amending and republishing the same legal framework.

In summary, it is the employer's responsibility to ensure OHS conditions in all work-related aspects, namely by implementing all necessary measures considering the general principles of prevention and by organising occupational safety and health services in accordance with the Law.

## 2.5 OHS Services

According to the European directive and the OHS, **all employing entities** are obliged to organise their OHS services, thus complying with the **employer's obligations** in this area, providing for various ways of organising these services.

## *Employer's obligations:*

The health and safety service of an organisation aims to ensure that adequate health and safety conditions are provided to its workers. The employer is obliged to ensure the following:

- Identification of foreseeable risks in the activities of the company, establishment or services, in the construction of installations, workplaces and processes, as well as in the selection of equipment, substances and products, with the purpose to their mitigation or reduction;
- Integration of the evaluation of the risks to the safety and health of workers in the company's activities, establishments or services;
- Risk prevention, based on technical developments, organisation and working conditions, social relations and the influence of environmental factors;
- Fighting risks at source, with the aim of eliminating or reducing workers' exposure and increasing the levels of protection;
- Ensure that the levels of exposure to chemical, physical and biological agents and to psychosocial factors in the workplace do not constitute a risk to the safety and health of workers;
- Adapt the work to the man, regarding the design of workstations and the selection of work equipment and methods;
- Replacing what is dangerous with what is non-dangerous or less dangerous;
- Prioritisation of collective protection measures over individual protection measures;
- Drawing up work instructions that can be understood by the worker.

## *Modalities of organising OHS services*

Employers may opt for one of the following OHS service modalities:

- **Internal Service:** set up by the employer and forming part of the structure of the company, operating under the employer's direction and supervision, and covering exclusively the workers employed there.
- **Common Service:** set up by agreement between several companies or establishments belonging to companies that are neither in a group relationship nor obliged to adopt internal service (although they may do so).
- **External Service:** developed by an entity that, through a written contract with the employer, carries out occupational safety and/or health activities.

## *Compulsory Internal Service*

The company should organise an internal OHS service by means of the following requirements:

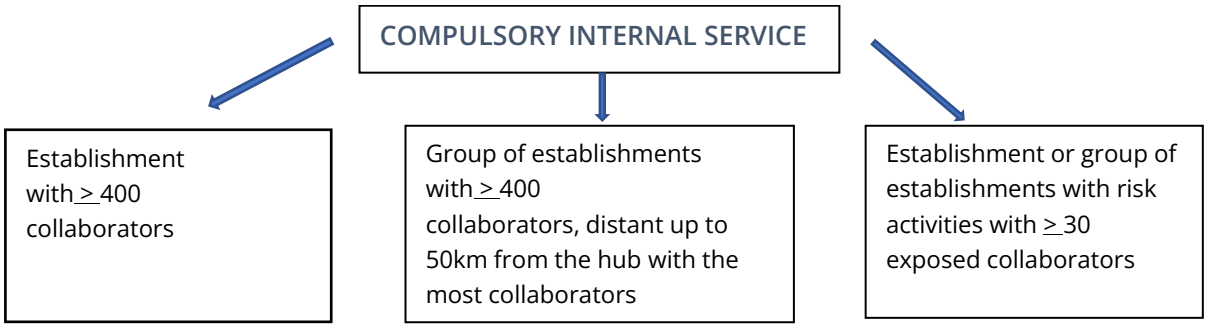



*Fig. 4: OHS – internal service*

### *External Service*

Service developed by an external entity, through the celebration of a contract. This may be associative, cooperative, private or conventional.

The provision of this type of service requires authorisation from the Authority for Working Conditions (AWC) in the field of security and the Directorate-General for Health (DGH) in the field of health.

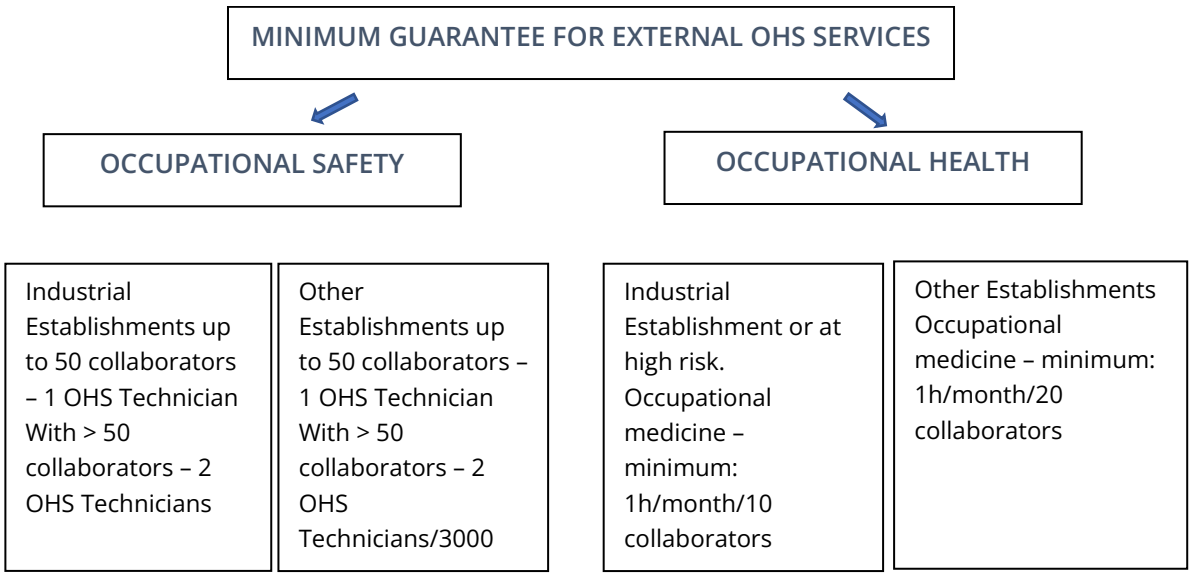



*Fig. 5: OHS – external service*

## 2.5.1 Occupational Health

Surveillance of workers' health must be carried out continuously and in accordance with the work requirements and occupational risk factors to which a given worker is exposed and must take account of the impact of these factors on the worker's health. The importance and relevance of health surveillance is related, namely, to the:

- Early detection of signs and symptoms of work-related illness;
- Limiting or controlling the progression of the disease and its consequences or complications;
- Decrease/suppression of incidence/recidivism of occupational disease or accident;
- Rehabilitation/reintegration of the disabled worker.

The employer is responsible for - Occupational Health Services, promoting appropriate health examinations to assess the worker's physical and mental aptitude to carry out the professional activity. This should be carried out by occupational physicians, in coordination with superior occupational safety and health technicians:

- **Admission examinations:** to take place before the beginning of work or, if the urgency of the admission justifies it, within 15 days;
- **Periodic examinations:** they must be annual for minors and workers over 50 years of age, and every 2 years for other workers;
- **Occasional examinations:** whenever there are substantial changes in the material work components which could have harmful repercussions on the health of the worker and on the return to work after an absence of more than 30 days due to illness or accident.

Therefore, the following must be ensured:

- Registration of each worker's medical and professional history;
- Personal interview with the employee;
- Individual assessment of their health condition;
- Biological surveillance whenever necessary;
- Screening for early and reversible effects.

Following the health examinations, a Medical Fitness Form is issued (MFF). Regarding the results of the health examinations carried out, the worker may be considered fit, conditioned fit or not fit to carry out the work activities. In the event of unfitness, or partial unfitness for work, the occupational physician shall indicate, if appropriate, other duties that the worker can perform.

A copy of the MFF should be sent by the occupational doctor to the head of the company's Human Resources department. The MFF should be brought to the attention of the employee, who should sign and date it.

### 2.5.2 Main activities

The organisation of OHS activities will be based on organisational, technical, material and social factors inherent to the work.

For the purposes of compliance with the legislation, the occupational safety and health service of an organisation must include the following activities:

- To plan prevention, integrating risk assessment and the respective prevention measures at all levels and for all the activities of the company;
- To carry out risk assessment and prepare the respective reports;
- To draw up the occupational risk prevention plan and detailed prevention and protection plans required by specific legislation in force;
- To participate in the elaboration of the internal emergency plan; firefighting plan; evacuation plan and first aid plan;
- To collaborate in the design of work sites, methods and organisation and in the choice and maintenance of work equipment;
- To supervise the supply, validity and conservation of PPE, as well as the installation and maintenance of safety signs;
- To carry out health surveillance examinations, preparing reports and charts, as well as organizing and keeping up-to-date the clinical records and other information related to the worker;
- To develop health promotion activities;
- To coordinate measures to be taken in the event of serious and imminent danger;
- To monitor the work conditions of workers in more vulnerable situations;
- To design and develop an internal information programme to promote the integration of prevention measures into the company's information and communication systems;
- To design and develop the training programme for OHS promotion;

- To support information and consultation activities of the workers' OHS representatives or, in their absence, the workers themselves;
- To ensure or monitor the implementation of prevention measures, promoting their efficiency and operability;
- To organise the necessary elements for compulsory notifications;
- To draw up the compulsory reports in the event of an accident at work or occupational illness;
- To analyse the causes of accidents at work or the occurrence of occupational diseases and preparing reports;
- To coordinate or monitor internal audits and inspections;
- To collect and organise statistics on health and safety at work;
- To keep updated, for consultation purposes, the following: Results of occupational risk assessments; List of proposed measures or recommendations formulated by occupational safety and health services; List and reports of occupational accidents; List of reported cases of occupational diseases. List of proposed measures or recommendations formulated by the occupational safety and health services; List and reports of occupational accidents; List of situations of occupational diseases reported.

## Occupational Health and Safety Folder

The company must organise and keep up-to-date its documentation, specifically, an Occupational Health and Safety folder, in order to comply with the legislation:

| FIELD | DOCUMENTS TO BE FILED |
|---|---|
| ORGANISATION OF OHS SERVICES | • Occupational Health and Safety (OHS) Contract<br>• Occupational Medicine (OM) Contract<br>• Authorisation for the Provision of OHS and OM Services<br>• Personal Registration Card of the Occupational Health Physician(s)<br>• Professional Aptitude Certificate (PAC) of the (Superior) Technician of Occupational Health and Safety<br>• Occupational Health and Safety Policy<br>• Occupational Health and Safety Organisation Chart<br>• Annual OHS Activities Report - Single Report<br>• Visitors' registers<br>• Meetings Minutes |
| AUDITS/INSPECTIONS | • OHS Services Audit Reports<br>• Client Audit Reports<br>• Notifications by AWC/Administrative Infringements by AWC |
| RISK ASSESSMENTS | • General Risk Assessment<br>• Illuminance Assessment<br>• Noise Assessment (if applicable)<br>• Thermal Environmental Assessment (if applicable)<br>• Contaminants Assessment - Chemical and Dust (if applicable)<br>• Other Assessments |
| PROFESSIONAL RISK PREVENTION PLAN | • Occupational Risk Prevention Plan<br>• Prevention Planning |
| ACCIDENTS AT WORK AND OCCUPATIONAL DISEASES<br>Mark the occurrence and participation of the accident and/or occupational disease.<br>Drawing up the Accident at Work Report.<br>When there is sick leave due to occupational illness, this must be registered and reported by the occupational doctor. | • List of Accidents at Work / Incidents<br>• Reports of Accidents at Work<br>• Incident Reports<br>• List of Occupational Diseases<br>• Statistical Summary of Accidents at Work |
| TRAINING | • Training Programmes<br>• Records of training actions or certificates<br>  ○ Occupational Risks<br>  ○ First aid<br>  ○ First Intervention Team<br>  ○ Emergency and Evacuation<br>  ○ Forklift truck driving (if applicable)) |

| | |
|---|---|
| INFORMATION | • Information Programme<br>• Flyers, leaflets, posters |
| CONSULTATION OF WORKERS ON OHS ISSUES<br>Completion of an annual occupational health and safety survey by employees.<br>These must be processed and statistical analysis carried out.<br>The results should be disseminated, and corrective measures may need to be implemented. | • OHS Employee Consultation Questionnaire (sample)<br>• Completed questionnaires<br>• Consultation Results (Treatment of Questionnaires) |
| INDIVIDUAL PROTECTION EQUIPMENT | • PPE Distribution Plan<br>• PPE Utilization and Distribution Term<br>• Used PPEs technical sheets |
| EMERGENCY ORGANISATION | • Self-Protection Measures<br>• Internal Security Structure<br>• Record of Extinguisher Maintenance<br>• FPN Maintenance Record - Fire Protection Network (Hydrants)<br>• Maintenance Record of FDS - Fire Detection System<br>• Fire Drills Reports |
| MACHINERY SAFETY AND MAINTENANCE<br>All machines must have a maintenance booklet, in which all maintenance/repairs must be recorded and reports attached.<br>Every 2 years: Checking machinery and equipment in accordance with Decree-Law 50/2005 (machinery and work equipment). | • Maintenance Booklet (model)<br>• Checking machinery and equipment in accordance with DL 50/2005 (models) |
| CHEMICAL PRODUCTS<br>– Chemicals should have up-to-date Safety Data Sheets (SDS) with workers using the chemicals.<br>– The Chemicals User List should always be kept up to date.<br>– It is forbidden to store chemicals in water bottles or other food packaging.<br>– When transferring a product, this should be placed in an appropriate container and always labelled. | • Safety Data Sheets<br>• Summarised Safety Data Sheets (if applicable)<br>• Labels (if applicable)<br>• Chemical Products Inventories<br>• Chemical Products User List |

*Fig. 6: Occupational Health and Safety folder*

### 2.5.3 Employee consultation, information and training on OHS

#### *Consultation*

The employer must consult the workers' representatives, or, in their absence, the workers themselves, in writing on various OHS matters at least once a year.

#### *Information*

The employer must inform the workers about the existing risks in the workplace and adequate action measures and reinforce them whenever there is an introduction or change in the elements inherent to the task (e.g. machine change), as well as about the measures to be adopted in the event of serious and imminent danger, first aid, firefighting and evacuation of workers.

#### *Training*

The employer is obliged to ensure OHS training of their employees, such as initial, continuous and specialisation training appropriate to their job and the performance of high-risk activities. If workers are engaged in specific OHS activities, they should ensure ongoing training to perform these tasks. In addition to these, training on the application of first aid, firefighting and worker evacuation measures and providing them with the appropriate material are suggested.

#### *Documentation*

The OHS regulations require that the occupational safety and health service keep the following up to date for consultation:

- Occupational Risk Assessment
- List of accidents at work which have led to absence due to incapacity for work, as well as accidents or incidents that are particularly serious from the point of view of safety at work.
- Reports on accidents at work that lead to absence for incapacity for work or which show evidence of seriousness from the point of view of safety at work.
- List of situations of sick leave and the number of days of absence to work, to be submitted by the personnel department and, in the case of occupational diseases, a list of the diseases reported.
- List of measures, proposals or recommendations formulated by the health and safety at work service.
- The Single Report, concerning information on the social activity of the company, which must be completed every year, includes two annexes related to Occupational Health and Safety: Annex C – Continuing Education Annual Report (indirectly) and Annex D – Annual Report on the Activity of the OHS service.
- Workers' Representative - worker elected to exercise functions of workers' representation in OHS fields, and permanent training must be ensured for the exercise of the respective functions. The model for the election of the employee representative(s) is defined in the applicable legislation (Chapter IV of Law No. 102/2009 of 10 September 2009).

## 2.6 Prevention Management System

According to the legislation in force - LRPPOHS and the Labour Code, the employer must guarantee the dignity of working life, as follows: *"The worker is entitled to work in **safety and health conditions**"*;

and *"The employer shall ensure that workers have good health and safety conditions at **in all aspects** related to work, applying **the necessary measures** bearing in mind the **general prevention principles**".*

The "Prevention Principles" have the objective of guiding the intervening mode and the prevention activities to be developed, allowing the reduction or control of risks so that the health and safety of the exposed workers are not compromised.

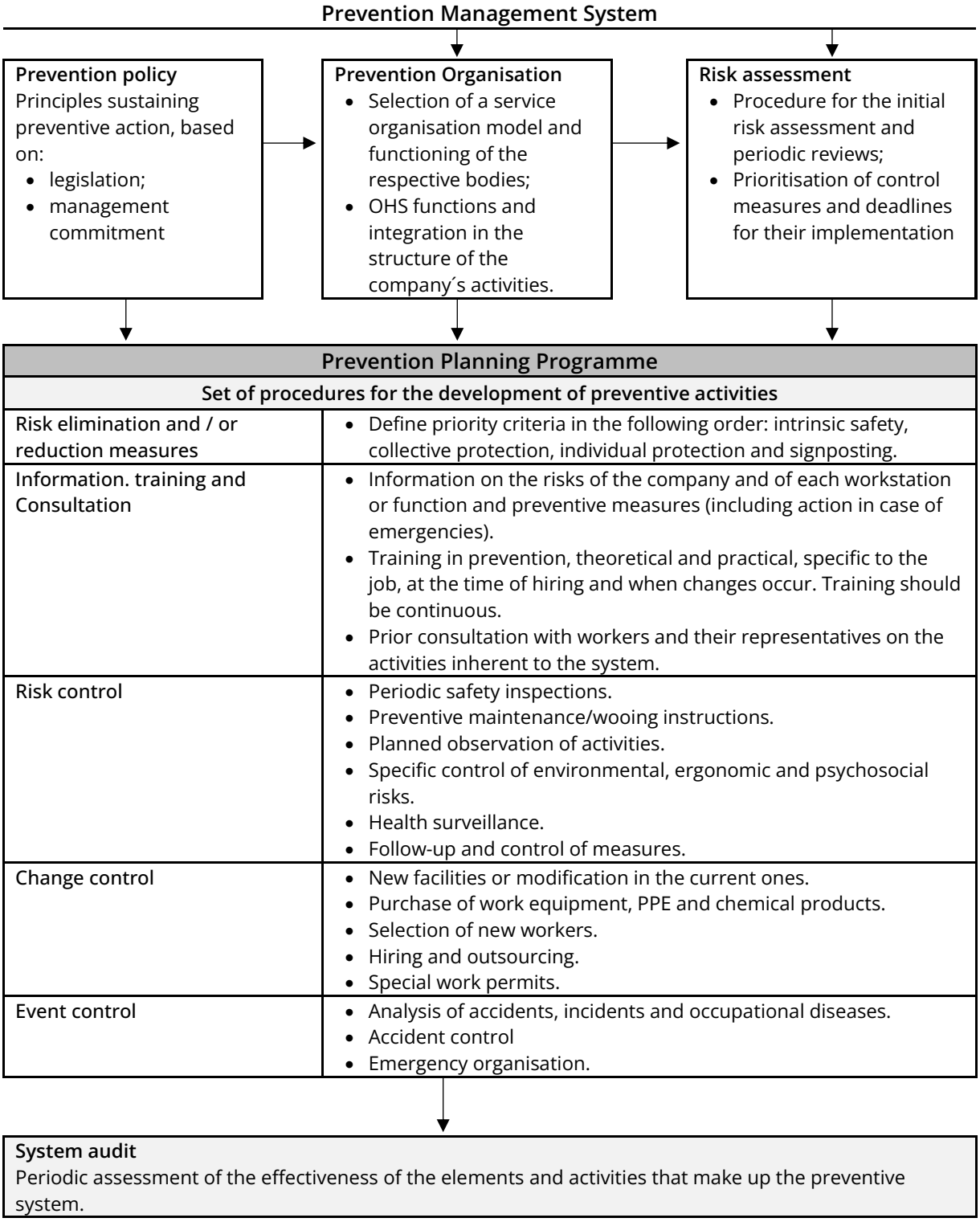



*Fig. 7: Prevention Management System*

## Occupational Risk Assessment

Occupational risk results from the combination of the probability of a hazardous work-related abnormality or exposure, the severity of the injuries and health problems that can be caused by the occurrence or exposures of the worker - occupational exposure.

Risk assessment is the basis for effective health and safety management and is key to reducing occupational diseases and accidents.

Risk assessment objective: enable the employer to identify the risks and implement the necessary measures to eliminate them.

Control measures include prevention of occupational risks, information and appropriate training of workers and organisation and means to implement the necessary measures.

Several methods based on evaluation criteria can be applied to carry out risk assessment:

- Level of disability
- Level of exposure
- Level of probability
- Consequence level
- Level of risk

The probability level = Disability level X Exposure level

The risk level = Probability level X Consequence level

A risk assessment must be carried out and applied so that the employer can:

1. Identify the dangers and respective risks existing in the workplace;
2. Evaluate the risks in order to follow the evolution of techniques and equipment allowing a better selection of these;
3. Determine the necessary measures;
4. Verify that the measures adopted are adequate;
5. Prioritise further control actions deemed necessary as a result of the assessment.

Risk Assessment and Control Process:

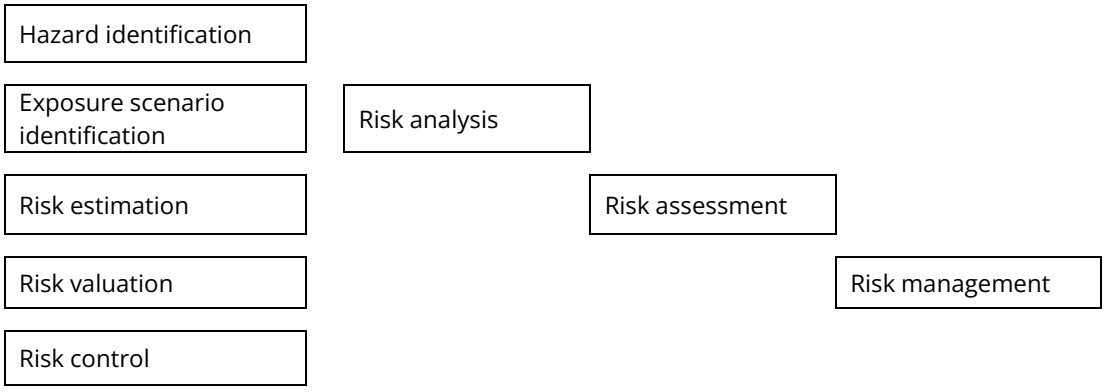



*Fig. 8: Risk Management*

Data collection instruments:

- Application of checklists
- Direct observation
- Photos
- Direct approach to employees
- ...

The data collection should consider:

- Work environment
- Activities performed
- External factors that could affect
- Psychosocial and physical factors
- Maintenance

## Types of occupational risks

**Physical risks:** noise, heat, cold, pressure, humidity, ionising and non-ionising radiation, vibration and any other forms of energy to which workers may be exposed. For each type of risk, a permitted limitation is indicated. In the case of noise, the maximum decibels for example.

**Chemical risks:** These are substances, compounds or products which may enter the worker's organism through the respiratory route, such as gases, dusts, fumes or vapours, as well as others which may be absorbed by the organism through the skin or by ingestion.

It is the toxicity level of the chemical agent that determines the maximum period that the employee can be exposed.

**Biological risks:** bacteria, viruses, fungi, protozoa and the prevention measures vary according to the pathogenicity to which the worker is exposed in his activity.

**Ergonomic risks:** Inadequate work posture, lifting and carrying of weight, prolonged shift journeys and any other situations that require too much physical effort or physical stress. The evaluation of these risks is done through an ergonomic report.

**Risks associated with working with machinery:** dangerous situations that place the worker at risk of accident: inadequate lighting, operating unprotected machinery and equipment, inadequate work structures (inappropriate tools, incorrect storage of materials) and situations such as working at heights, imminent risk of electric shock, fire, explosive atmospheres and handling heavy machinery.

## 2.7 Risk prevention in the footwear sector

Footwear manufacturing is divided into sectors and subsectors depending on the model, type of seams and constructions used. As an example, the following briefly describes the footwear production cycle, demonstrating the operations inherent to each of the sectors - cutting, sewing, lasting and finishing.

| **Start** | | | |
|---|---|---|---|
| **Cutting** | **Sewing** | **Lasting** | **Finishing** |
| Cutting exterior pieces | Embossing exterior pieces | Attaching insoles | Placing/Attaching heel pad/sock |
| Cutting lining pieces | Embossing lining pieces | Backpart moulding | Removing creases |
| Cutting reinforcements and interlinings | Sewing exterior pieces | Side and seat lasting | Cleaning using the polishing machine |
| Splitting (if necessary) | Folding (if necessary) | Attaching the upper to last | Applying finishing products using the pistol |
| Skiving | Attaching toe puffs | Polishing (if necessary) | Polishing |
| Checking | Attaching and/or folding linings | Halogenating and roughing soles | Placing laces |
| Scratching (if necessary) | Sewing linings | Roughing feather edge | Placing padding |
| Crimping and trimming vamps | Trimming linings | Applying cement to soles | Polishing off |
| Checking process | Punching or placing eyelets | Attaching soles | Placing pictogram |
| | Attaching quarters to vamps | Cleaning shoes | Final checking |
| | Attaching backpart and threads | Removing last | Placing labels and anti-fungus |
| | Burning threads and checking process | Sewing Blake or lateral (if necessary) | Packaging and labelling box |
| | Closing uppers | | **End** |

*Fig. 9: Footwear production cycle - risk assessment*

### *Occupational risks in the footwear industry*

It is the employer's obligation to identify the hazards and assess the risks present in the workplace for all workers involved in the production process.

Regardless of their category or size, it is essential that all companies carry out proper risk assessments that include all aspects related to the work. Once the risks have been assessed, the necessary preventive and protective measures should be taken so as to eliminate, reduce or control their effects and verify the effectiveness of these measures.

This approach is essentially characterised by:

- Affirming that prevention must take account of changing technologies and be developed according to internationally established general principles of prevention;
- Focusing on concrete work and production activities;

- Promoting worker training and information and enhance worker participation;
- Attending to all risk factors and the interaction of risks between them;
- Providing for preventive intervention at the workplace design stage;
- And, given these characteristics, to be based on continuous improvement processes.

### 2.7.1 Chemical risks

Chemical risks associated with the use of adhesives and solvents. The use of primers, adhesives and halogen containing volatile organic and inorganic compounds likely to contaminate the working atmosphere occurs mainly in the assembly and finishing sections, but also when preparing uppers, soles or other components.

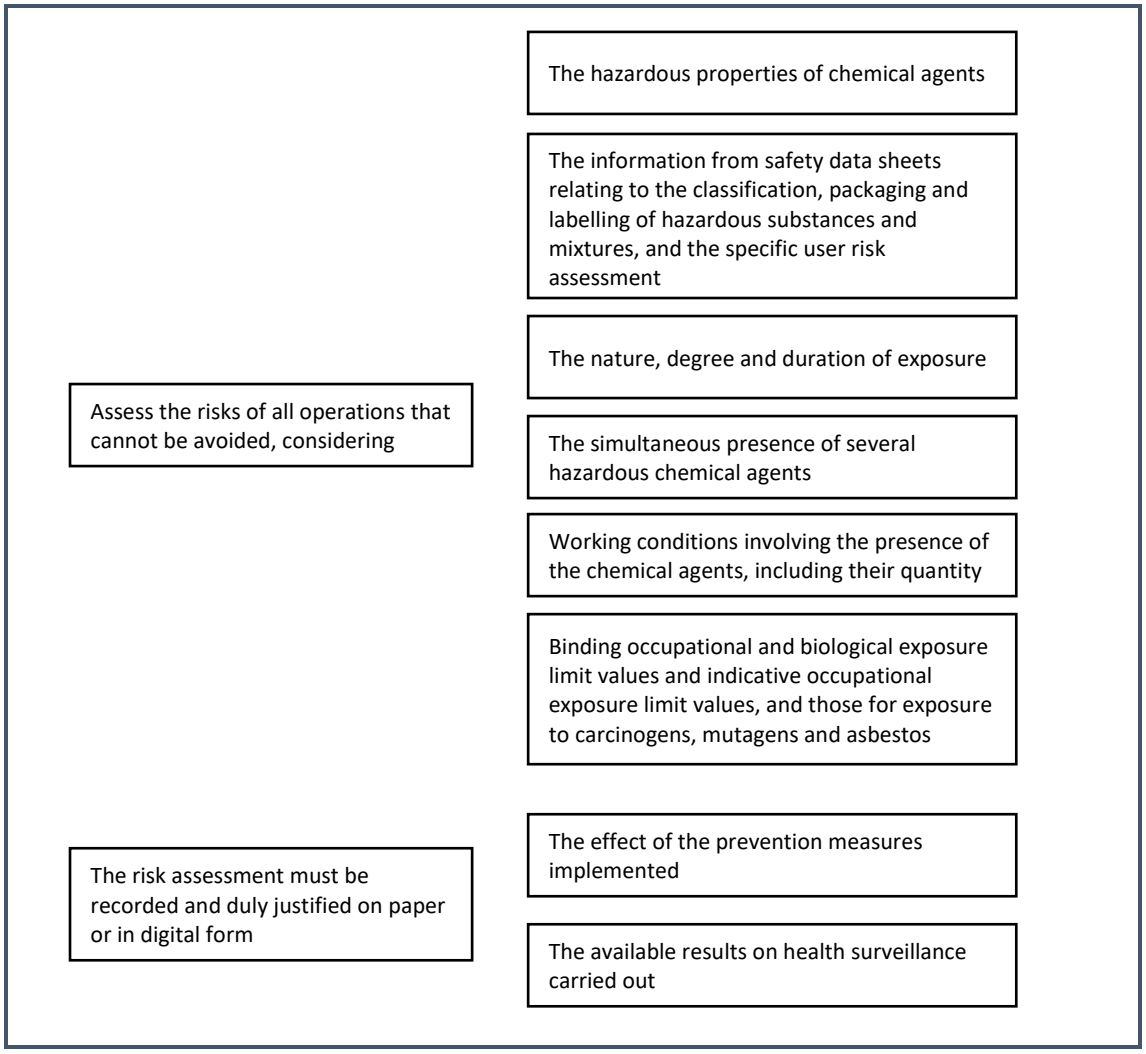



*Fig. 10: Chemical risk assessment*

**Prevention measures**

| | |
|---|---|
| **General prevention and protection measures** | Designing and organising appropriate working methods<br>Replacing hazardous chemical agents with less hazardous or hazard-free chemical agents, reducing the quantity of hazardous chemical agents used to a minimum<br>Using appropriate equipment for working with chemical agents<br>Using, in maintenance operations, processes that ensure the health and safety of workers<br>Keeping the number of exposed workers to a minimum<br>Reducing to a minimum the duration and degree of exposure<br>Adopting appropriate hygienic measures<br>Using appropriate working procedures during the handling, storage and transport of hazardous chemical agents and their waste |
| **Specific prevention and protection measures** | Designing work processes and technical controls to prevent or reduce the release of hazardous chemical agents<br>Applying collective protection measures at the source of the risk (adequate ventilation and appropriate organisational measures)<br>Adopting individual protection measures if exposure cannot be avoided by other means (gloves, masks and appropriate work clothes), in accordance with information made available in the safety data sheets |
| **Technical or organisational measures** | Promote the storage, handling and separation of incompatible chemical agents, or if this is not possible, avoid the presence of ignition sources that could cause fires and explosions or of adverse conditions that could cause unstable chemical substances or mixtures to produce harmful physical effects.<br>Ensure that work equipment and protective systems for workers comply with the legal provisions on safety and health in their design, manufacture and marketing.<br>Ensure that equipment and protective systems intended for use in potentially explosive atmospheres comply with the health and safety rules in force.<br>Ensure that the effects of explosions are reduced or measures are taken to reduce pressure. |

*Fig. 11: Chemical risks prevention and protection measures*

**The employer shall ensure the consultation, information and training of his employees, including:**

- The data obtained from the risk assessment;
- The available information about the hazardous chemical agents present in the workplace;
- The content of safety data sheets;
- The appropriate precautions and measures for workers to protect themselves at the workplace, including emergency measures;
- The contents of containers and pipework used for hazardous chemical agents;

**Safety Data Sheet**

The safety data sheet provides information on the composition of the product, hazard identification, what to do in case of first aid, measures to be taken in case of firefighting and accidental spills, how to handle and store the product properly, data on exposure control and personal protection, its physical and chemical properties and its stability and reactivity. Most of the chemical products used in the footwear industry consist of hazardous chemical agents with certain

effects on the safety and health of workers, including: **acetones, alcohols, ethyl and butyl acetates, hexane, toluene, xylene, ammonia**, etc. Many of them are classified as:

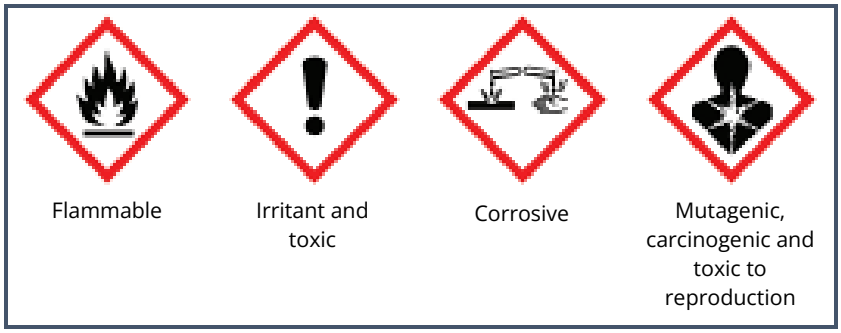



*Fig. 12: Chemical hazards - symbology*

These can cause the following symptoms: drowsiness and dizziness from inhalation of vapours, dry and chapped skin from repeated exposure or even severe skin burns, irritation of the upper respiratory tract and eyes as well as severe eye damage, central nervous system depressants, anaesthetics and narcotics. Others may be toxic for reproduction and may cause congenital malformations, i.e. they may affect the morphology or function of the unborn child.

### 2.7.2 Mechanical risks

Mechanical risks associated with the use of equipment that has pressing mechanisms, elements or moving parts, blades or tips – **cutting press machines**, presses, roughing machine, stitching machines, ...
Prevention and protection measures:

| | |
|---|---|
| **Control systems** | • They must be clearly visible, identifiable and properly marked |
| **Starting the equipment** | • There must be a voluntary actuation control system for start-up as well as one for restarting after a stoppage |
| **Stopping the equipment** | • The stop order should have priority over the start order<br>• There must be an emergency stop device |
| **Risk of mechanical contact** | • Protectors must be placed to prevent access to the danger zones by moving parts or devices interrupting the movement of moving parts before access to those zones<br>• The protectors and protection devices must be of robust construction, located at an adequate distance from the danger zone, not giving rise to any additional risk and must not be easily rendered inoperable<br>• The protectors and protection devices must enable the necessary operations to be carried out without dismantling them |
| **Equipment maintenance** | • The employer must periodically check and, if necessary, test work equipment subject to influences likely to cause damage likely to be dangerous<br>• Maintenance operations must be carried out with the equipment stopped and disconnected from the power supply |
| **Instruction manual** | • The manufacturer or importer shall make available instruction manuals for the machine or equipment, in Portuguese, containing information relating to safety at all stages of use |
| **Safety signs** | • Their placement will serve to warn workers and third parties of the risks to which they are exposed and the personal protective equipment to be used |

*Fig. 13: Mechanical risks - prevention and protection*

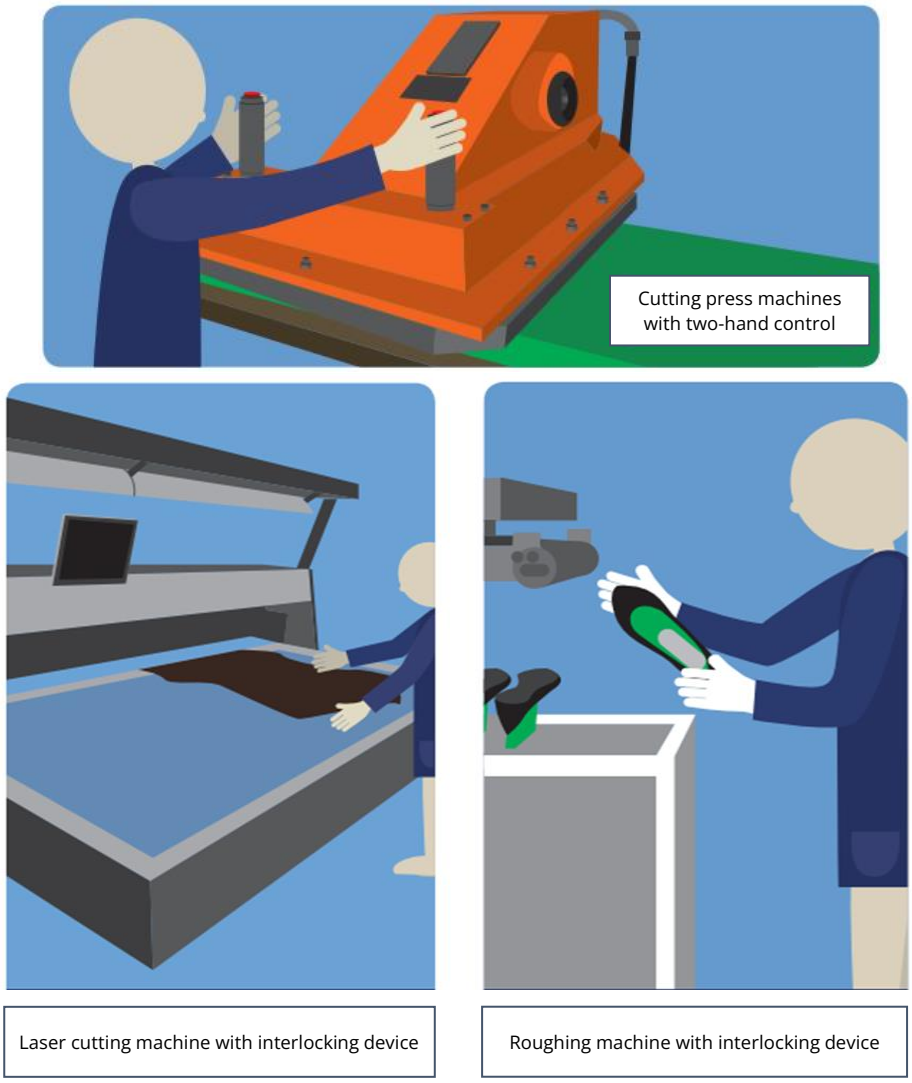



*Fig. 14: Mechanical risks and prevention in footwear manufacturing*

### 2.7.3 Ergonomic risks

Ergonomic risks: risks related to repetitive work, incorrect postures and manual handling of loads. The musculoskeletal injuries that have appeared most frequently are tendonitis and epicondylitis, especially in the sewing section. Lower back pain due to strain occurs mainly among warehouse workers.

Throughout the production process in the footwear industry workers may be subject to ergonomic risks arising from the absence or poor ergonomic adaptation of the workstations that:

- They prevent or hinder the alternation of the worker's body posture;
- They subject the worker to inappropriate movements or excessive cadence, mechanical strain on the tissues and overstrain.

Manual handling of loads under unsuitable conditions is also likely to cause musculoskeletal disorders (back and limb injuries and pain, such as tendonitis and epicondylitis).

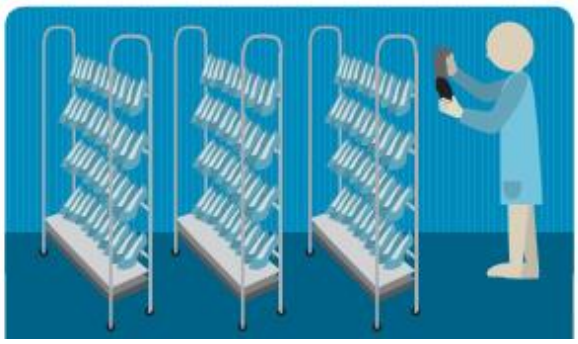
**Prevention measures:**

- Maintain proper posture so as to avoid working positions that compromise the bone and muscle structure (torso twisting, repetitive movements);
- Avoid extreme postures, asymmetric postures with rotation and/or static postures or postures with high repetition;
- Lifting and carrying loads, wherever possible, should be done mechanically, using, for example, conveyors, trolleys and height-adjustable lifting platforms;
- When muscular strength is unavoidable, it should be of low intensity and short duration.

*Fig. 15: Ergonomic risks and prevention - Shoe sewing*

| Danger identification | Recommended measures |
|---|---|
| In the **cutting section**, most tasks usually require standing up, stationary postures throughout the day, especially when working with the cutting press. | • Workers should maintain a joint posture close to the neutral position;<br>• Avoid bending the torso forward and/or rotating it;<br>• The worker should be able to choose whether or not to support the elbows during the sewing activity. The worktable should be equipped with a 4 to 6 cm thick foam support in the elbow area;<br>• In activities such as sewing, where the point at which the task is performed is fixed (sewing needle), the point of view considered optimal should be in the same line of the visual field and the elbow flexed at 90º;<br>• Provide adequate lumbar support in all seats;<br>• The seat must be adjustable to allow flexibility and adjustment according to the anthropometric diversities of the worker and follow the height of the benches;<br>• Provide a footrest that can be either fixed to the machine or placed on the floor (platform or mat). |
| In **the preparation and sewing section** the tasks require the involvement of fine motor skills (precision work), visual acuity and foot-operated machines. These operations usually require sitting and static posture. | |

*Fig. 16: Ergonomic risks and prevention - Shoe cutting and sewing*



Lasting and finishing sections

| Danger identification | Recommended measures |
|---|---|
| The handling and transport of cargo present several variables which contribute to accentuate or minimise the problems which may arise from this activity. Thus, it is important that the relationship between the weight of the object and the conditions in which it is transported, lifted or handled is assessed according to the following variables:<br>• Weight of the object handled;<br>• Position of the load in relation to the body - measured at both the start and end point of the lift, in terms of horizontal and vertical coordinates;<br>• Lifting frequency;<br>• Period or duration - total time of the lifting operation;<br>• Possibility of gripping or grasping. | • Weight of the object handled;<br>• Position of the load in relation to the body - measured at both the start and end point of the lift, in terms of horizontal and vertical coordinates;<br>• Lifting frequency;<br>• Period or duration - total time of the lifting operation;<br>• Possibility of gripping or grasping. |

*Fig. 17: Ergonomic risks and prevention - Shoe lasting and finishing*

### 2.7.4 Psychosocial risks

Psychosocial risks: associated with the way work is designed, organised and managed and which, in interaction with the social and environmental contexts and with the workers' skills and needs, may cause psychological, physical or social harm. These include, among others, occupational stress, harassment (moral and sexual) and violence at work.

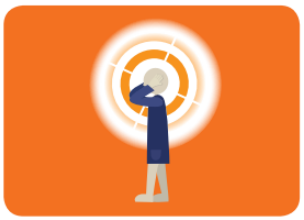


*Fig. 18: Psychosocial risks*

**Prevention measures**

The prevention of psychosocial risks in the workplace requires the active and dynamic involvement of the employer and the workers and their representatives.

Preventive or organisational measures should be directed at the source of the problem (risk factors) and focused on the work situation and should aim to increase the resources of the workers, enabling them to cope with the demands of the tasks.

Examples:

- Changes to working hours and regimes;
- Reorganization of functional contents;
- Ergonomic alteration of workstations;
- Training and information;
- Participation and consultation of workers and their representatives.

# 3 Conclusion – Importance of implementation and certification of OHS management systems

Nowadays the implementation and certification of an OHS management system represents an added value for all organisations.

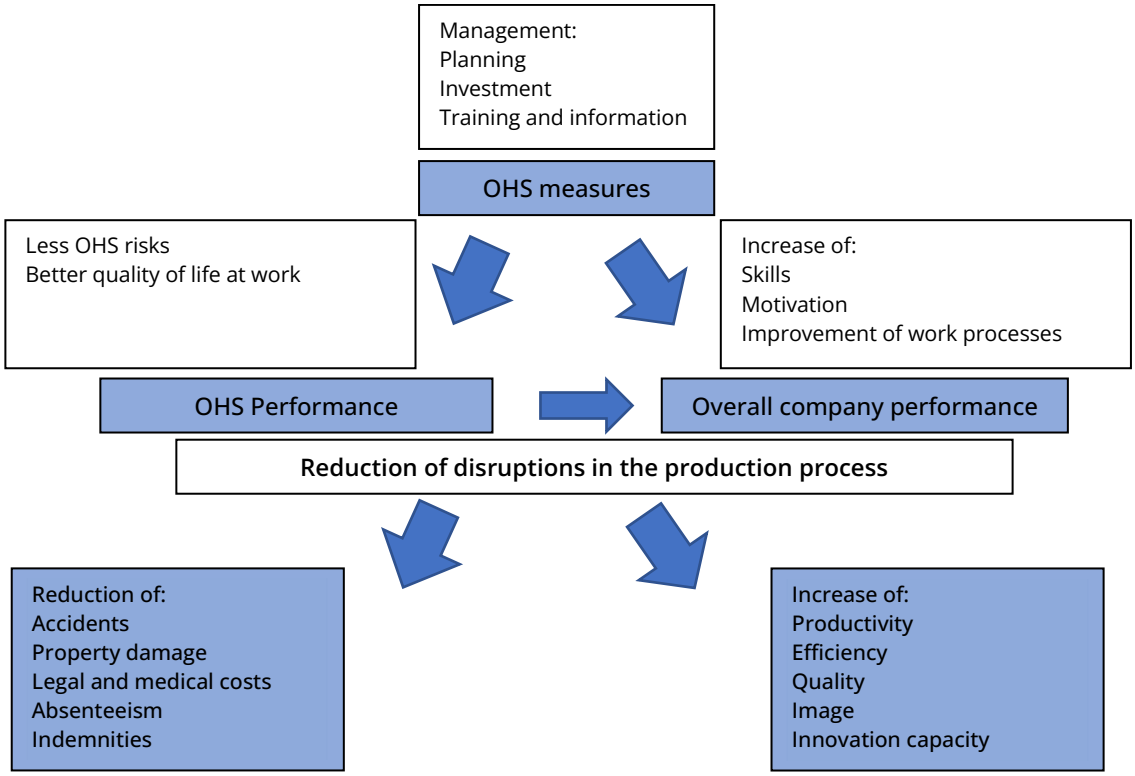



*Fig. 19: OHS as investment*

Based on the high-level structure of ISO - International Organization for standardization, ISO 45001 allows easy integration with other management systems in place, such as ISO 9001 (Quality Management System Requirements) and ISO 14001 (Environmental Management Systems), among others.

ISO 45001 - Occupational health and safety management systems - Requirements with guidance for use, is intended as a tool to help establish and improve the health and safety working environment, prevent accidents and, in many cases, go beyond legal requirements.

The main benefits of implementation and subsequent certification in accordance with this framework are:

- Reduction of accident risks and professional illnesses;
- Improvement of the organization's image;
- Evidence of the commitment to comply with applicable legislation;
- Reduction of costs (indemnities, insurance premiums, losses resulting from accidents, lost working days);
- Improved employee satisfaction and motivation by promoting and ensuring a safe and healthy working environment;
- Scope of prevention activities to the whole organization;
- Reduced absenteeism rates;
- Greater effectiveness and proactivity in operational planning.

**OHS Management System Requirements – ISO 450001: 2018**

The implementation of an OHS management system starts with good planning aimed at commitment, delegating responsibilities and competencies.

Fundamentals and characteristics proposed by ISO 45001:2018 for the implementation of the OHS management system:

1. Context of the Organization
2. Leadership
3. Planning
4. Support
5. Operations
6. Performance Evaluation
7. Improvement

The major focus of ISO 45001 is the organizational context. This standard incorporates the PDCA concept (Plan - Do - Check - Act):

**PDCA model in draft ISO 45001**

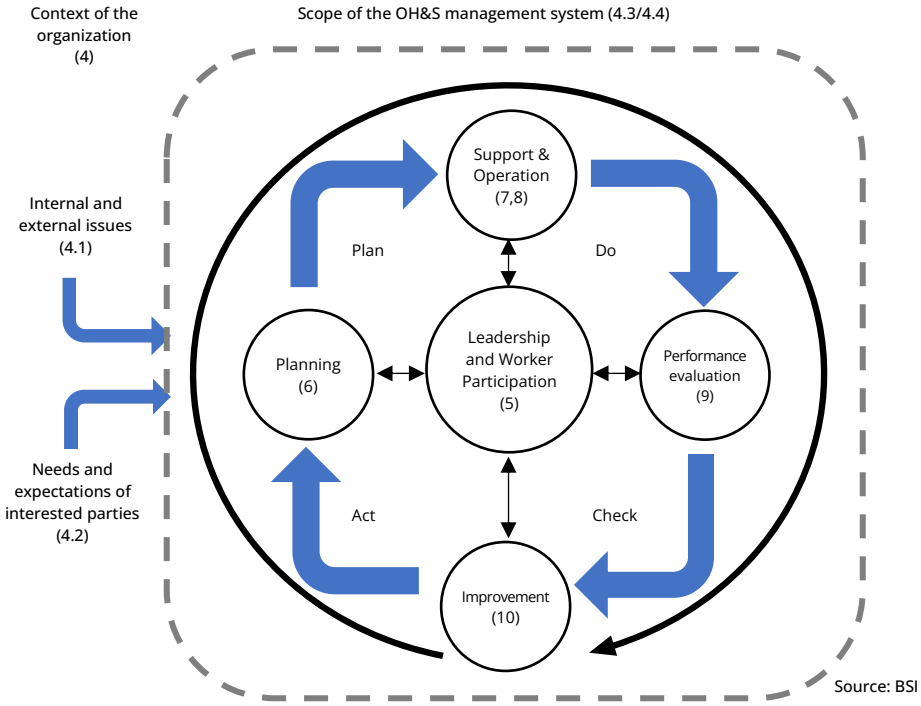



*Fig. 20: Model PDCA – ISO450001*

This methodology promotes the continuous improvement and efficiency of the OHS management systems and of an integrated management with other systems implemented in the organization.

The results are intended to eliminate and minimize OHS risks by taking effective prevention and protection measures.

# 4 List of Figures