THE CHANGING WORLD OF WORK
Trends and implications for occupational safety and health in the European Union

Working life in Europe is changing at an ever-increasing speed. The Agency has carried out a number of activities based on the implications of the changing world of work for occupational safety and health at work. These include the organisation of a European conference, publishing an *Agency Magazine* with expert viewpoints and a special information section on the Agency's web site. The Agency has also published two research information reports: one on the Research on the *changing world of work — Implications on occupational safety and health in some Member States of the European Union* and another on *Research on new forms of contractual relationships and the implications for occupational safety and health*. This forum summarises the main findings and conclusions from these activities.

Contents

1. Introduction

The world of work has been changing rapidly in response to business demands and new technology. General trends include an increase in the number of small businesses, changes in management methods, increased use of contractors and temporary staff, changes in working hours and increased ability to work away from a fixed workplace or from home. For example, in response to globalisation and

economic pressures companies have looked for greater flexibility to respond rapidly to peak production demands and seasonal variations whilst controlling labour costs. Their approach has included introducing new working practices such as 'just-in-time' production and casual labour such as temporary work and fixed-term contracts.

Changing world of work (CWW) issues covered in this publication include:

- changes in the characteristics of organisations, how they function and employment sectors;
- changes in working time and employment contracts;
- changes in work organisation;
- use of information and communication technology;
- changes in the composition of the workforce, with a higher percentage of older and female workers.

All these issues can have implications for occupational safety and health. They can affect the type and nature of risks present in the workplace and they can affect how risks need to be managed. For example, in some work areas there is evidence that job demands have increased, including an intensification of work and requirements on workers to be more flexible and rapidly learn to carry out new tasks. These conditions can contribute to the incidence of musculoskeletal disorders and stress, which are the most prevalent work-related ill health problems in Europe,

although traditional risks also remain on the agenda. Changes in management structures and responsibilities will affect the management of occupational safety and health, and the use of subcontractors, for example, also complicates the process of managing safety and health especially where several different organisations are working on one site. These changes can also affect the approaches occupational safety and health authorities need to take to effectively support health and safety improvements in organisations.

The European Union Member States and organisations themselves therefore need to manage the occupational safety and health (OSH) implications of these developments, especially given that the occupational health situation in Europe is not showing improvements. As well as ensuring that changes do not lead to a detriment in occupational safety and health, there is the potential to use change as an opportunity to improve working conditions. However, the main focus of this report is to identify possible problems and any steps that can be taken to avoid them.

2. Changes in characteristics of organisations and employment sectors

Small and medium-sized enterprises (SMEs)

The percentage of small and medium-sized enterprises has increased. European figures from Eurostat show that accident rates are far higher in small businesses. SMEs may lack resources and know-how to manage OSH and may not recognise that they need it. In SMEs and particularly micro-enterprises there can be a lack of a formal management structure that will affect the health and safety management process as well. As the number of SMEs grows this places additional demands on labour inspectorates and so forth, seeking to reach and support a larger number of workplaces, and workplaces that generally have fewer resources and knowledge to deal with workplace safety issues. Some ideas and initiatives for reaching SMEs are given in the Agency publications linked to current campaigns, *Getting the message across* and *How to reduce workplace accidents*.

Fragmentation and slimmer management structures in larger organisations

Many larger companies are now operating in a more complex way. There has been the fragmentation of traditional large enterprises. Parts of organisations may operate as semi-autonomous units, and management duties are delegated down. Now many companies operate on a franchise basis. The traditional company had a strong centralised management structure, including for setting health and safety policy and employing safety specialists. Fragmentation and delegation down to line management level, with the reduction of middle management, can create uncertainty about both health and safety responsibilities and decision-making responsibilities. There may be competing management tasks to be carried out especially where responsibilities are delegated down and the time available to carry out occupational health management tasks may

subsequently be inadequate. Slimmer management structures in organisations leave little spare capacity to deal with health and safety contingencies. Also down-sized firms may no longer employ specialists on health and safety.

Change and reorganisation

Change and reorganisation have become features of modern industrial life. Reorganisation has been identified as a factor contributing to a number of major accidents, and may have a negative effect on an employer's ability to manage contractual relations. Change has been shown to be a factor contributing to work-related stress. However, health and safety performance can improve where reorganisation schemes are well planned and well resourced (R. Clifton, *Agency Magazine 2*).

Contractors and outsourcing work

Another major trend has been for larger organisations to outsource tasks such as maintenance as well as component parts of the core business. This can create uncertainty and misunderstandings about health and safety responsibilities. This can be complicated further where contractors are working together or one is working for another. For example, there can be uncertainty about who is responsible for providing OSH information and training or the provision of equipment or protective clothing or who is responsible for management activities such as risk assessments. Whilst EU-derived OSH legislation does not allow employers to hand over their health and safety responsibilities to their contractors, there can be misunderstandings of this nature. Where contractors are present the management emphasis must be changed to one of effective cooperation and coordination between parties. The Agency publication, *Accident prevention in practice,* contains some examples of working with contractors on OSH.

Improving the OSH cooperation between the client and contractors — The Gesina project (Agency's report on contractual relationships)

The Gesina project focuses on the cooperation between different companies and describes the opportunities of this cooperation in the field of OSH. Within the Gesina project a participation-oriented concept was initiated, the 'cooperation circle', to improve the synergy of the contractors (maintenance and industrial cleaning) and the client, an automobile company. The circle structure consists of traditional circle meetings with the contractor's employees and the superiors and a steering committee of superiors and OSH professionals where work problems coming out of the circle are discussed. New changes include:

- central purchase of personal protection equipment;
- support of the contractors in undertaking a hazard analysis;
- increase of cooperation and communication between contractor employees and company employees

---

(participation in health programmes, increase of social support);

- implementation of modern strain-reduction concepts (job rotation, job enrichment);
- improving safety by improving safety behaviour.

Changing role of safety managers

The changed nature of organisations requires a change to the traditional role of the safety manager in enterprises. Rather than carrying out company safety activities themselves, their role needs to change to facilitating and overseeing the tasks. For example, instead of carrying safety audits themselves they would be responsible for developing auditing and other health and safety competencies in line managers and overseeing the auditing process. They would need to be involved in other management areas such as checking the safety performance of potential contractors during tendering processes. They need to develop new skills and new ways of working in their organisation to carry out these tasks effectively.

Modified role of safety professionals (R. Clifton, *Agency Magazine 2*)

Research into the role of safety managers in the sub-contracting process, involving a study of members of the Institute of Occupational Safety and Health (IOSH, the UK membership body for health and safety professionals), found that these managers exercised significant influence over contracting processes and procedures, and found that:

- the relative influence of in-house health and safety professionals increased proportionately with the size of the contract, though it was consistently less than that of line managers;
- health and safety professionals worked closely with contract managers as part of the management team in reviewing the performance of contractors;
- health and safety managers were generally responsible for health and safety training of contractors; and
- they were closely involved in the monitoring of contractors.

Changes in union membership

There is research from some Member States showing that unionised workplaces have lower accident rates (M. Whelan, *Agency Magazine 2*). Unionisation has decreased across Europe and is lower in SMEs. The European model for OSH incorporates the principle of worker consultation in the management process. Where there is no union, workers may lack the knowledge and support to play their role effectively.

Growth of the service sector

A growing proportion of workers is employed in the service sector. Many of these jobs involve contact with members of the public — clients, customers, patients and so forth — which can lead to risks of stress and violence at work. The necessity to carry out additional administrative tasks has increased in professions such as health-care work and teaching and there has been as increase in delivering care in the community in the health and social services so more staff work away from a fixed workplace. Some parts of the service sector may need to develop a safety culture and OSH authorities may need to provide more support to this sector.

3. Changes in working time and employment contracts

There has been a general trend towards more flexible working hours and growth in the proportion of part-time and non-permanent jobs and the number of self-employed.

Working time

Working time has changed, for example, where employers have introduced more flexible working patterns to provide services or use plant during more hours of the day. Many organisations are faced with the challenge of planning a streamlined workforce around tight schedules and peaks in production or services. Any increase to working around the clock will mean more people exposed to the ill-health effects of shift work and night work. Research on the impacts of working in shifts and at night is well established. This research includes evidence that older workers have more difficulties adjusting to shift work. However, according to the Agency CWW report there has been little research into the OSH impacts of other changes to working time patterns.

Work intensity

According to the Agency CWW report an important factor, related to the increase in the diversity of working time patterns, is the increase of work intensity in all countries in Europe. Some effects of this increased work intensity are the extended practice of weekend work, the increase of working time schedules with irregular and less predictable working hours, and the use of both very limited hours (involuntary part-time work) and excessively long working hours (involuntary overtime). Developments towards more work intensity and time unpredictability do not seem to have gone in hand with an increase in workers' autonomy over work. There is still little research on the exact link between new working time patterns and OSH issues at the European level.

Part-time work

Part-time work can bring benefits for both organisations and workers, for example, for workers who do not wish to work full-time. However, there can be safety and health implications if part-time work is not properly planned. Stress may occur if part-time workers feel isolated or not properly involved in the organisation, or if they feel that they do not have the same career development opportunities. Some part-time jobs are concentrated in unskilled work, with poor working conditions and these workers in particular may not be given OSH training, which should be given during their normal working hours.

Short-term contracts, temporary agency work and the self-employed

Temporary work has increased rapidly in almost all European countries, as part of the general movement towards increased flexibility in employment.

According to the Agency CWW report and contractual relationships report there is some research information available that demonstrates that temporary contract arrangements can have a negative impact on working conditions and health. At a European level, working conditions of 'precarious' workers (workers with fixed-term contracts or temporary jobs) are generally worse than those of permanent workers, in particular the physical work environment and conditions of employment. For example, this group of workers is more exposed to physical hazards such as working in painful or tiring positions, high noise levels, and work involving repetitive tasks and movements. They generally have less opportunity to develop skills at work and have less access to training. They have less autonomy over their work and time and less opportunity to participate in workplace decisions (Letourneux, 1998, cited in the Agency CWW report). As a result of this, more musculoskeletal problems and fatigue are found among precarious workers. On the other hand, workers with permanent contracts are more likely to be exposed to high-speed work and have more stress and mental health problems. Some of these differences can be explained by differences in sectors and occupations between the two groups of workers (Goudswaard and Andries, 2001, cited in the Agency CWW report).

Some workers with self-employed status may not have real control over the work or the health and safety elements of the work they are contracted to do. Where a self-employed worker is clearly under the direct control of the employer who contracts them, then some Member States have opted to treat them as employees of the parent company for purposes of the application of health and safety laws.

Little research is found on the question of how workers adapt to the new situation of flexibility and insecurity. Some research indicates that permanent employees may also experience insecurity at work, for example, as a result of organisational changes such as outsourcing or subcontracting tasks or restructuring within the organisation (Agency CWW report).

It is not easy for occupational health services to ensure continuity of service to these fragmented groups. Therefore community services, for example, provided through municipal health centres, may become the most important means of providing appropriate health and safety services to these groups in the future (J. Rantanen, Agency conference).

NIOSH reports that evidence specifically linking recent work organisation and employment innovations to illness and risk is beginning to emerge. Studies in Finland and the United States point to increased sick-leave absence, trauma, and musculoskeletal and stress-related disorders among the 'survivors' of downsizing. Some studies also suggest that so-called 'lean production' practices, which attempt to increase productivity through continuous improvement, new inventory systems, and elimination of wasted time and motion, may increase injury risk in the automotive industry. New employment practices associated with efforts to reduce labour costs have also raised concerns. Researchers at the Massachusetts Institute of Technology found, for example, that contingent workers employed in the petrochemical industry were less educated and experienced than direct-hire workers, and received less safety and health training than direct-hire workers. An even stronger implication of increased safety and health risk among contingent workers is found in a cross-European study showing that, in comparison to permanent workers, precarious workers have increased exposure to painful or tiring work postures, repetitive tasks, and increased noise at work (S. Sauter and L. Rosenstock, *Agency Magazine 2*).

4. Changes in work organisation

According to the Agency CWW report several developments in work organisation have been seen, for example:

- teamwork;
- decentralisation of supportive tasks, such as quality and maintenance;
- job enlargement, job rotation and interdepartmental job rotation;
- knowledge management;
- teleworking;
- virtual networks;
- new working time patterns.

Some of these changes have been introduced from a management efficiency perspective and others with the aim to improve work organisation and quality of working life for the employees. Therefore these changes have not always been accompanied with positive outcomes for occupational safety and health. Here are some examples:

- Some changes have led to increased intensity of work with the aim of achieving higher productivity. In such cases job demands on workers have risen. (See CWW Report)
- Telework systems and virtual networks have enabled work to be carried out at home. New risks may arise as a consequence of homes not having been designed or adapted to operate as workplaces and the isolation from the main workplace. Risk assessment and subsequent monitoring of risks can be a problem. (See CWW Report)
- Some of the changes have also reduced the possibilities for workers to control their working situations. Perceived lack of control over work is a well-documented factor that contributes to the experience of work-related stress.
- Workloads have become increasingly complex and diverse but often this is accompanied by a diminishing amount of time available for training.
- Not all research supports the argument that teamwork leads to improvements in productivity, well-being and

motivation. Organisational systems need to be specifically geared to the use of teamwork. It will not overcome problems such as major reductions in staff (B. Zimolong, Agency conference).

5. Information and communication technologies (ICT)

The workplace has seen a huge growth in the use of information and communication technology as well as rapid changes in the type of technology used, including computer networks, electronic data interchange and the Internet. This has given rise to a whole new set of electronic business activities (e-business) and work practices using e-mail and the Internet. ICT is used to automate activities and can also help to organise processes and operations.

At an individual level there can be three main problem areas in the use of ICT at work: (1) the visual sensory system; (2) cognitive processes; and (3) the psychomotor responses involved in the hand–arm movements. Examples of problems include musculoskeletal problems in shoulder–neck and hand–arm systems, information overload and psychological stress of learning new skills. Also standard display screens are not the optimal solution from the point of view of sight and eye fatigue (J. Rantanen, Agency conference).

Some of the ergonomic problems with the use of display screen equipment are well documented. A newer problem is the risk of hand-arm problems from the use of the computer mouse. Machine-paced work has been associated with musculoskeletal problems and increased stress. Electronic monitoring of workers may therefore have negative effects on their performance rather than the hoped for increases in productivity. E-business also raises new challenges for occupational health and safety. For example, supply management relations between companies raise the issue of occupational health and safety responsibilities.

According to Rantanen the use of poorly designed computer software with lack of attention to usability can put unnecessary pressure on workers. Despite improvements in user-friendliness, problems are still associated with the limited state of development of software ergonomics. Worker productivity and quality of work with ICT is critically dependent on the user-friendliness of the new technology interface, both for hardware and software. The pressure of information-intensive work and the learning process may be particularly stressful for some older workers. Nevertheless, 'information overload' and psychological stress are not restricted to older employees or those with low training levels — the super-experts of ICT have also shown an elevated risk of psychological exhaustion.

On the other hand, ICT can bring great benefits to organisations and workers as well as to OSH management. However, just like any other work organisation system, ICT systems and their use must be planned, implemented and used taking into account the needs and abilities of workers. Adequate training and support are also important factors. Introduction of working with new forms of technology can be a stressful experience for some. Any introduction of change needs to be carefully managed in the workplace to reduce stress.

An example of successful planning to introduce technological change is a case involving the introduction of lasers in a hospital. The following aspects of change were taken into account during the planning process:

- *Organisational issues*
  — changes to work organisation, job descriptions, involving all relevant parties such as human resources, nursing department and service management;
  — changes to the workplace, including specifically designed lighting.
- *Financial planning* including purchase of specific laser equipment and materials, cost of workplace changes, maintenance costs, staff training costs, etc.
- *Medical and patient considerations*
- *Health and safety risk prevention* considerations such as:
  — risk assessment aimed at ensuring effective management of and improvements in health and safety at work;
  — lasers that are official approved and comply with relevant standards;
  — validating collective protection measures by workplace tours, studying workstations and checking that individual protection measures such as laser safety goggles are properly used;
  — staff health surveillance monitoring;
  — information and training for staff.
- *Contingency planning,* relating to failure of the prevention policy. Risks include:
  — for the user, a risk of eye damage and skin burns;
  — for the patient, a risk of eye damage and a fire risk (in an operating theatre), together with environmental, chemical and biological risks.
  — For the environment, a risk of chemical and biological pollution of the premises, electrical risks.

(M. Veron, Agency Magazine 2)

6. Changes in the workforce and OSH implications

The European workforce has changed in composition, and will continue to change over the next decades. Member States will need to take account of these changes, including the OSH implications. Three major trends can be seen.

Older workforce

The first trend is the ageing of the workforce. In all European countries, the average age of the workforce is rising and the percentage of workers over 50 will continue to grow. By 2005, more employees will be in their fifties than in their thirties. According to the Agency CWW report the OSH implications of having large groups of workers over 60 years of age in the workforce are still unclear. Some experts have pointed out the dangers of generalisation about the abilities of older workers. 'The 'deficit model' of the older person and the associated generalisation regarding the supposed gradual loss of all occupation-relevant skills as people grow older are based on findings that relate to particular human capacities, especially individual sensory functions and on the degeneration of physical powers. There are no cogent grounds for generalising these observations.' (W. Hackl-Gruber, Agency conference)

Nevertheless, older workers will need specific support to cope with the rising job demands because of new organisational practices and new technologies and will need to adapt to ever-changing job demands. European safety and health directives require that particularly sensitive groups be protected against dangers which specifically affect them. A. L. Johansson (Agency conference) says that attention to the needs of older workers will preclude long working days and favour 'doing the right thing at the right time'. Older (skilled) workers need more time to acquire and learn new knowledge, time which is not always made available. Ongoing work training programmes need to be adapted to cater for older workers.

'It is not so much a matter of designing work processes for 'older employees' but rather of taking timely action, even when employees are still young, to ensure that work processes are designed to avoid long-term physical damage (to the musculoskeletal system, for example) and to offer opportunities for personal development as a means of counteracting a serious loss of motivation as working lives become longer and employees grow older.' (W. Hackl-Gruber, Agency conference)

One implication of this is that organisations may need specific information and help from OSH authorities, for example, on assessing risks to older workers and practical examples of possible changes to work organisation and so on, to reduce the risks to older workers. There are already some examples of supportive action that has been taken. For example, the Finnish FinnAge programme was introduced to improve health, well-being and work ability in workers over 45. This national programme included the development of tools to make age-sensitive interventions in the workplace

(Agency report, *Occupational safety and health and employability — programmes, practices and experiences*).

Company solutions for older workers (adapted from A. Pensky, *Agency Magazine 2*)

- Some companies are now discussing making 'normal' employment conditions more geared to change, with greater emphasis on age, life-long learning, flexibility and mobility. These may be through individual or collective measures.
- In a steelworks there was a need to reintegrate older workers into the company's new production process. Different and flexible solutions were developed, geared to the individual using a 'performance potential analysis'. Short training courses to develop skills were linked to longer, more specific initiatives. As well as technical work skills, training in health and safety was included. Training was given on an individual basis if necessary. This was followed by subsequent work experience in special jobs designated for the purpose.
- In a public transport company a part-time work model for older workers was brought in to replace early retirement, to provide a gradual withdrawal into retirement. For example, workers who have worked shifts for many years are able to reduce the negative effects on their health by gradually reducing their working hours. At the same time they are able to pass on their knowledge to younger workers before they leave.

More women in paid employment

A second trend is the increasing percentage of women in the workforce. In most countries, participation rates of women have risen quite steadily. However, it is uncertain how much jobs have been changed on the basis of this. Traditional differences remain in the types of jobs carried out by men and women, the types of employment contracts and in career development opportunities. Many women work in the caring services where there are high risks of stress and violence. More women than men work in jobs where the demands are high but there is little individual control over the work. The 'world of work' is still often based on the needs of the male worker and has not been adapted to the needs of female workers. For example, many tools and equipment have been designed for male rather than female workers and traditional working hours may be difficult for women with family responsibilities. Increasingly, researchers and commentators suggest that a 'gender-sensitive approach' is needed at work to ensure that risks to women are properly recognised and managed.

Immigration

A third trend is immigration of new groups into European Member States. In some Member States the trend in immigration is now towards the entry of highly skilled and educated workers. To obtain the full benefit from these new

workers, work organisations may have to adapt to accommodate people from different cultural backgrounds and to ensure that communication is effective within the workplace. In contrast there are still many other immigrant workers concentrated in unskilled jobs, characterised by poor working conditions. An additional problem is that workers who do not have a good knowledge of the language of the country they are entering can experience language problems regarding OSH instruction and training.

7. How to best make 'change' a positive safety and health experience

Changes and developments in working life have the potential to have a positive or a negative impact on occupational safety and health. An overview of workplace trends and possible OSH implications is given in Table 1. A number of possible initiatives at enterprise and national level that can help to make the impact positive are listed below.

7.1. Actions at enterprise level

- Integrate occupational safety and health into the common management and decision-making system and abide by quality management principles. This includes purchasing and procurement systems, selection and management of contractors, use of employment agency staff, and so forth.
- Take a holistic approach to prevention that incorporates risk assessment, training, health surveillance used to spot trends and rehabilitation.
- Ensure managers have safety management competence so that directors, managers and supervisors have the ability to manage OSH alongside their other management activities.
- Company health and safety manager or advisor to be the 'facilitator' and coordinator for OSH management not only the 'doer'. Ensure safety advisors have the skills for this role.
- Include OSH considerations and risk analysis principles in the management of change. This includes when bringing in new forms of working, new technologies or for more minor changes.
- Ensure the management of contractors, including effective cooperation and coordination between parties and maintaining the necessary chains of OSH responsibility.
- Ensure employee involvement in OSH.
- Ensure training is adapted to the needs of any special groups such as part-time workers or older workers.

7.2. Actions in national and regional programmes

- Provide encouragement and help to enterprises in how to apply risk assessment principles to new workplace issues and circumstances, new risks or change management, for example:
  — practical guidelines;
  — practical interventions and appropriate inspection;

- Encourage employee involvement in occupational safety and health.

Examples of initiatives to improve worker consultation

The Irish Congress of Trade Unions agreed with the Irish Health and Safety Authority and the Construction Industry Federation a plan to appoint safety representatives to the 50 largest building projects in Ireland (Martin Whelen, *Agency Magazine 2*; Agency report, *How to reduce workplace accidents*).

The United Kingdom is carrying out a pilot scheme to introduce specially trained safety advisors to workplaces that do not have trade union safety representatives.

- Look at how best to reach 'hard to reach' groups such as temporary and mobile workers, for example, using community-based occupational health services or providing information through family doctors and clinics.
- Work with SMEs, for example:
  — involve intermediary organisations in OSH activities such as trade associations. Some examples of OSH interventions to support SMEs are given in *Getting the message across* (Agency campaig publication) and in the Agency report on how to reduce workplace accidents;
  — motivate SMEs to develop a safety culture by making them aware that health and safety is not only a legal requirement but also a strategic business tool;
  — look at how SMEs can have access to facilities such as common occupational health resources.

Bacon (Agency conference) suggests the following ideas, in addition to regulatory action, to reach small firms.
- Encourage the insurance industry to put its weight behind penalising bad performance and rewarding good performance, through premia and conditions.
- Encourage commercial contracts, including those from the public sector, to lay down conditions for health and safety performance and ensure that those with a bad record or no policies do not get contracts. This should apply particularly to construction.
- Use fiscal measures, including the equivalent of the polluter-pays principle, so that costs of accidents and ill-health are brought home to those who cause them, in paying for hospital treatment, disablement benefits or compensation for example.
- Use publicity, including bad publicity, about companies who rely on good will and good reputation to operate. Accolades and infamy are both powerful tools.
- Use businesses to help each other. Larger companies can help to perpetuate good practice to small firms and extend the benefits of their expertise to neighbouring companies, customers or suppliers. For example, a large firm which has a programme of in-house health and safety training courses might offer any vacant

places to smaller businesses. This helps businesses to learn from each other.

- Facilitate the sharing of information about effective good practices and so forth.
- Promote OSH and human factors at the design stage, for example, of new technologies.
- Look at how to bring occupational safety and health into the mainstream of other domains such as public health, employment and social policy areas.

8. Future research and training needs to address these challenges

It appears that work organisation may be changing in ways that increase occupational illness and injury. This suggests that a greater emphasis on practical research and training in the area of work organisation is needed (S. Sauter, L. Rosenstock, *Agency Magazine 2*).

Suggested research needs include:

- targeted health effect studies of changing work organisation;
- placing particular emphasis on organisational intervention studies;
- studies to develop practical risk assessment methods and studies of combinations of factors and their practical applications;
- properly evaluated 'holistic' ergonomic workplace intervention studies in the field of prevention of musculoskeletal disorders and the need for similar studies in the field of occupational stress, the need for which has already been highlighted in other Agency reports;
- proper evaluation of the emerging examples of interventions, for example, aimed at matching work to older workers;
- analyses of existing interventions to determine success factors;

- improved and standardised research methodologies in work organisation and health studies;
- improved mechanisms for surveillance of changing work organisation and effects on job characteristics.

Suggested training developments include:

- integration of work organisation as a topic into occupational health training for OSH specialists;
- integration of OSH training into the training of other disciplines such as architects and designers, including design of ICT interfaces, as well as management and financial management training and other relevant disciplines;
- integration of workplace training into the overall prevention approach;
- starting OSH awareness activities and development of a safety culture at school level.

In addition, information exchange networks are needed to share any effective examples of management systems and so forth, or other best practices for prevention and give early warnings of possible new risks in the organisations of today and tomorrow.

9. Table 1. Overview of changes at work in the EU and the possible OSH implications

In the Agency report, Research on the *changing world of work — Implications on occupational safety and health in some Member States of the European Union*, a comparison is made of the changes taking place in Belgium, Germany, Finland, France, Germany, the Netherlands, Spain and Sweden together with a literature review in the area. Common trends were found across the Member States. These trends are summarised in the Table 1, together with the possible OSH implications. Further details of trends and their implications can also be found in the Agency report on new contractual relations.

Table 1. Overview of changes at work in the EU and the possible OSH implications

Workplace changes	Possible OSH changes/implications
Increase in SMEs and micro-businesses	• Higher accident rates in SMEs • May lack formal management structures • May lack resources, awareness about OSH • Increase in the number of organisations for labour inspectorates to visit • Benefit most from direct interventions from inspectorates etc.
Larger organisations' changes include: — flatter management structure — fragmentation and increase in complexity — leaner organisations	• Reduced central management control, including for OSH • Possible lack of clarity in OSH responsibilities and decision-making • Delegation to line managers, including OSH responsibilities • Line managers may have limited time, resources, training for OSH responsibilities • Reduced direct employment of safety managers etc. • Safety managers' role changed from implementor to facilitator. Different skills needed • Leaner organisations may have reduced capacity to deal with OSH contingencies • In complex organisations, increased need to integrate OSH into all management and financial functions
Change and reorganisation as constant feature of modern work-life	• Identified as contributing to some major accidents • Possible negative effect on ability to manage contractual relations • Possible stress factor • If well planned and resourced OSH performance can improve
Contractors and outsourcing	• Many contractors can work together • Possible uncertainties and misunderstandings about OSH responsibilities between contractors and between contractors and the contracting organisation • Effective cooperation and coordination between parties is crucial • Need to involve OSH and safety managers in the tendering and contract management process
Reduced union membership	• Evidence that workplaces with unions have lower accident rates • Need for effective methods of worker consultation in workplaces with no union
Increased employment in the service sector	• May have less well-developed OSH systems and traditions • High number of SMEs and temporary workers • Some areas involve dealing with the public, with possible increased risks of violence and stress • More care services provided in the community with staff working away from a fixed base

Workplace changes	Possible OSH changes/implications
Work organisation changes, include: • tele-working • increased 24-hour working • increased work intensity and pace of work • increase in complexity of tasks and rapidly changing tasks	• Homes not designed as workplaces • Possible social isolation • Risk-assessment difficulties • Possible confusion over OSH responsibilities • Increase in numbers working shifts and unsocial hours • Possible increase in stress, MSD and fatigue • Possible increase in stress
Employment status changes: • increased part-time work • temporary workers • self-employed workers • precarious workers in general	• May experience social isolation • May miss out on OSH training • Many jobs less skilled and potentially monotonous • Possible stress from insecurity • May not receive OSH training • Coverage by OSH systems not always clear • Some are technically self-employed for tax reasons but in practice work under the control of the parent company • Evidence that they are more exposed to physical work hazards and have less access to training • May experience insecurity (stress) • More difficult to reach to provide OSH services such as information or occupational health services
Information communications technology (ICT) work E-business and virtual companies	• Highly cognitive (mentally demanding) work, can be very intensive • Possible musculoskeletal disorder risks and eye fatigue from display screen equipment use • Possible increased stress if user-interfaces and equipment not user-friendly • Training for new tasks etc. very important but not always available • Possibility of machine-paced work and monitoring • Possible lack of awareness of OSH risks of 'office' work. • Possible confusion over where OSH responsibilities lie
Changes in the workforce: • ageing • more women in paid employment • immigration	• Danger of generalisation about reduced ability based on assumption of reduced cognitive and physical ability. Compensating experience not always recognised • May face particular problems learning new skills and coping with changes at work • Specific support and training needed • Concentrated in jobs with higher risk of musculoskeletal disorders and in caring jobs with higher risk of violence • Tasks and equipment may be designed for men • Traditional working hours may not suit women with family responsibilities • 'Gender sensitive' approach needed • Possible stress if work organisations not adapted to accommodate different cultures • Many immigrant workers still concentrated in jobs with poorer working conditions • Some may experience language problems with OSH instruction and training

10. Conclusions — From research to practice

Changes in the world of work or the introduction of new working conditions should mean the opportunity to improve working life. This is clearly not always the case.

To prevent new risks emerging and to improve working life, occupational safety and health management needs to be taken into account alongside all other management considerations. Particular attention to occupational safety and health should be built into company processes regarding decisions on change and subsequent management of change, in order to bring business management, work organisation and safety and health issues, including management of stress, together in the management of change process. Assessing the health and safety risks of proposed changes in the workplace including changes to work organisation, should be a routine part of planning changes.

Enterprises need encouragement and help, for example, to apply risk assessment and prevention principles to more complex management situations or to new risk areas. Where steps have been taken to address risks or management issues in new work situations, this information needs to be shared and the approaches taken evaluated.

The development of reliable financial tools, which can illustrate the social consequences of changes in the organisation of work would be an important asset in integrating OSH in the functional planning of production.

Traditional research approaches are designed to be applied in well-defined, stable conditions. The dynamic nature of current working life means that these traditional research approaches are not always appropriate. OSH research in future should concentrate on action research, intervention studies and development of learning networks. The crucial area is the transfer of research into practice, and sharing of research findings with those who are involved in planning changes in work organisation. Development of user-friendly information systems is the way to support this transfer.

11. Agency reports — sources of further information

All Agency publications are available online and can be downloaded free of charge. Some are available in print from the Office for Official Publications of the European Communities (EUR-OP) in Luxembourg (http://eur-op.eu.int) or from its sales agents (http://europ.eu.int/general/en/s-ad.htm). Reports are available in English, the magazines are available in four EU languages and factsheets are available in all 11 official Community languages.

This *Forum* is available in four EU languages at http://agency.osha.eu.int/publications/Forum/. Other Agency resources where information related to this topic can be found include the following.

Research on the changing world of work — Implications on occupational safety and health in some Member States of

the European Union, is a report providing an overview on the issue and information on some EU Member States. The Topic Centre on Research — Work and Health carried out the work for the Agency. TNO (the Netherlands) and NIWL (Sweden) have been the task leaders for this project. This report is available on the Agency's web site at:
http://agency.osha.eu.int/publications/reports/

'The changing world of work', Agency Magazine 2, includes examples of Member State and international research and good practice, available on the Agency web site at:
http://agency.osha.eu.int/publications/magazine/#2

'The changing world of work', Agency conference proceedings, 1998, with contributions from European and international speakers, available on the Agency web site at:
http://agency.osha.eu.int/publications/conference/conference98/index.html
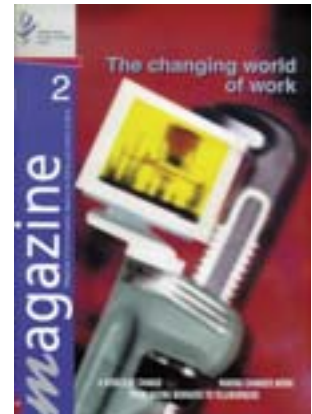
Research on new forms of contractual relationships and the implications for occupational safety and health. The Topic Centre on Research — Work and Health carried out the work for the Agency, TNO (the Netherlands) has been the task leader for this project. This report is available on the Agency's web site at http://agency.osha.eu.int/publications/reports/.

A factsheet on this report is also available at:
http://agency.osha.eu.int/publications/factsheets/.

Occupational safety and health in marketing and procurement is available on the Agency web site at:
http://agency.osha.eu.int/publications/reports/#marketing.

A factsheet is available on this report at:
http://agency.osha.eu.int/publications/factsheets/facts11/

'Preventing accidents at work', *Agency Magazine 4*, includes an article on new trends in accident prevention, available on the Agency web site at:
http://agency.osha.eu.int/publications/magazine/#4

Getting the message across, is a publication on current OSH campaigns contains a number of examples related to SMEs, available on the Agency web site at:
http://agency.osha.eu.int/publications/reports/#campaigning

Occupational safety and health and employability — Programmes, practices and experience, is available on the Agency web site at:
http://agency.osha.eu.int/publications/reports/#employability.

A factsheet on this report is also available at:
http://agency.osha.eu.int/publications/factsheets/facts12/

Accident prevention in practice, includes examples from SMEs and about managing contractors. It is available on the Agency web site at:
http://agency.osha.eu.int/publications/reports/howprevent/

How to reduce workplace accidents, is a report on accident prevention programmes in the Member States including SME and service sector examples. It is available on the Agency web site at:
http://agency.osha.eu.int/publications/reports/workaccidents/

Additional information on other Agency publications is available at: http://agency.osha.eu.int/publications

Links to further research information on the changing world of work can be found on the Agency web site at:
http://europe.osha.eu.int/research/rtopics/change/change.asp?tcid=3
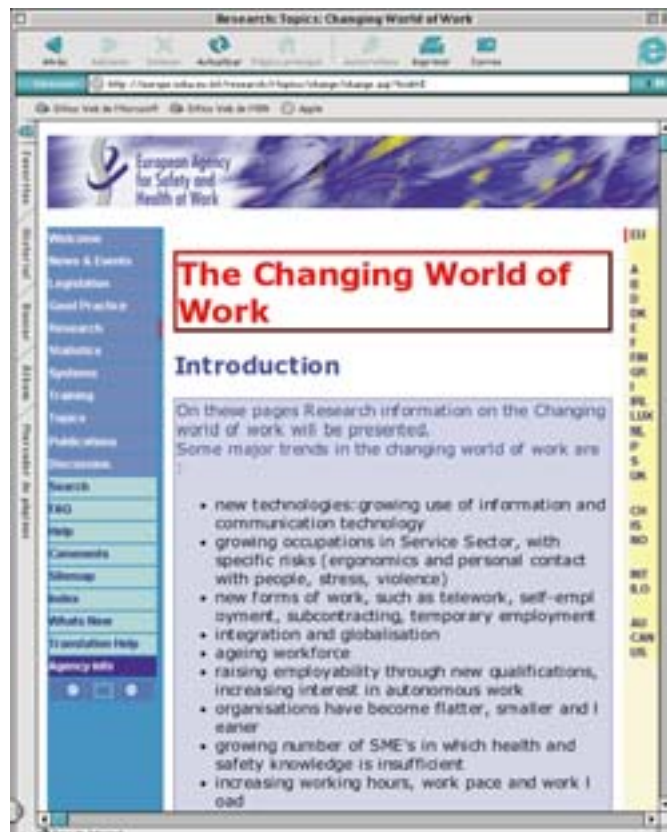
Gran Vía, 33
E-48009 Bilbao
Phone: (34) 94 479 43 60
Fax: (34) 94 479 43 83
E-mail: information@osha.eu.int
http://www.osha.eu.int

**European Agency
for Safety and Health
at Work**

TE-AD-01-005-EN-C