

## **Occupational safety and health in the textiles sector**

### **The textiles industry in Europe**

The textiles and clothing sector is a large, diverse sector across all Member States and with a turnover of over EUR 200 billion. An industry with a long history, the products manufactured range from hi-tech synthetic yarns to wool fabrics, cotton bed linen to industrial filters, nappies to high fashion. The sector employs over 2.5 million workers, many of them women. In some states, women form the majority of workers in the sector.

The industry can be split into a number of sub sectors:

- the treatment of raw materials, i.e. the preparation or production of various textiles fibres, and/or the manufacture of yarns such as through spinning
- "natural" fibres, including cotton, wool, and silk
- "man-made" fibres, including cellulosic fibres such as viscose, synthetic fibres such as polyester, and fibres from inorganic materials such as glass
- the production of knitted and woven fabrics (i.e. knitting and weaving)
- finishing activities such as bleaching, printing, and dyeing
- the transformation of the fabrics into goods, including the "clothing" industry, carpets and other textile floor covering manufacture, the production of home textiles such as bed linen, and the manufacture of technical or 'industrial' textiles.

The textile and clothing sector in Europe is changing as a result of developing technology and economic conditions, with businesses restructuring, modernising, and adapting to technological change. There is a trend of moving away from mass production of simple products towards a wider variety of products with a higher added value. The technical and industrial product subsector in particular is an area where European producers are world leaders. These developments have also had an impact on employment in the sector, with changes in employment models (e.g. subcontracting), and as a result of the techniques involved, on the hazards and risks to which workers are exposed.

### **Hazards and risks in the textiles sector**

The textiles sector contains many hazards and risks to workers, ranging from exposure to noise and dangerous substances, to manual handling and working with dangerous machinery. Each processing stage — from the production of materials to the manufacturing, finishing, colouring and



## **Occupational safety and health in the textiles sector**

packaging —poses risks for workers, and some of these are particularly dangerous for women's health.

This short document cannot cover all the hazards and risks in all the parts of the textiles sector, but highlights some of the key issues, particularly to women workers, and how worker safety and health can be managed.

### **Musculoskeletal disorders**

Musculoskeletal disorders (MSDs) are the most common work-related health problem in Europe, with almost one in four workers reporting backache and one in five complaining of muscular pains. Manual handling, the lifting, holding, putting down, pushing, pulling, carrying or movement of a load, is the largest cause of injury in the textiles sector. Manual handling can cause either cumulative disorders from the gradual deterioration of the musculoskeletal system, such as lower back pain, or acute trauma such as cuts or fractures due to accidents.

In the textiles sector, risk factors for MSDs include:

- Working in awkward postures, such as during spinning, cutting, product control, and packaging,
- Repetitive movements, such as during spinning, cutting, product control, and packaging,
- Fatigue from manual handling, during the storage, inspection, treatment, shipping, finishing, and cutting of textiles.

### **Exposure to chemical agents**

Many different groups of chemical substances are used in the textiles sector, including dyes, solvents, optical brighteners, crease-resistance agents, flame retardants, heavy metals, pesticides, and antimicrobial agents. They are used in dyeing, printing, finishing, bleaching, washing, dry cleaning, weaving slashing/sizing, and spinning.

Respiratory and skin sensitizers can be found in the textiles industry, for example textiles fibres, reactive dyes, synthetic fibres, and formaldehyde. The textile industry has been evaluated as a sector with an increased carcinogenic risk. Several studies have showed an increased risk of nasal, laryngeal and bladder cancer in women.

### **Exposure to dusts and fibres**

The exposure of workers to dusts from material such as silk, cotton, wool, flax, hemp, sisal, and jute can occur during weaving, spinning, cutting, ginning, and packaging. Division of tasks along gender lines may mean that women are exposed to organic dusts more than men, with respiratory diseases being diagnosed more often in women than men. Exposure to fibres and yarns may cause nasal or bladder cancer.



## Occupational safety and health in the textiles sector

### Exposure to biological agents

In some activities, such as carding and willowing, workers may be exposed to biological agents such as *anthrax*, *clostridium tetani* (the causative agent for tetanus), and *coxiella burnetti* (which causes Q fever). Exposure to biological agents can result in allergies and respiratory disorders.

### Exposure to physical agents

Workers may be exposed to noise and vibrations, for example during weaving, spinning, sewing, twisting, and cutting. Exposure to loud noise can result in permanent hearing damage such as noise-induced hearing loss and tinnitus. Exposure to vibration, particularly together with risk factors for MSDs, can lead to long-term harm. Electromagnetic fields may also be found in some workplaces in the textiles sector.

### Accidents in the textiles sector

The textiles sector has many hazards that can cause injury to workers, from transport in the workplace (lift truck), dangerous large work equipment and plant, to the risk of slips from a wet working environment. Workers being struck by objects, such as moving machinery parts and vehicles are a significant cause of injury in the sector. There also exists the risks of fire and explosions, for example from heating plants used for vapour generation.

### Psychosocial issues in the textiles sector

Work-related stress has been defined as being experienced when the demands of the work environment exceed the workers' ability to cope with or control them. Work-related stress may be an issue in some areas of the textiles sector, being associated for example with repetitive and fast paced work, and where the worker has no influence on how the job is done.

### Legislation

Much of Europe's legislation for protecting the safety and health of workers is based on a common structure. This is a series of directives made up of council directive 89/391 (the "framework directive") and its "daughter directives" on a range of more specific subjects such as noise, chemical agents, and manual handling. The directives, transposed into law in all Member States set minimum standards, so check with the relevant national enforcing authorities. These directives take the same approach to prevention; risk assessment followed by prevention measures based upon the following common principles of prevention:

- avoiding risks
- evaluating the risks which cannot be avoided
- combating the risks at source
- adapting the work to the individual
- adapting to technical progress



## Occupational safety and health in the textiles sector

- replacing the dangerous by the non-dangerous or the less dangerous
- developing a coherent overall prevention policy
- giving collective protective measures priority over individual protective measures
- giving appropriate instructions to the workers

### **Risk assessment step by step**

The legal requirement for risk evaluation or assessment applies to all employers. The process for carrying out a risk assessment can be broken down into a series of steps:

#### **Step 1 Identifying hazards and those at risk**

Looking for those things at work that have the potential to cause harm, and identifying workers who may be exposed to the hazards. Using workers' knowledge helps to ensure hazards are spotted and workable solutions implemented. Consultation encourages workers to commit themselves to health and safety procedures and improvements.

A risk assessment should cover all workers regardless of whether they are employed on long- or short-term contracts. Where there are persons employed by another organisation on site, there is a duty on the two employers to cooperate and safeguard the health and safety of workers.

Risk assessment should take account of differences in workers, such as by gender, age, or disability. For example, older employees may learn differently than a younger worker, and also have different concepts of risk due to a lack of experience. Different prevention measures may be required for these worker groups. Work, its organisation and the equipment used should be adapted to the worker, not the other way around. This principle is enshrined in EU legislation.

Workers with disabilities should be considered specifically in the risk assessment process. For example, people with disabilities may be subjected to bullying, which can lead to work-related stress. Consultation with workers with disabilities is vital to ensure a risk assessment is appropriate.

#### **Step 2 Evaluating and prioritising risks**

Evaluate how likely it is that the hazard will lead to harm or injury, and how severe that injury is likely to be. Consider what control measures are in place and whether they are sufficient. It is essential that the work to be done to eliminate or prevent risks is prioritised. The focus for cost-effective and sustainable risk management should be on collective protection and preventative measures.



## Occupational safety and health in the textiles sector

### **Step 3 Deciding on preventive action**

Identifying the appropriate measures to eliminate or control the risks. List the preventive measures needed in order of priority, then take action, involving the workers and their representatives in the process. Targeting the underlying problems is the most cost-effective method of risk management.

### **Step 4 Taking action**

Risk assessment is the first step to successful risk management. Put in place the preventive and protective measures through a prioritisation plan (most probably all the problems cannot be resolved immediately) and specify who does what and when, when a task is to be completed, and the means allocated to implement the measures.

Interventions should be agreed with the workforce, either directly or through worker safety representatives. The agreed solutions should be carefully implemented, monitored and evaluated. The information arising from the risk assessment must be shared with the appropriate persons. Action should be supported by appropriate training.

### **Step 5 Monitoring and reviewing**

The assessment should be reviewed at regular intervals to ensure it remains up to date. It has to be revised whenever significant changes occur in the organisation or as a result of the findings of an accident or “near miss” investigation.

### **Checklist – a simple tool for risk assessment**

Checklists can be useful tools as part of the risk assessment process, when they can be used to identify hazards. They can also be used in monitoring the performance of control measures. The checklist below cannot cover all hazards and risks, and readers are recommended to identify other relevant tools on the web pages of national safety and health authorities and inspectorates.



## Occupational safety and health in the textiles sector

<b>Checklist of hazards in textiles</b>		
<i>Mechanical hazards</i>	<i>Yes</i>	<i>No</i>
Is work equipment and machinery regularly checked to ensure that it works properly and that the guards and other protective measures are in good condition and operating correctly?		
Are there machines with unprotected or unguarded moving parts?		
Are the emergency stops on the work equipment and machinery accessible and working?		
Are there machines where an unprotected or unintentional start-up is possible?		
<i>Noise and vibration</i>		
Are there workers exposed to noise which is so loud that they have to shout to communicate with a person standing 0.5-1 metre away?		
Are there noise sources which are not dampened, enclosed effectively or placed in a separate room?		
Is there a lack of noise screens between sources of noise and work areas?		
Are there workers who do not use ear-protectors, even when the noise level is high?		
Are workers carrying out tasks that expose them to vibration - either of their hands and arms, or their whole body?		
Do pregnant women use vibrating tools or machines; for example, during cutting or sewing?		
Does the employer purchase the lowest-noise machines available?		
Does the employer purchase the lowest-vibration machinery available?		
<i>Chemical hazards</i>		
Do workers use hazardous chemicals; for example, those classified as toxic, harmful, corrosive, irritant, sensitising, carcinogenic, mutagenic, or toxic to reproduction?		
Do workers use hazardous chemicals if material safety data sheets are not supplied?		
Do workers work with hazardous chemicals even if a set of safety instructions for use has not been drawn up?		
Can hazardous chemicals be substituted for ones less hazardous?		
Are new workers told of the risks from the dangerous substances in the workplace?		
Are workers aware of the dangers posed by the chemicals they are using?		
Do employees work with carcinogenic or mutagenic substances?		
Do pregnant or breastfeeding women work with carcinogenic or mutagenic substances; for example, arsenic compounds, dimethyl sulphate, carbon disulphide, ethylene oxide, epichlorhydrine or formaldehyde?		
Are workers exposed to organic dusts; for example wool, cotton or yarns?		
Are there workstations without appropriate collective preventive equipment, such as local exhaust ventilation?		
Are there workers who do not use personal protective equipment, such as gloves, goggles, face shields or respirators, even if this is required?		
Are there workers using hazardous chemicals who have not been trained in		



## Occupational safety and health in the textiles sector

their use and handling?		
<i>Fire hazards</i>		
Are fire precautions in place, operational, and accessible?		
Do workers use oxidising, or flammable materials, such as sometimes found in paints, adhesives and solvents?		
Are oxidising or flammable substances or preparations stored in unventilated rooms?		
Are there any sources of ignition; for example, open fire, electrical equipment, electrostatic charges or high temperature?		
Do explosive mixtures arise in work processes; for example, air and gases such as hydrogen or methane, air and vapour of benzene or acetone?		
Are there any areas where there is a risk of explosion; for example, rooms in which paints or solvents, flammable liquids or gases are stored?		
Are there any areas with a risk of explosion as a result of contamination by stored flammable substances, increased storage temperatures or excessive quantities of products?		
Are there any fire/high temperature/electrostatic field sources in explosive areas?		
<i>Manual handling of loads and prevention of musculoskeletal disorders</i>		
Are loads lifted in awkward working positions; for example, far from the body, above shoulder-height or below knee-height?		
Are heavy objects or loads lifted manually; for example, boxes containing reels of yam, rollers or rolls of cloth?		
Are trolleys or other equipment for moving loads kept in good condition?		
Do workers have to carry out repetitive tasks, and cannot dictate their pace of work?		
Do workers stand or walk for a long period of time?		
Does considerable force need to be used to push or pull equipment such as trolleys?		
Is the floor uneven, sloping, or in other ways likely to make the movement of goods more difficult?		
Are there areas where the pushing or pulling of loads has to be carried out in cramped conditions?		
Do people work in uncomfortable or awkward postures and positions?		
Do workers have to make repetitive movements?		
<i>Psychosocial and other issues</i>		
Are there high levels of absenteeism and staff turnover that may suggest that work-related stress is present in the workplace?		
Is it often necessary for employees to work overtime?		
Are workers showing abnormal behaviour such as drug and alcohol abuse, lack of ability to concentrate, irritability, and depression that may indicate an issue with work-related stress?		
Are women discriminated against in relation to their gender?		
Are women working under the threat of physical violence?		



## Occupational safety and health in the textiles sector

### Managing the safety and health of women in the textiles sector

Occupational safety and health should be managed in a gender sensitive way, being aware that there may be differences in the exposure of women to risks compared to men. Gender sensitive interventions should be participatory, involving the workers concerned, and based on an examination of the real work situation. There has to be a real commitment from management to take safety and health and gender issues seriously, and no assumptions should be made about who is at risk from what hazards.

At each step of the risk assessment process described above, gender issues should be considered. For example:

- Ask both male and female workers what problems they have in a structured way,
- Take care of unintentional gender bias when “grading” risks as high, medium, or low,
- Ensure that reproductive health issues are included when seeking to eliminate risk at source or when trying to substitute substances,
- Ensure that monitoring of the performance of preventive measures covers tasks carried out by both men and women.

Workers who are pregnant or nursing mothers are protected by a specific directive, Council Directive 92/85/EEC, which establishes minimum standards and is transposed into every Member States. The directive requires employers to carry out a specific risk assessment to the workers covered, and highlights in particular

- exposure to chemical, physical and biological agents,
- physical movements and postures,
- mental and physical fatigue and other types of physical and mental stress.

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