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safety AT WORK

report on EU OHS Week

musculoskeletal disorders

**UN Conference on Corporate
Social Responsibility**

**international
news**

safety AT WORK

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EDITORIAL

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from the editor



It has been the intention of **safety AT WORK** to provide a magazine of analysis with interviews with interesting Safety and Risk people. This edition is a little different. I couldn't pass up the opportunity that the European Agency for Safety and Health at Work provided to publish a selection of solutions to OHS problems from within the European Union.

Frequently, the OHS world seems to be divided into American, European and Oceanic sections. These sections have only recently begun to consider themselves on a global platform. Part of this is the growth of International Standards, another is the spread of the Internet. This magazine itself is an indication of us considering ourselves in a global context. It would be good if more safety professionals began operating with a GAIA-perspective rather than containing their programs, products and schemes to national boundaries.

We are not saying that the solutions presented in this edition of **safety AT WORK** will be applicable widely. Several are similar to developments that I have seen in the last 12 months in Australia. Australia's National OHS Commission has established a "solutions" database that has built on many of the programs of each State. (It is accessible at www.nohsc.gov.au) What is heartening about this is that these are globally available just as it is hoped the EU information will be.

Recently I saw an example of the sectional perspective operate in a microcosm. A local safety group welcomed a new member, a member I had known for many years. He proposed that the group begin to share many of the programs, checklists and policies. Not a radical philosophy and one that, as a consultant myself, use widely to achieve goals and avoid problems. The response was mainly suspicion. One particular response was that as organisations had developed their own programs, it was necessary for the programs to recoup the cost of development, therefore they wouldn't share.

I wouldn't be producing this magazine if I didn't believe in sharing. The magazine must be profitable to survive and that relies on occasional

commercial ruthlessness; but it can not mask the fundamental sharing of information with which OHS professionals must operate. The European Agency has offered me an opportunity to share and I must thank them heartily. I also must thank those solution-makers who have supported the reproduction with photos and diagrams.

I also must thank the other contributors to this edition. Melody Kemp has provided us with a report on a UN Conference on Corporate Responsibility. Her report is an excellent companion piece to her interview on Globalisation in the last edition. Also I must mention the excellent support from Sheila Pantry. Sheila provides each fortnight's International News. It is not really news so much as issues and articles of interest but they are essential resources for most safety professionals.

Lastly, I have to promote our next edition. Edition 7 will be an analysis and report of OHS in the sex industry around the world. It is a difficult industry to discuss as I have been told that "around the world" has a specific definition within the sex industry. Writing on this industry is fraught with traps. The research is dominated by gender political analysis, an example will be included. The industry relies on sexual and racial exploitation in some countries, in many countries the industry is illegal, even in those countries that have a strong tradition of brothels and prostitution.

However, the sex industry operates within workplaces and, as such, the workers have the right to a safe and healthy work environment. The next edition of **safety AT WORK** will illustrate some of the unique OHS challenges in this industry and provide you with some possible solutions that may be applicable in your workplaces.

At the least, it will show that **safety AT WORK** is a useful and interesting magazine, and provide you with an understanding of a type of workplace that has been left out of almost all the major OHS changes for the last 30 years.

Kevin Jones
Editor

Europe is turning its back on MSD

*by Hans Horst Konkolewsky
Director of the European Agency for Safety and Health at Work*

Organised by the European Agency for Safety and Health at Work with the support of the European Commission, the European Parliament and the 15 Member States, the European Week provided a unique opportunity to focus widespread attention on the growing problem of work-related musculoskeletal disorders (MSD).

MSD are one of the most prevalent occupational ailments, affecting millions of European workers in all types of jobs and employment sectors every year. Moreover, much of the pain and suffering involved could be prevented or significantly reduced by following existing health and safety regulations and guidance on good practice.

Getting that message to Europe's workplaces was the key aim of the European Week for Safety and Health at Work 2000. A wide variety of activities took place in all EU Member States during October 2000. In addition, on 27th November 2000 the French Presidency of the European Union and the European Agency for Safety and Health at Work joined forces to organise a closing event for the European Week 2000.

The European Week for Safety and Health at Work is an information campaign designed to raise awareness and promote activities to make Europe a safe and healthy place to work. This year's European Week, which took place during October in all Member States, focussed on the growing problem of work related musculoskeletal disorders.

Everybody involved in occupational safety and health matters was invited to take part, especially safety and health institutions and organisations, trades unions and employers organisations, companies, managers, employees and safety

representatives. The Week was aimed at organisations, companies and workplaces of all sizes and sectors with particular focus on small and medium size enterprises.

The prevention of musculoskeletal disorders has been prioritised because of the large and increasing number of workers affected and of the economic consequences involved.

The extent of MSD in Europe

Work related musculoskeletal disorders are already one of the most common work ailments affecting millions of European workers in all sectors. MSD are

the primary source of occupational health complaints reported by workers. In some countries MSDs are now the most prevalent occupational disease. According to a recent European survey¹ 30% or 44 million of European workers complain of backpain, 17% complain of muscular pain in the arms and legs and 45% reported working in painful or tiring positions.

The risk of work-related MSD is increased by exposure to factors or combinations of factors such as manual load lifting, poor or awkward movements, highly repetitive movements, pace of work and vibrations. People are

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put at risk where their work involves unsatisfactory handling techniques or the loads they handle are excessive. Lifting, putting loads down, carrying, pushing and pulling can all cause injury. Some people are also at risk because they work in uncomfortable positions doing forceful or repetitive tasks. One example is VDU equipment work where people may work in a fixed position for prolonged periods with repetitive hand and wrist movements.

As a result of the risks, people may injure their muscles, tendons and joints and if these injuries are repeated, there can be permanent damage. The nature of some jobs carried out predominantly by women put them at greater risk and older workers have problems where jobs are often designed for younger people. But all the sectors and types of jobs are concerned, from office work to manual handling, from fisheries to the health care sector.

MSD health problems range from discomfort, minor aches and pains to more serious medical conditions requiring time off work, medical and hospital treatment. Treatment and recovery are often unsatisfactory especially in more chronic causes. The end result can even be permanent disability with loss of employment.

Lightening the load

The toll of aches, pains and injuries is a heavy load borne by workers and their families. It is also a heavy load for enterprises costing Europe billions of Euros in lost productivity and increasing health and social costs every year.

A high proportion of all work related of ill-health - up to 40 or

50%- can be attributed to MSDs. Some cost estimates in the Member States point at cost equalling 1% of Gross National Product.

Lifting the burden of work related MSD is about improving the lives of people at work and is also about improving business: good health and safety is good business!

Musculoskeletal disorders can be prevented

Much of the pain and suffering involved could be prevented or significantly reduced by following existing health and safety regulations or guidance on good practice. MSDs can and must be prevented! Getting that message across is the key objective of the European Week 2000.

The European Union has adopted directives to protect workers and to improve safety and health at work, which include minimum requirements aimed at preventing musculoskeletal disorders. The framework directive in 1989 (89/391), to improve the safety and health of workers, was a decisive step forward in this field. It imposes a duty on employers to ensure the safety and health of workers in every aspect related to their work. To this end, employers must, *inter alia*, evaluate the risks to safety and health at work and take action to reduce or avoid the risks and to adapt the work to the workers. Individual directives followed on manual handling, on VDU equipment, on work equipment, on machinery and on working time.

Member States have transposed the European Directives and issued legislation covering risks related to MSD. Practical guidelines and preventive tools

are also available. Nonetheless, the prevention of MSDs remains a challenge for those involved in prevention work.

How can these disorders be prevented? Assessment of the risks in the workplace is the key element of an effective prevention plan. Once MSD problems have been identified actions that can help preventing MSD problems need to be determined. Such actions could include: organising the work in a different way to eliminate or reduce the risky activity; modifying the job, the equipment, the workstation or the process; altering a person's job pattern by job rotation or job enlargement or introducing breaks in the routine etc. - Indeed, tackling MSDs often results in rethinking work organisation.

When dealing with MSDs companies may need expert advice, e.g. from preventive services. However many solutions are straightforward and inexpensive. Prevention is also good sense and a lot of preventive tools and good practices already exist.

The European Week — a collective and cooperative endeavour

The European Week was very much a collective and cooperative endeavour from a wide range of organisations and individuals. The Agency's principal role has been one of coordination, support and encouragement. The real work however has taken place in the Member States and beyond (including the EFTA countries) in organisations of all types like public authorities, companies and trade unions.

In order to promote practical action against MSDs the Agency co-funded 37 projects from public institutions, private companies and social partners and universities across the EU supporting a variety of initiatives from advertising on buses in Ireland to an interactive TV programme in Finland, from a free telephone information line initiative by the Trade Union Confederation in the UK to a self control tool on CD ROM and Internet in Luxembourg. Abattoir workers in France, Bank employees in Luxembourg, farm workers in Great Britain and car factory workers in Portugal are just some of the groups targeted and which will benefit from the Community support. Most of the co-funded projects are aimed at SMEs.

To support the campaign, the Agency produced a whole set of promotional material in all Community languages and set up a multilingual web site dedicated to the European Week available at <http://osha.eu.int/ew2000>.

The Agency has run several *information projects* on specific aspects of MSD problems including work-related neck and upper limb disorders, low back disorders, repetitive strain injuries and the socio-economic impact of MSDs. All the information reports are available on the Agency web site where they can be downloaded free of charge.

Furthermore, *data collection of good practice* examples has been substantially developed to give access to MSD Good Practice. A first-ever *European award scheme* has been organised to identify and promote a number of good practices that will be recognised at an awards ceremony on 27 November.

This ceremony forms part of a *closing event* jointly organised by the Agency and the French Presidency of the European Union. A colloquium on European perspectives will offer a valuable opportunity for a forward looking debate on the major political challenges posed by the growing incidence of work related musculoskeletal disorders between European decision makers including European social partners, and European and national experts.

Looking beyond EW 2000, the information collected through the campaign will 'live on' on the Agency's web site and serve as an invaluable source of reference material for those looking for information on this major work-related risk that affects up to one in 3 workers in Europe.

The European Agency would like to express its gratitude to all organisations, authorities, companies and individuals that accepted our invitation and actively participated, helping to turn Europe's back on musculoskeletal disorders.

1 By the European Foundation for the Improvement of Living and Working Conditions (1996)



MSD Solutions

Provided by the European Agency for Health and Safety At Work

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Introduction

Background

Musculoskeletal disorders (MSD) are one of the most common work-related ailments affecting millions of European workers across all employment sectors at a cost of billions of Euros to Europe. The disorders cover a broad range of health problems. The main groups are back pain/injuries and work-related upper limb disorders, commonly known as 'repetitive strain injuries'. Lower limbs can also be affected. They are common across all employment sectors and industries in all the Member States in the European Union. Once they have occurred they can be difficult to treat and can result in permanent pain and disability for the worker. However, much of the problem could be prevented or reduced by following existing health and safety regulations and guidance on good practice. Unless effective steps are taken the toll of workers suffering will increase along with the costs to industry. Therefore many employers want to know how to introduce effective measures in practice.

Sharing good practice

Across the European Union Member States a common set of

directives aimed at preventing health and safety risks in the workplace apply. An important role of the European Agency for Safety and Health at Work is to gather and make available information that will support and promote the prevention of work-related ill health. This includes assisting and stimulating the sharing of information to solve common problems.

This publication and the Agency's web site aim to show that work-related musculoskeletal problems can be solved in many ways. They provide real examples of how companies and organisations have made interventions and sought to reduce musculoskeletal disorders at work. Each type of industry and workplace has its own conditions, that can also vary between Member States. Therefore work practices and solutions to problems must be matched to the particular situation by carrying out an assessment of the risks at the actual work-place concerned (See Box 1). Nevertheless, many musculoskeletal problems are not unique and solutions can be relevant and transferable across various sectors, types and sizes of enterprises.

The practical examples

The 16 examples of good practice MSD prevention presented here are all award winners in a European competition run as part of the European Week for Safety and Health at Work 2000. The aim behind this European Agency initiative has been to support the dissemination of good practice information about MSDs and to increase the exchange of information about effective ways of prevention and 'practical solutions' in Member States and at European level.

The winners come from 13 EU Member States and include small and medium-sized enterprises, large companies, a trades union and a specialist safety and health institute, operating in very different sectors.

Each example describes the nature of the problem, the solution applied and the benefits. It is hoped the cases will give those in the workplace an idea of what is achievable. It is not meant to be definitive or technical guidance. Not all elements of all cases were successful and these short summaries present the best features to demonstrate what can work in practice and the process to achieve it. Some of

Box 1

Risk assessment

Before Good Practice information is applied, an assessment of the hazards and risks present in the workplace should be carried out and reference made to relevant national legislation.

A risk assessment is a careful examination of what could cause harm to people, so that you can decide whether you have taken enough precautions or need to do more to prevent harm. The aim is to make sure that no one gets hurt or becomes ill. If a risk assessment is not carried out before implementing good practice information, there is a danger not only that risks may not be controlled but also that there may be wastage caused by misapplied resources.

Source: Agency website Good Practice area where more information about risk assessment and good practice is available (see references at end of this publication)

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the enterprises developed their own solutions using their own expertise. Others found it useful and cost-effective to use consultants with expert knowledge and practical experience in investigating MSD problems. The majority included the involvement of employees and their representatives to determine the problems and try out solutions. This is crucial to success as they have first hand experience of the work situation. Some initiatives were initiated by trade union organisations. A table at the end lists the title of the example, source of problem, industry and intervention.

Risk prevention

It is hoped that these examples will be of practical use to others.

Good practice is about taking effective action to tackle the root cause of the problem. Every organisation is different so for an existing solution to be used by another organisation, it has to be adapted to their particular circumstances. The European Directives on safety and health at work and national legislation to implement them and supporting guidelines set out the approach to take (see box 2). The Agency website provides links to information about these directives and to national sites providing information about their legislation, guidelines and also national good practice solutions. Various reports and factsheets giving further information about MSD risks and their prevention are available from the Agency

website, as well as more examples of Good Practice and advice about how to use them. See references and sources of further information section

Acknowledgements

The Agency relied upon its network of 'Focal Points' in the Member States (competent authorities, or bodies nominated by them, responsible for occupational safety and health) to nominate good practice examples for the Agency award scheme. We would like to thank them and the winning organisations for their help in the production of this publication.

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

November 2000

*Box 2***European prevention approach**

- Avoid MSD risks;
- evaluate MSD risks that can not be avoided;
- combat the MSD risks at source;
- adapt the work to the individual, especially the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reduce their effect on health;
- adapt to technical progress;
- replace the dangerous by the non-dangerous or less dangerous;
- develop a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors related to the working environment;
- give collective protective measures priority over individual protective measures
- give appropriate instructions to workers.

Based on "Framework" Directive 89/391 article 6.2 (5)

Redesigning tram driver's working position

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Task

Driving public transport trams

Problem

Wiener Linien GmbH & Co KG, the Vienna Transport Authority, is Austria's largest local transport company, carrying more than 700 million subway, tram and bus passengers each year. The tram division operates 570 eight- and twelve-wheel low-floor tramcars and trailer trucks, and employs 1,400 drivers.

The company was concerned about the possible high health risks to drivers of operating old trams, resulting in time off work due to illness and early retirement on health grounds. The reasons identified included strain on the musculoskeletal and motor system, stress, irregular hours and poor climatic conditions inside the vehicle.

The design of the driving positions in the old vehicles (529 units) required the driver to adopt constricted postures and perform repetitive activities such as button operation to open and close doors, etc., resulting in extreme strain on the musculoskeletal and motor system.

In order to be ready to brake at any time, the driver of a moving

tram had to have his right hand on the 'gritting' lever and his thumb on the 'rail brake' lever. The length of the two levers meant that the right arm usually has to be held fully extended or slightly bent. At the same time, the left hand was being used to operate the stop/start lever. The driver had to use additional pressure to operate the 'dead man's handle'. These requirements meant that the driver was forced to work in constricted postures with twisting of the torso. The drivers also had to use their feet to operate three pedals (dip switch, bell and solenoid brake).

In addition, at the start of their work shift many drivers found that they did not have time to adjust their seats, leaving them in the position used by the previous driver, as they were difficult and complicated to alter. This created additional adverse effects on the posture of drivers seated in incorrectly adjusted seats.

Solution

Wiener Linien decided to introduce ergonomic improvements to the driver's position when constructing new low-floor trams. To decide what measures were required they questioned drivers and set up a working group that included representatives of drivers, occupational physicians and safety experts, and also used expert support from the Ergonomics Department of Vienna Technical University's Institute of Industrial Engineering, Ergonomics and Business Economics.

The new trams incorporated the following design features for the drivers:

- new seat with controls for the

- most frequent operations incorporated in the armrests;
- height-adjustable pedals;
- rapid and simple individual seat adjustment;
- special breathable seat cover material for greater comfort;
- air-conditioned cab.

Specific features of the new seating position included:

- centrally oriented seating position for the driver and possibility of performing the most frequent operations



- (opening and closing of doors) and the longest-lasting or continuous operations (setting of reference values for driving and braking commands) without twisting of the torso, and therefore without constricted posture, by transferring these functions to the armrests;
- adjustment facilities to adapt the seating position (height of seat and level of foot support) and the appropriate adjustment controls (reference value setter and door function buttons) to the physical size of the current driver;
- contour of the backrest adjustable by the driver.

Results

To date, 41 vehicles incorporating this new driving position and the other safety and health features have been built leading to the following results:

- improved driver posture and reduced strain on the musculoskeletal and motor system;
- reduced perspiration as a result of breathable seat cover and air conditioning of the cab;
- significantly improved driver acceptance of the driving position and enhanced job satisfaction;

In the medium-term further improvements are expected including:

- reduction of occupational illnesses;
- less time off due to illness;
- fewer early retirements on health grounds.

Adapting a forklift truck

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Task

Unloading lorries and storage of packages on pallets in a warehouse

Problem

A forklift truck is used to unload lorries. Standard packages of bags of polyethylene and polypropylene granules are stacked on pallets. The pallets are then transported and stacked in a large warehouse.

Forklift truck drivers had reported various work-related neck and back problems to the company medical physician. A survey of mental and physical stress in the materials handling department, supplemented by data from conversations between individual employees and the physician, showed that full-time forklift truck driving was the most stressful job in this department. An ergonomic analysis was made of the work and the driver's cab. The ground was uneven, consisting of 'Stelcon' elements,



with the result that drivers were continuously exposed to major shocks and jerks. For safety reasons the loaded forklift trucks were driven in reverse. Thus, the shocks were absorbed with the body turned. The driver's seat was provided with springs. This resulted in further back strain. The forklift used turned out to have an especially low cabin structure to enable the containers to be loaded. Increased pressure of work in this department also needed to be resolved by organisational measures. Technical and safety aspects were also regarded as

important objectives that needed improving

Solution

IDEWE, an external authority for prevention and protection, implemented this project at Borealis Beringen.

A multidisciplinary project group was set up. The engineer from the Materials Handling department directed the project. Various operators from the Materials Handling department ensured participative input.

In addition to the participation of Borealis's in-house prevention department, the company doctor and the ergonomist from IDEWE – the external prevention authority – and an employee of Barlow Handling (a company which sells, hires out and adapts forklift trucks) also took part in it.

The subjective views and experiences of the Materials Handling workers were already known from the survey and the conversations with the company physician. The ergonomists used this data and ergonomic analysis of the existing situation and forklift truck, (based on the "NOVA" checklist) to assess the situation. The project group then formulated ergonomic recommendations. Determining the ergonomics solution also involved the use of anthropometric data of the drivers and recommendations to propose changes to the cab.

First the ground surface in the warehouse was replaced by a soft asphalt covering.

Since no forklift truck could be found on the market that fulfilled all the ergonomic safety and technical specifications, it was decided to adapt an existing forklift truck. A prototype

forklift was built and carefully evaluated during trial phases, with adjustments to the design being made throughout this process:

- visibility when driving forwards was ensured by raising the entire cabin structure. This also enabled tall drivers to sit upright;
- the driving seat has been set lower in relation to the base-plate;



- a shorter seat base prevents circulation to the thighs from being cut off. The driving seat is equipped with new springs, cushioning vibrations and acting as shock absorbers;
- the levers are within easy reach and can now be operated while maintaining good posture;
- the switch controlling driving direction has been moved so that it can now be operated from the steering wheel;
- improved lumbar support and the amended design of the seat back makes sitting more comfortable;
- the seat and controls can be adjusted to suit the driver;
- in order to increase produc-

tivity, it was decided to implement the design with a double pallet fork, so two pallets can be lifted at the same time.

The ergonomist provided instructions to project group members on their use and driver training for these new forklifts, for example individually adjusting the driver's cab, in order to make the working position as ergonomically effective as possible and in order to be able to work efficiently. The instructions and working procedures were incorporated into work guidelines or standard operating procedures. Comments from drivers resulted in some changes being made.

Results

Reduction in work-related health problems in forklift truck drivers:

- it is now very rare for there to be a need to drive backwards, as forward has been greatly improved visibility;
- exposure to vibrations and shocks have been reduced by the new ground covering;
- increase in operator participation as a result of participative approach.

Reduction of costs:

- the eight adapted forklift trucks are hired at an increased rental cost, but the increased productivity has resulted in savings (Hire costs BEF 1 600 000 a year; an annual profit of BEF 7 200 000 as a result of increased productivity and a BEF 5 600 000 net annual profit).
- 80% gain in storage and order picking.

An intelligent lifting device for loading a high-frequency press

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Task

Table manufacture in the furniture industry: gluing solid wood bandings onto table tops using a high-frequency press.

Problem

Manual lifting of heavy, unmanageable loads requiring physical strength and with corresponding bad posture was causing health problems especially regarding MSD.

The worker's tasks include laying the solid wood bandings and table tops in the high-frequency press, supervising the pressing process and removing the complete table top. On average 80 table tops are completed each shift. The workers had to load the high-frequency press manually. This involved them lifting the table tops weighing approximately 40 kg from the freight lorry, carrying them, placing them in the press and removing them. Manual loading was only possible with two workers because of the size of the panels, so another worker had to be deployed solely for the loading process.

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The manual loading was causing strain on the spine, due to the weight of the table top, the detrimental body-posture (e.g. bending with the weight) whilst placing the panel in the press or removing it and the frequency of the lifting and carrying process. The repeated lifting, carrying and setting down tasks took place approximately 200 times per shift.

Solution

A mechanical lifting device was introduced so it is no longer necessary to move heavy loads manually. It uses a vacuum system and intelligent control device to hold the tabletop in a suspended position. The use of the vacuum to hold the tabletop means it can be easily moved. An electronic measuring gauge records the weight of the panel and the electronic controls enable the panel to be suspended. The worker can move the suspended panel in any direction without expending energy. Workers were actively involved in decisions the implementation of this solution



Results

- reduction of time lost due to sickness;
- improved efficiency of work processes;
- cost savings as the direct result of innovation approx. • 16,000 p.a..

Improved organisation of workstation for sewing of mattresses

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Task

Sewing mattresses.

Problem

The working position was fixed and employees had to make numerous twisting back movements when handling large mattresses during sewing. Foot pedal controls were also causing problems. There were a high number of complaints of health problems regarding MSD like pains in back, neck and shoulders. Sickness absence was between 7 and 10%.

Solution

A comprehensive action plan was developed to combat monotonous repetitive work in the company. The Danish Regional Preventive Services took part in the process, contributing advice on the development of technical solutions for example.

Initially a new platform for workstations was which could be lowered or raised to allow

employees to sit or stand up while working was introduced. The control pedal system was altered and careful attention given to working space requirements. Employees may now alternate between standing up for half the day and sitting down the other half while sewing the large mattresses. This also provides some variety.

Despite the changes the problems with the control pedals continued, causing some operators to rest on one hip. Therefore further technical changes were introduced including the use of automatic sewing machines. Initially one machine was tested in the factory and 16 have been bought since then. The new machines allow operators to move more freely while sewing large items. and this has created considerable satisfaction among employees.

Results

- effect with regard to absence due to illness: a drop from 7-10% to 1%;
- efficiency has increased by 30-35%;
- employees more satisfied for example with greater freedom of movement when carrying out the work;
- work is continuing on improving the workstations. Plans include the testing of height-adjustable platforms from where the mattresses may be taken for sewing without the operator having to bend her back;
- the process and solution chosen is also suitable for other companies.

Avoiding manual handling using a vacuum device to lift meat

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Task

Manual handling of heavy loads of meat at high frequency in a meat processing and preparation factory.

Problem

Back disorders are particularly common among Danish meat workers. 64% of men and 56% of women throughout the industry have back symptoms at least twice a year (compared to an average of 45% men suffering pains in the lower part of the back at least once a year-according to figures from a major Danish study, DIKE 1989).

Heavy slabs of meat had to be manually lifted at high frequency. Several workplaces required the lifting of approximately 10 tons an hour per employee using inappropriate movements.

Solution

A specially designed vacuum lifting device or 'meat magnet' was developed for lifting slabs of meat. It consists of a horizontal vacuum lifting unit, a vacuum suction device and a pneumatic control unit. The operator places

the suction device on the meat slab and a vacuum is created between the device and the item, so it can be lifted and held automatically for transport. By activating an open/close valve on the right hand side, the meat item may be raised and lowered without any heavy physical effort on the part of the operator.

Several other lifting relief measures have also been



introduced. The work process is also part of a job rotation scheme and work is in progress to develop better scope for job rotation, 'knife-free days' and other technical and job organisational initiatives.

To help in the training in the use of the 'meat magnet' and to help share the idea across the meat industry a professional video was developed. It has been shown at divisional meetings in several companies within the meat processing industry and used for teaching at meat processing and technical colleges.

The involvement of employee prevention representatives and the participation of all employees played a crucial part in developing

a successful solution. The project was carried out with the assistance of the external Occupational Health Service, who made regular visits, working with a special project group from within the company and with the involvement of the company's joint prevention committee. Care was taken to keep employees in the division informed of progress throughout the project. Employee prevention representatives were involved in early testing of the meat magnetic lifting aid. All staff had the opportunity to discuss the project and test the 'meat magnet'.

Results

The effects have been many and varied:

- the 'meat magnet' has eliminated the need for heavy lifting without increasing the speed;
- nearly all the employees report that the equipment is suited to the task and 60% find that using the equipment reduces work stresses on the lower back, upper back, shoulders, elbows, left wrist, hand and fingers;
- no employees have experienced an increase in repetitiveness and about half experience less repetitiveness;
- fewer employees are seeking physiotherapeutic treatment for lower back pains;
- more older employees, men and women, and those with symptoms of premature physical wear, can manage the work;
- training and retaining new employees has become easier;
- many good ideas put forward

Continued on Page 14

- by employees for technical innovations and work organisation have been implemented;
- the interest in participating in activities aimed at improving the working environment has increased;
- daily interaction between staff has improved. Working with others including on new initiatives to improve the working environment has improved, for example in relation to both attitudes and practical issues such as setting budgets;
- the idea has spread across the sector and now various different 'magnets' have been developed for lifting other meat items.

Automatic removal of protective plastic from stainless steel parts

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Task

Removal of plastic protective covering from stainless steel parts in dishwasher production and 'stamping'.

Problem

Plastic covering is used to protect the stainless steel used in the production and assembly of household appliances from

getting scratched, marked etc. The operation to remove the plastic from the stainless steel part has until now been performed manually. The worker begins from one point and pulls it back, so that by performing circular movements all the plastic is removed. There is a risk of MSD such as tendinitis in the forearm from the repetitive effort involved in the movement required to do this task.

Solution

The Department of Stamping Engineering, the section in which stainless steel is worked, had for some time been examining how to avoid the manual performance of this operation. As a machine or tool for this purpose could not be found in use elsewhere, so it was decided to design one, which removes the plastic semi-automatically.

In the new design of the workstation, the operator will feed the machine with parts which are still in their plastic covering, raising the edge of the plastic slightly, the machine will then remove the plastic leaving the machine to do the rest.

The machine's functioning mechanism is basic and consists of pincers closing on the raised edge of the plastic and pulling it back in a regular way. Feeding the part into the machine is not



done directly but on a bedplate which allows one to be fed in and the finished one to be removed. The removed plastic is then collected in a container located in the lower part of the machine which is easily extractable.

Results

- Elimination of an established risk from a repetitive manual task;
- the evaluation of the outcome and benefits is ongoing.



Reducing manual effort in factory loading tasks

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Task

Loading industrial detergent sacks on to pallets, loading solid industrial detergents into mixers, loading industrial adhesives into mixers and into crushers.

Problem

This company produces a variety of chemical products including cleaning agents and adhesives. MSD risks from various tasks involving the manual handling of heavy loads such as barrels, sacks, etc. were identified, including the adoption of forced postures, creating problems of absenteeism and possible poor industrial relations. The worst problems were in the industrial detergents and industrial adhesives production area involving tasks such as putting heavy sacks of industrial detergent onto pallets, loading solid industrial detergents into mixers, loading industrial adhesives into mixers and into crushers.

Solution

Specialised assistance was engaged in order to make a joint ergonomic study of the workstations affected. Based on this study, the main initiatives taken were:

- comprehensive analysis of each of the workstations (including use of the "NIOSH lifting equation" and the limits proposed by ISO/CD 11226) and introduction of prevention measures based on this analysis;
- mechanisation to avoid manual handling of loads (Vacuum-action bag manipulators);
- redesign of the workstation to avoid forced postures;
- specific training for employees involved in each of the workstations;
- education and awareness raising e.g. display of information posters at the workstations involved etc.

Results

- 50% decrease in worker absenteeism caused by musculoskeletal disorders, following introduction of the corrective and preventive measures;
- improvement in work relations, due to decrease in absenteeism;
- benefits due to the improvement of working conditions include the increase in employee satisfaction and the improvement in working atmosphere.

Improved seating and reduced lifting in garment manufacture

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Task

Textile industry - sportswear manufacture. Production work and transportation of goods within the factory in the tailoring division and printing and dyeing division.

Problem

The work in the tailoring division, printing and dyeing division involved prolonged periods sitting in a static position and constantly lifting or pulling loads. An increase in health problems and absenteeism had been noted, especially related to MSD. Some machines were operated by pedals that were uncomfortable to use. Very large and heavy metal trolleys were being used to transport goods in the factory, which required

intense muscular effort and strain on the part of the employee.

Solution

The company has taken the following steps to help tackle these problems:

- use of new adjustable seating which provides the worker with much better support and also allows them to adjust their body position when working;
- adjusting the pedals of the machines to suit the employee the anthropometric data of the employee;
- replacing the heavy trolleys by installing a mechanical system of rolling, raised shelves (Schonenberger system) for the purpose of placing, transporting and storing items to be tailored;
- increasing the use of other lifting devices such as forklifts, hand-operated pallet-bearing machinery;
- training employees in the correct lifting methods and the use of the lifting devices;
- training employees in other work tasks so a rotation system can be used to move them between different tasks. The aim of this is to reduce both physical and mental strain and allow employee to move between from one work area and atmosphere to another.
- moving older and more susceptible employees to lighter work posts;
- carrying out regular health surveillance to help check for problems and that solutions are working;
- creating a pleasant and spacious room for rest and recreation with a canteen.

Results

- Decrease of musculoskeletal problems;
- decrease in average of days off;
- improvement of productivity.

companies and the occupational health services felt that there was a need for improved ergonomics in their workplaces.

The small companies with MSD problems came from a wide variety of sectors:

Ergonomics programme for SMES

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Task

Developing an ergonomic small workplace programme with 24 SMEs to assist them in the prevention of musculoskeletal disorders

Problem

Twenty-four small businesses had previously taken part in a Small Workplace Programme on maintaining and promoting working ability, organised by the Finnish Institute of Occupational Health. A follow-up survey indicated that three out of four employees in the companies had suffered from musculoskeletal symptoms during the past 12 months. The MSD problem was further confirmed by examinations of some employees sent by their companies to a physician at the Finnish Institute of Occupational Health. In addition, the management and staff in the

Industry	Companies with less than 10 employees	Companies with 10-49 employees	companies with ≥ 50 employees	total number of employees
Metal	1	5	5	823
Electronics	1	3		92
Printing		1	1	173
Hotel/restaurant		3		75
Commerce	1	3		94
In total	3	15	6	1257



*A worktable, which can be bend. The worktable is constructed by workers.
Photo: Ulla Könni*



*A standing base, which is bild by workers. Now the hole sole is on the floor.
Photo: Ulla Könni*

Solution

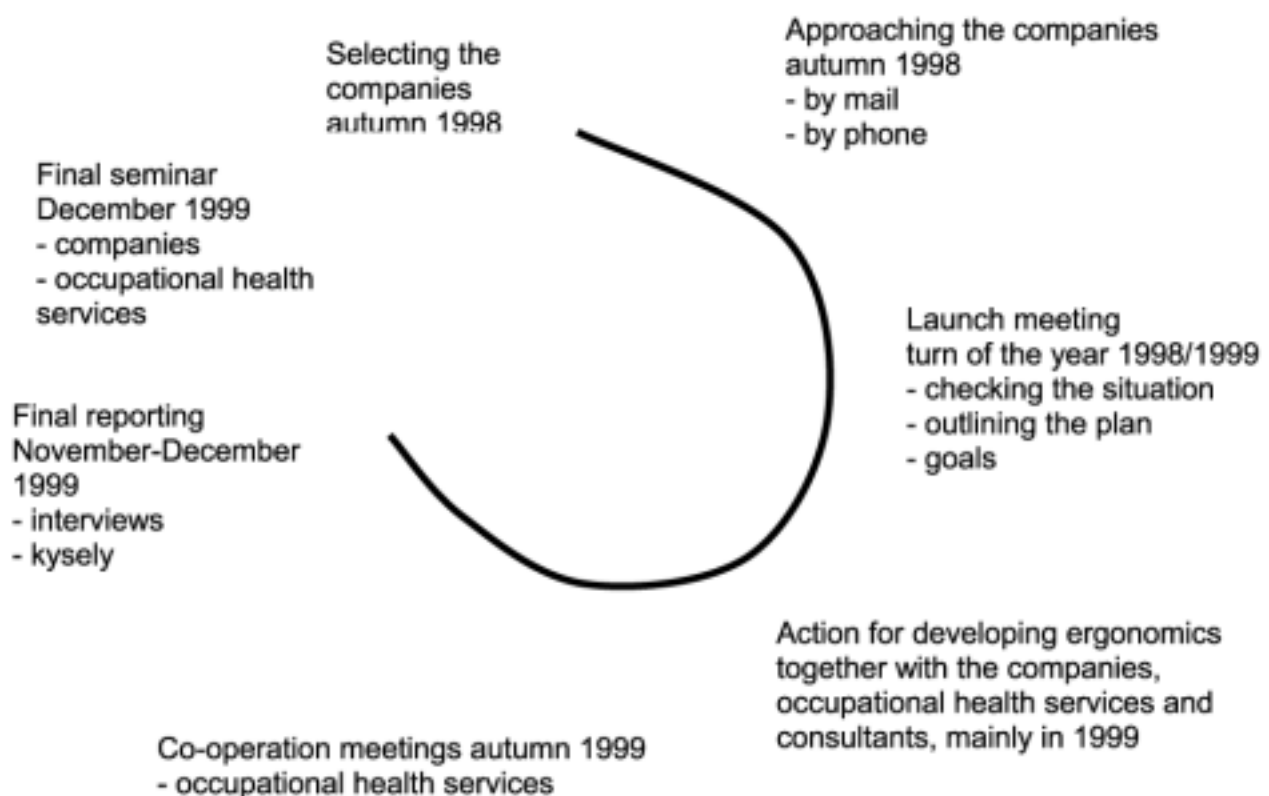
A multidisciplinary consultant group from the Uusimaa Regional Institute of Occupational Health developed ergonomics programmes in co-operation with the staff of the 24 companies. The process used to develop the programme with the small workplaces is given in the box.

At a launch meeting with the companies goals were set concerning the development of ergonomics interventions in their workplaces. The precise measures to be taken by the companies were agreed with them during the development phase. Towards the end of the development phase an assessment meeting was held to review progress on the initial

goals, whether the agreed measures had been implemented, for example whether the company had made new procurements or if there was anything that required further processing and discussion at the company level. An important element was to review what was considered to have been a success and what could have been done differently. Also

Box

Process to develop an ergonomics programme to prevent MSD at small workplaces



effectiveness of co-operation with and between the Occupational Safety and Health Services was reviewed at this stage. A final evaluation meeting was held to discuss whether the measures taken had had any effect on ergonomics. Evaluation forms were also used to obtain feedback on experiences.

Ergonomics interventions were developed on the basis of the needs and goals of the individual companies. A wide variety of methods were used and example are given in the box below:

Results

The 'developing ergonomics' programme was successfully implemented in the companies based on the initial goals set:

- concrete improvements in working conditions and workstations were successfully implemented;

Ergonomics intervention methods	companies with < 10 employees	companies with 10-49 employees	companies with ≥ 50 employees
Developing workplace ergonomics together	1	8	4
Guidance on ergonomic working methods	2	9	3
Ergonomics training or briefings to employees		1	
Designing the layout of the workplace/workstation		3	2
Teaching and using the method of mapping workplace ergonomics		4	
Using the method of developing working conditions and the work community (questionnaire)			1
Consulting ergonomics experts	1	4	3
Assessing the strain on the musculoskeletal system		1	
Finding solutions in problem areas		1	1
Creating an ergonomics library	3	15	6
Training to relieve neck and shoulder symptoms			
Workstation ergonomics campaign		3	2

Thirteen companies chose to develop ergonomics together. The employees of companies were always involved in developing the ergonomic interventions, using 'participatory ergonomic methods'. Through the project companies made concrete improvements in working conditions and workstations. Some of these measures were 'small-scale' and 'immediate'. Some target areas required more substantial investments and the companies made further plans to implement them in the longer term.

- company planning on health and safety was developed e.g. by budgeting and planning for longer term interventions;
- the project promoted employee participation in health and safety and developing ergonomics solutions;
- there was an increased awareness of ergonomics among staff and managers;
- it encouraged co-operative working between some companies on health and safety.

Removing repetitive risks from the assembly of small components

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Task

Small component assembly line work during production of electrical domestic goods

Problem

Esswein is an industrial branch of the BRANDT Group, specialising in the production of dishwashers, washing machines and tumble dryers. Production line operators carry out a whole range of operations to assemble and install small components and sub-assemblies: frame and motor components, internal components, electrical circuits, etc. All these operations entail a large number of and very precise positioning, assembly, screwing and clipping operations. It was found that the upper limbs of

operators were under constant stress as a result of time constraints, precise and repetitive movements and different levels of exertion at different work stations. The number of work-related MSD was on the increase and new cases had increased by a factor of nine over five years.

The different activities concerned were giving rise to a range of MSD problems on all the production and assembly lines.

- Risks arising from the movements performed
 - stresses on the wrists and elbows in the case of clipping, insertion of wiring and screwing;
 - stresses on the shoulders due to the height at which operations had to be performed at some work stations.
- Risks connected with the forces exerted
 - weight of tools;
 - weight and bulk of the components to be handled.
- Risks arising from the repetitive nature of movement sequences
 - work on assembly lines, with tasks divided into repetitive sequences always requiring the same movements.
- Organisational and relational problems
 - little rotation between work stations;
 - working areas not geared towards co-operation;
 - overloading of supervisors and workshop methods.

Solution

The project arose from discussions over a number of years

about MSD prevention in the enterprise. These discussions paved the way for the introduction of a range of measures in the appliance production and assembly departments.

The solutions were developed through discussion and participation of the workers and their union representatives.

They involved a whole range of changes to improve work and work stations and to improve the whole process of ensuring good ergonomics by integrating it into management activities.

- mechanised assistance with screwing: changes in the positioning of tools in many screwing stations and changes to their conditions of use in order to reduce levels of exertion;
- assistance with component handling;
- introduction of variable height work stations;
- training in new skills and tasks and incentives for task rotation, following ergonomic studies of the respective constraints of the various individual stations;
- organisational work changes to tackle psychosocial risk factors that can exacerbate the probability of the onset of MSDs (e.g poor work relations and tensions) including improved communication with operators and reacting to their complaints.
- training for technicians in methods of analysing and finding solutions for MSD risks;
- integration of the use of ergonomic and bio-mechanical criteria into the design of new work stations from the outset. The complete redevelopment of a production

line provided an opportunity to take account of MSD issues right from the design stage.

- involvement and steering of schemes by the unit directors, including enabling ergonomic aspects to be taken into account in management decisions. Supervisory staff have been trained on how to take account of working conditions in their decisions.
- creation of a range of working parties, with employee participation, in order to analyse and redevelop work stations.

Results

- All these measures, introduced over a number of years and still in progress, have curbed the rise in MSDs and substantially improved working conditions
- many bio-mechanical risk factors have been eliminated: repetitive movements reduced, improved working postures, lower levels of exertion;
- there is now systematic inclusion of ergonomic criteria in the design of new workstations. Increased attention is paid to ergonomics, MSD prevention and working conditions in all management decisions;
- there has also been a marked improvement in the social climate.

Technical devices to reduce manual handling and repetitive work in meat packing

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Task

Various tasks related to meatpacking including moving, cutting, cleaning and collecting of animal parts in pork meat production.

Problem

Studies show that workers in the meat sector suffer from a high rate of back disorders and the company had noticed a high rate of various MSD problems. The main problem involved manual handling of heavy loads of meat, including whole pig carcasses, at high frequency. Several workplaces required the lifting of heavy loads by the employee using awkward movements. For example twisting and turning whilst holding the load; manoeuvring loads at a height with the arms fully stretched above the head; carrying and supporting heavy carcasses and meat joints across one shoulder. Other tasks involved very forceful and awkward movements to cut the carcasses, often whilst supporting the load manually at the same time. Identified risks included: carrying, pulling, pushing and holding heavy loads,

often in static positions; repetitive movements; poor indoor climate; the danger of injury from using sharp instruments and devices for cutting; high physical workload.

Solution

Manual handling of loads and repetitive movements were reduced by using semiautomatic and automatic machines and systems for the high risk tasks and also making changes to working procedures and by doing so avoiding the need for the workers to carry out these high risk tasks.

For example the following changes were introduced:

- a machine operated meat joint cutter with integral protective gauntlet, with the load of the meat supported by a ceiling hung support;
- automated movement of carcasses through the factory, suspended from the ceiling, to eliminate manual carrying over the shoulder. Carcasses now move automatically between process areas and are suspended at the correct working height;
- automated cutting open of ceiling suspended carcasses, eliminating a forceful cutting task and manual support of the load;
- automatic removal of intestines weighing 25 Kg, before done manually involving an awkward twisting movement whilst holding the heavy intestines;
- automated 'unhooking' the carcasses from the ceiling to place on a horizontal conveyor;
- in shoulder jointing section

further automation to support the load and to open and cut the meat;

- mechanical lowering of pieces of meat to be processed;
- the suspension of the carcasses from the ceiling has also improved the working postures of those carrying inspections of the meat.

Results

An evaluation has shown:

- reduced manual handling of loads;
- reduced accident rate;
- elimination of risks especially regarding MSD.

Mechanical aids for handling glass panes

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Task

Glazing industry: transport and positioning of glass window panes.

Problem

Manual handling problems were occurring in the horizontal and vertical transport of window panes and in the positioning of window panes. This was giving rise to serious back, neck and arm disorders. Examining the accident and sickness absence records confirmed the extent of

the problem: the sick leave at the start of the project was 16.7 % and the disability rate (one year sick leave) was 5.5 % which is very high.

Most window panes weigh well in excess of 50 kg and panes weighing between 100 and 200 kg are quite common. (While typical lifting recommendations quote maximum weights for manual handling of 25 kg). Besides heavy loads there were problems of transporting the large, unwieldy panes across difficult and uneven surfaces, including outdoors on building site terrain. The existing transport cart weighed 45 kg, far too much for easy working. Besides the weight they were also difficult to handle and manoeuvre and the wheels often unsuitable, especially on construction sites where transport ways can be muddy or sandy for example.

Surveying and health surveillance of employees revealed more about the nature of complaints. More than 75% of the glaziers had complaints about the physical demanding aspects of their work. The rate of associated ill health problems was well above the norms in the construction sector, a sector which has high rates of manual handling related ill health problems. The problems were greatest for the back, but significant for other parts of the body as well. For example, prevalent complaints were: to the back 28% (compared to construction industry rate of 23%); neck complaints 23%; shoulders 27%; elbow 14 %; wrist 9%; hand/fingers 10%; hip 11%; knee 22%.

Solution

The companies involved worked with the ARBOUW Institute to develop the solutions. New working methods and mechanical aids were developed to avoid as far as possible the need for the glaziers to carry out any manual handling in the pane transportation and mounting process altogether.

A mechanical hoist mounted on a truck means that a glass pane can be loaded and unloaded without physical strain. The hoist can be easily folded out. The hoisting lasts almost one minute longer than manual loading and unloading. However one worker can now do the job, while previously for most window panes at least two workers were necessary.

Two tools for horizontal transport were developed: a new lightweight carts weighing 25 kg, can stand loads of 200 kg and can easily be handled by one person. The wheels can be changed for different situations. For transport over even floors, a mini-cart in the shape of a roller skate was designed.

An easy to use vertical transport aid can lift a pane up to the third floor of a building. The lifting device can be used in combination with a transportable scaffold to provide a stable platform. The physical strain is low, since there is no manual lifting. A special device prevents the hazard of the grip of the vacuum lifting device slipping through leakage of the vacuum.

Results

- Elimination of manual handling is possible and practically feasible;
- 13% to 59% of the glaziers are now using one or more of these mechanical aids;
- improved working between and within companies: the exercise involved three different companies and the participatory process led to real collaboration between all involved in the three companies as well as in their branch organisations;
- economic costs/benefits: qualitative assessments showed a break-even or productivity gain with the new working methods.

Improving seating and ergonomics in factory quality control work

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Task

Quality control checks during the manufacture of plastic articles.

Problem

Checking for defaults in the manufacture of plastic articles is a repetitive task. The operator's tasks in the quality control section basically consist of:

- picking up parts from an incoming runner to inspect them by touch and vision;
- putting the part back on an outgoing runner;
- if it has a defect, placing it on the runner on the operator's left;
- if it does not have a defect, re-routing the part on an upper runner;
- noting the results on a special form.

The problems were mainly:

- health complaints by workers, particularly musculoskeletal disorders;
- operators had to stand to do the job;
- excessive reaching to distances to the runners, which were outside the comfort
- reach and visual zones of operators;
- for example a bench was restricting operator access to one of the runners, causing back pains;
- high rate of undetected defective parts, jeopardising customer relations and leading to the return of complete loads in supply contracts where the deadline had only just been met.

Solution

An ergonomic intervention was carried out under the occupational safety, health and hygiene services. It involved a team consisting of the factory medical inspector, an ergonomist and an occupational psychologist.

After an initial identification of health and safety risks in the workplace and dysfunctions in the production system, a detailed analysis of the task, and the

analysis of the work activity and dysfunctions in the production system was carried out. The postural demands on the operator in the real working situation were recorded and analysed and those tasks involving greatest risk of musculoskeletal changes identified.

Methods used included free and systematic observation, video recording of the work activity, surveying and interviewing workers and the preparation and completion of analysis tables geared towards the situations under study.

Video recordings were analysed to quantify the frequency, duration and sequence of postures in the real work situation to give a dynamic postural profile of operators as they carried out their work. This was done using the PASEA computer programme (Posture Analysis System for Ergonomic Applications) and with the support of the Ergonomics Laboratory in the School of Human Motoricity, UTL (Lisbon Technical University).

Based on the results of these analyses proposals to minimise the identified health risks were made. This was done with the aid CAD techniques (computer assisted design) and graphic modelling (3D Studio Max) to simulate the real working situation. It included three stages:

- modelling the actual situation;
- preparing potential proposals, with brainstorming and value analysis;
- preparing suggested action with simulations of the work activity.

To enable operators to work seated one of the major problems of the existing layout, the

excessive distance for reaching for parts on the lower runner, the upper runner and the rejected parts side runner had to be solved. The runners were brought closer to the operator so that they were positioned in the comfort reach and visual zones of the operators (an analyses of the operators comfort zones was made). The variables of reach and free space were taken into account in redesigning the workstation.

Frequency of tasks and therefore movements such as reaching was also an important consideration in deciding where to position elements in the redesigned workstation, particularly the runners. In principle the elements of the workstation used most frequently needed to be closest to the operator. One of the restrictions affecting the operator in reaching towards the runner was the bench sited between the operator and the runner. This was replaced with a smaller one.

The design of a system based on ergonomics alone does not eliminate harmful risks to the health of operators associated with postural problems. Problems may arise in the implementation stage if it is not monitored and if operators are not trained. On-the-job training was therefore provided to facilitate adaptation to the new working situation and to overcome resistance to change on the part of operators.

Results

A survey was carried out with operators to validate the action:

- output increased by over 30%;
- errors fell from 17% to 2%.

The operators referred to the following aspects of the new work situation:

- greater comfort;
- the chairs are comfortable, leading to a reduction in postural discomfort of the lower limbs at the end of the working day;
- reduction in tiredness;
- due to the technical changes carried out to increase output rates, the rate of the runner carrying parts to be inspected increased and the work rate increased as a result.
- improved motivation because management showed concern not only with increasing production but also with the safety, comfort and health of the operators.

Ergonomics for junior schools

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Task

Sitting still for long periods of time in junior school classrooms (pupils aged six to nine years).

Problem

There was concern that prolonged periods of sitting still on ill suited and poorly designed school furniture puts strain on the musculoskeletal systems of young, growing children, and may favour the use of one side of the body. It also means that the pupils are not made aware, by example, of the importance of suitably designed tools and equipment (e.g. furniture) and variations in posture and activity.

Solution

The prevention of strain-related problems in school children solution consists of at least three parts in a coherent programme: provision of suitable furniture of the correct size; exercise; education, training and awareness raising. To help achieve this ergonomics programmes for junior schools have been developed and introduced.

Physiotherapists are now promoting ergonomics



knowledge and application in this area through the provision of:

- detailed information to pupils, teachers, other members of staff and parents;
- assistance in the purchasing and testing of school furniture;
- instruction in lifting techniques etc.
- exercise during breaks, etc.,

Results

Preventing a child from gaining serious strain injuries and providing educating and training on the issue saves society vast sums of money now and in the future:

- school furniture of the correct size is reducing the direct danger of uneven strain and problems;
- sufficient and correct exercise is increasing ability of the child's body's to cope with strain later in life;
- the programme increases the pupils' understanding of ergonomics and allows them to be in a position, in the future, to demand a good working environment.

Introducing adjustable workstations on a packing production line

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Task

Packing tea on a production line

Problem

The workstation was not adjustable which proved to be a real problem for the workers, whose heights and body sizes vary considerably. It was also unsuitable for left-handed workers. Worker heights ranged from five feet to six feet three inches. The workstation was too low for tall operators causing them to adopt stooped back postures. It was too high for small operators, but if they raised the height of their chairs (if they were able to) this resulted in their legs dangling without support.

- Operators with larger thighs had difficulty in squashing their legs under the fixed width of the workstation. The limited space caused pressure to be exerted on the upper thigh;
- two out of three of the chairs were unsuitable in that they were not adjustable. At least one of the chairs was fitted with a ring, which was designed to act as a footrest. Operators who rested their feet on the ring were forced into positions, which restricted blood circulation.
- waste bins (for damaged tea bags) were situated at a distance from operators and in some cases placed behind them. This resulted in twisting and stretching;
- boxes piled high around operators interfered with human contact. Operators reported experiencing feelings of being hemmed in; left-handed workers had to spend a significant amount of

time at the start of their shift rearranging workstation furniture in order that they could carry out their job.

Solution

The project was carried out by a team from the company with expert advice provided by an ergonomist, a health and safety expert and a psychologist from the local University (Sunderland University). The workplace team comprised: four shopfloor operatives (including representatives from all three shifts), the Occupational Health Nurse, the Administration & Training Manager and the Line Manager.

Part of the solution including training a small team of shopfloor workers in ergonomic risk factors and to enable them to participate fully in risk assessment and solution generation.

The starting point was for the team to carry out an assessment of health and safety risks (with a particular focus on MSD) as required by national legislation (Management of Health & Safety at Work Regulations) on the production line where the problems were occurring.

Facilitated by the University experts the team met over a number of weeks to brainstorm possible solutions to the problems they had identified. Potential solutions were taken back to the workplace and tried out. A logbook was used by the operators to record ideas as they occurred. All those working on the production line were encouraged to become involved in putting forward ideas and testing them. As a result:

- a new fully adjustable workstation was designed according to ergonomic principles;

Continued on Page 25

- fully adjustable chairs were ordered and all operators were educated in the importance of adjusting their chair and workstation at the beginning of the shift;
- waste bins were placed close to and to the side of workers;
- the high stacks of boxes were eliminated as a result of a change in work practices.

Results

- Each operator on the production line now has a fully adjustable workstation which fits his or her needs no matter how small or large he or she is;
- the working environment is also far more pleasant as a result of the high stacks of boxes having been removed. This has had the effect of enabling operators to look around the room. A number of them have said that this had made them feel 'less bored'.



Worker rehabilitation using voice recognition computer software: 'Talk yourself into a job' training programme

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Task

Use of display screen equipment or other computer operated equipment by workers with or who have had a work-related musculoskeletal disorder.

Problem

Continuing the employment of workers, such as experienced display screen equipment operators, once they have developed a work-related upper limb disorder.

The GMB is a trade union whose members work in both office and factory workplaces. The union was concerned that workers who had developed long-term musculoskeletal disorders, from manual operation of keyboards or the mouse, other repetitive office work, or factory tasks e.g. on factory production lines, were unable to continue in employment. The following may have contributed to the development of the disorder in the first place: very repetitive tasks, insufficient breaks, poor posture, stress, fast pace of work e.g. to meet production targets and bonus targets, insufficient or poorly designed workplace equipment, lack of job rotation etc, insufficient / no training on the safe use of the equipment, VDUs and the mouse may also have exacerbated the MSD. Once the worker had developed such a condition it was impossible for them to continue in the same or similar work involving repetitive movements etc. Those with the MSD can therefore find themselves unemployed and also unable to carry out other everyday basic tasks. For the organisation it means the loss of an experienced, trained and skilled member of staff.

Solution

To continue in the same or similar employment the way the computerised equipment is operated by the worker needs to be changed. Voice-operated equipment exists but workers need training in its use if they are to remain employable. A special course 'Talk your way into a job' was set-up to help meet this challenge.

In the UK some Government projects have been set up to assist and provide public funding for initiatives to re-skill workers for future employment. The union worked with a regional programme (Essex TEC Skills 2000 Challenge Project) to obtain the funding and set-up the special training course. The custom built course was designed and developed to provide tuition to MSD sufferers on the use of voice recognition software, predominantly for word-processing activities, as an alternative to standard typing and mouse use; thereby enabling employment re-integration / retention. Eligible people from the local area, with upper limb MSD, can take advantage of this free course that is held one-day per week for six weeks, with tuition being provided on a one to one basis.

It was recognised that rehabilitation support should go beyond just training in the use of equipment. The course also covers workplace health and safety information, coping strategies for MSD sufferers and advice on how other workplace aids can help minimise the effects of MSDs. Assistance is also provided on career re-direction, when necessary. The newly acquired and effective communication technology skill

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(voice recognition) can provide the client with new and further employment opportunities.

Similar training programmes can also be provided for workers in employment or their employers to enable their retention at work, by the provision of voice recognition training and advice. A charge has to be made for this service.

As a general support and promotion of worker rehabilitation the union has also been involved in providing advice and information to a variety of organisations. This includes: demonstrations and advice on voice recognition software and its benefits; how to obtain Government financial assistance for employing MSD sufferers; how to retain people with MSDs in the workplace is also disseminated to a variety of organisations.

Results

- Workers have been retained in employment by switching to the use of voice recognition software to carry out their work, who would otherwise have become unemployed;
- unemployed individuals with MSDs have returned to the workplace, utilising their new voice recognition skills and MSD coping strategies, where appropriate;
- to date, approximately 1/3 of the clients who have completed the course, since its start in September 1999, are in, or about to enter, paid employment. This would probably not have been possible if they had not attended the 'Talk Yourself into a Job' course.

Annexes

References and sources of further information

More information about preventing musculoskeletal disorders is available from the Agency website

<http://osha.eu.int> where the full text of all Agency publications can be downloaded free of charge.

Further examples of solutions to MSD risks can be found at http://europe.osha.eu.int/good_practice/.

The Agency website also provides links to EU legislation, <http://europe.osha.eu.int/legislation/>, and to Member State sites where national legislation and guidelines may be found.



Report on Recent UN Conference on Corporate Social Responsibility

By Melody Kemp

"No one believes business any more. They are I think even less believable than politicians and journalists" said Jean Paul Jeanrenaud of the World Wildlife Fund for Nature. We were all attending a two-day intensive workshop in Geneva on Corporate Social responsibility sponsored by the United Nations Institute for Social Development. While the emphasis was to be on developing nations the principles equally apply to the rest of the world. It is clear that governments are progressively abdicating their role as regulators in the face of corporate lobbying. Fashionable rhetoric instilling fear of big government and the substitution with notional economic efficiency, has allowed transnational corporations (which unlike governments are not accountable or removable), to become largely self-regulating. Accordingly we have seen the yeast-like rise of things known as Codes of Conduct - which are largely voluntary in nature.

My own role was to review the situation in Indonesia where companies such as Reebok and Nike in particular had been taking a lot of stick from the international consumer movement for low

wages and poor working conditions in their subcontracting plants. I had myself been involved in the independent monitoring of OHS in Reebok plants so know first hand the difficulties of trying to enforce voluntary Codes of Conduct. I also knew the reason why the companies had been able to get away with such conditions all these years was that Indonesian labour administration would not have won prizes for honesty, accountability or effectiveness.

The delegates from research and social institutions throughout the world brought the message clearly home that while the role of civil society is desirable to an increasingly globalised world it is clear that Codes of Conduct unless supported by legislative muscle are merely fig leaves designed to appease the less critical public.

The reason for this is that Codes of Conduct to a great degree rely on independent labour monitors to check compliance. In the developing world many of these groups have little or no power in a formal sense. Even trade unions are often the target of oppression or are not so cleverly disguised

agents of the state. In Indonesia that was the case for years. Independent monitors coming from the poverty stricken layers of labour activists and trade unions in Asia would largely be easily bought off. In terms of OHS little information and even less technology exists to assist them in their task. Few of them would have enough training to enable them to recommend adequate changes to work places to make them safe.

David Barkin of Mexico questioned whether we should be even considering social responsibility seriously in light of the global erosion of workers wages - in Mexico real wages have dropped by 40% since NAFTA came into being.

The irony is that most workers in the developing world want the sorts of rights we in Australia have given away: industry and sectoral awards, income and job security, industrial courts to mediate fairness. What most consumers don't know is that well known brands such as Reebok, Nike, Calvin Klein, Tommy Hilfiger Next and Gap subcontract their work to production plants in Asia - let's say Indonesia. One factory may produce say five different

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international news

Provided by Sheila Pantry, OBE



Scientific tests by the CAA confirm mobile phone threat to aircraft

The UK Civil Aviation Authority (CAA) recently issued a report on research that confirmed that mobile phone transmissions made by aircraft passengers can interfere with aircraft equipment. The tests back up the existing CAA ban on the use of mobile phones on board aircraft while the engines are running. This has been in effect since the introduction of the first mobile phones. Tests carried out by the CAA on board two aircraft parked at Gatwick proved that phone transmissions produced interference levels that could disrupt aircraft systems.

One of the reasons for conducting the research is that aircraft equipment certificated before December 1989 was not tested to show immunity from interference from mobile phones. Equipment manufactured after this date has higher levels of immunity. For many years, the aviation industry has reported interference attributed to mobile phones. These reports by pilots have included:

- false cockpit warnings that increase the workload for the crew and reduce their confi-

dence in important warning systems

- malfunction of aircraft systems
- interference in the pilot's headsets
- distraction of crews from their normal duties

Dan Hawkes, head of the avionics section in the CAA's Safety Regulation Group, said: "Because of the lack of detail in the reports and the variable factors on board the aircraft at the time they were purely anecdotal. We recognised that a better technical understanding was required." The tests found the following:

- interference levels varied with relatively small changes in the location of the telephone in the cabin
- internal doors in the aircraft, made of composite material, did not block the signal
- passengers in the path of the transmission attenuated (reduced) the signal.

This means that the number of passengers on the flight could affect the level of interference. Mr. Hawkes explained: "The tests show that a mobile phone used near an aircraft's flight deck or avionics equipment bay will produce interference that exceeds the certification levels for some equipment. For safety reasons the current policy of prohibiting the use of mobile phones by passengers while an aircraft's engines are running must continue."

The report also contains a number of follow-up recommendations:

- there should be reminder

notices in airport departure areas shortly before passengers board

- airlines should be encouraged to evaluate mobile phone detection equipment that would warn crews if a phone was in use.

The CAA also plans to conduct further testing to determine more precisely what effects mobile phone transmissions can have on aircraft equipment. This will involve exposing selected aircraft equipment to increased levels of transmissions, in a controlled environment, until the equipment ceases to function.

For more information, or a copy of the full report, contact:

Jonathan Nicholson
Civil Aviation Authority
Aviation House
Gatwick Airport
West Sussex RH 6 OYR
UK
Tel: +44 20 7453 6027

Alternatively, go to web site for the full report www.srg.caa.co.uk/srg/srg_news.asp

The Royal Society for the Prevention of Accidents (RoSPA) Review published

The Royal Society for the Prevention of Accidents (RoSPA), one of the longest established health and safety organisations with over 80 years experience, has just published the latest Review on its wide ranging activities. RoSPA's aim is "to enhance the quality of life by exercising a powerful influence for accident prevention", and judging by the breadth of activities

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reported it can said that RoSPA is achieving its objective. The respect in which RoSPA's name is held has been demonstrated on numerous occasions as RoSPA's ideas for advances in the health and safety field have been taken up by Government and other influential organisations. Sometimes this has been the result of years of work, gathering evidence, preparing a case, lobbying those with power and at times taking criticism, before winning an argument. An example of this is the campaign of *Managing Occupational Road Risk*, particularly where it concerns company cars and van drivers, which might never have made its mark on the health and safety agenda. Now, the UK Government has agreed that an inter-agency task group will look into the whole matter, with RoSPA playing a lead part.

Many of RoSPA's views on revitalising occupational safety and health after 25 years of the *Health and Safety at Work, etc. Act* have also been taken up by the Government. Another long-term objective, the inclusion of risk education in the National Curriculum, has now come to fruition.

RoSPA, with its various Advisers, also has various committees, whose members, drawn from a wide range of industries, offer advice and guidance. RoSPA's work includes consultancies, and has gained a mounting reputation for specialist knowledge and expertise. These consultancies, undertaken in the UK and globally include playground safety, the needs of small businesses, product safety, water and leisure safety, driving and fleet drivers needs, with

clients from local authorities, universities, government agencies, shopping centres and private companies. RoSPA also offers an extensive training programme, an Information Service and a lively publishing service with journals such as *OSH*, *Safety Education*, and also *OS&H Bulletin*, *Safety Express*, and *Staying Alive*.

RoSPA also stages the biggest single celebration with its annual Occupational Safety and Health Awards, and the first ceremony of the new millennium saw more than 880 businesses and organisations being honoured - a record number! RoSPA's Distinguished Service Awards recognise outstanding contributions to health and safety by an individual, and this year awards went to David Eves, Deputy Director General of the UK Health and Safety Executive, Nigel Bryson, Director of Health and Environment in the GMB union, Roger Bibbings, Safety Adviser, RoSPA and to your European contributor Sheila Pantry.

RoSPA Review available from:
The Royal Society for the Prevention of Accidents
RoSPA House, 353 Bristol Road,
Birmingham B5 7ST, UK
Tel: +44 (0)121 248 2000 Fax: +44 (0)121 248 2001
web: www.rospace.co.uk

Research on work related stress, by Tom Cox and others

This report of an information project commissioned by the European Agency for Safety and Health at Work and carried out by the University of Nottingham, UK covers the problems of stress at work, how it affects health and the implications of existing research for managing stress.

Available from:
OFFICE FOR OFFICIAL PUBLICATIONS OF THE EUROPEAN COMMUNITIES,
L-2985 Luxembourg
ISBN 9282892557
Price EUR 11.00

Titles you may have missed.....

Patty's Industrial Hygiene, 5th Edition, 2000,
3553 pages.
<http://www.hhsc.co.uk/acgih2.htm#patty's5th>
Full set of 4 volumes £711 + p&p. Separate volumes £211 + p&p each.

Aerosol Technology, 2nd Ed, William C. Hinds,
1999, 503 pages. £90. See
<http://www.hhsc.co.uk/acgih2.htm#0471194107>

Air Pollution and Health, Holgate, Samet, Koren, and Maynard,
1999, 1079 pages. £128.
<http://www.hhsc.co.uk/acgih2.htm#0123523354>

Basics of Industrial Hygiene, Debra K. Nims,
1999, 368 pages. £52. <http://www.hhsc.co.uk/acgih2.htm#0471299839>

Health Effects of Toxic Substances, 2nd Ed, Malachowski with Goldberg,
1999, 308 pages. £86. <http://www.hhsc.co.uk/acgih2.htm#0865876495>

Contact:
Dr Donald Hughes
H & H Scientific Consultants Ltd
<http://www.hhsc.co.uk>

WORK-RELATED MUSCULOSKELETAL DISORDERS ARE FAST BECOMING THE GREATEST HEALTH AND SAFETY CHALLENGE FOR EUROPE

Bilbao, 17th November 2000

This is the main conclusion of the European Week for Safety and Health at Work with Musculoskeletal Disorders (MSDs) accounting for up to 40 or 50% of all work-related ill-health and affecting over 40 million European workers.

Europe's competitiveness is being considerably reduced by the social and economic impact of this increasing work-related disorder. Some estimates in the UK put costs to companies at between £5,251 and £11,498 per reported case. Estimates in several Member States indicate that the overall costs could be between 0.5% and 2% of Gross National Product which is a significant burden on the EU economy. In the case of MSD prevention, it is clear that a healthy workplace could also contribute to a healthy business environment.

Much of the pain and suffering and economic costs from MSDs could be prevented or significantly reduced by following existing health and safety regulations and guidance on good practice. The main objectives of the European Week have been to promote awareness about musculoskeletal disorders and to encourage the exchange of experience on practical preventive solutions to this work-related problem. The Agency has played an important role in encouraging national activities and projects and in collecting good practice examples that could have a real impact in the workplace.

The Director of the European Agency, Mr Hans-Horst KONKOLEWSKY, said that he hoped that "Companies, trade unions and professionals across Europe would consult and put into practice some of the Good Practice examples collected by the Agency and others at the Member State level. If companies were able to exploit these and other good practice examples in the workplace, they might also find that the results would not only alleviate the burden of work-related MSDs but that they may also result in cost-efficiency savings too".

On 27th November 2000 the French Presidency of the European Union and the European Agency for Safety and Health at Work will join forces to organise the closing Colloquium of European Week 2000 in Bilbao. The colloquium will begin the debate between experts, social partners and decision-makers at the EU level to examine the next steps that can be taken at the European level.

A full programme is available at http://osha.eu.int/ew2000/closing_en.pdf.

The results of this debate will make an invaluable contribution to the discussion next year that will be undertaken at the European level on a

"European Strategy for Safety and Health" outlined in the European Commission's Communication on the European Social Policy Agenda in June.

Following this colloquium, awards will be given as part of a European award scheme to a number of good practice examples which have been developed by companies and organisations from across

Europe. In all, 16 organisations from across Europe were selected to receive awards in recognition of their good practices in the first ever event of this type at the European level.

The full list of winners and summaries of the good practice solutions can be accessed on the Agency webpage at <http://osha.eu.int/ew2000/prevmsds.pdf>

Further information
European Agency for Safety and Health at Work, Gran Via 33,
E-48009 Bilbao, Spain
email: information@osha.eu.int,
fax: +34 94 479 4383

notice

**First Issue of
safety AT WORK
for 2001
Volume 2 Issue 8
due out
Late January
early February**

USEFUL WEB SITES

<http://cgsst.fsa.ulaval.ca>
<http://cgsst.fsa.ulaval.ca/violence/p4.htm>

Two new sites from Canada - one on Mental health at work and the second one on Violence at work. Both in French, from IRSST, which also has a new name - it is now "Institut de recherche Robert-Sauvé en santé et sécurité du travail"

IRSST
505 De Maisonneuve Ouest
Montreal, Qc
Canada H3A 3C2
Tel: 514-288-1551
Fax: 514-288-0998
<http://www.irsst.qc.ca>

www.accesstoeeurope.com

This is a joint initiative between the UK's The Stationery Office and EUR-OP, the Office for Official Publications of the European Commission. The site gives details and short summaries of available publications from EUR-OP by subject.

www.hse-databases.co.uk/prosecutions/

Resulting from a report, entitled Health and Safety Offences and Penalties, this 'Name and Shame' database lists around 1,600 individual offences and includes several big name companies, as well as small firms, local authorities, hospitals, and universities throughout

Britain. Users can access this information in a number of ways, including by geographical location, type of industry, size of fine and type of work activity.

Health and Safety Offences and Penalties can also be downloaded from the HSE website in pdf format
www.hse.gov.uk/policy/enforce.pdf ork activity.

UN conference reports

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labels under one roof. Each brand may have its own Code of Conduct: one saying workers have to be paid the minimum wage and work for 10 hours each day, the other saying workers have to get 5% over minimum wage and work 11 hours per day. It is likely that the others brands say something completely different in their Codes of Conduct some specifying safety and health standards to be adhered to. Now all of these issues should be specified in regulations and laws and not left to the discretion of the buyers and to a confused subcontractor to administer. Globalised firms are increasingly characterized by the rubric "All care. No responsibility".

While a few international NGO's such as the Clean Clothes Campaign, tried to defend Codes of Conduct, the rest of the delegates seemed to agree with me that Codes of Conduct and the smokescreen that is

corporate social responsibility, are in fact merely symptoms that capital is getting away with it, and that governments, with our approval and because of economic fear or the mantra of globalisation, are abrogating their responsibilities to the workers in particular and the community in

general. The message coming from the UN meeting was that the rule of law needs to be strengthened and that transnational corporations in particular need to be legally accountable to the nation in which they are operating.

about the author

Melody Kemp has been active in OHS fields for many years and has lived for almost 12 years, on and off, in Indonesia. In 1989 she completed her thesis on The Human Ecology of Logging in Solomon Islands. Since then she has completed several post-graduate studies and has been a Research Fellow at the Edith Cowan University and the University of Western Australia. Since June 2000 she has been a researcher with the United Nations Institute for Research into Social Development (Geneva).

Other than many conference papers, Melody wrote: **Working for Life: A Handbook for Women Industrial Workers**. This book was published in early 2000, by Isis International. It is designed as a how-to-do-it guide to occupational health and safety for women industrial workers and trade union or labour organisers in the developing world. It took some five years of work and research.

Melody was interviewed in Issue 5 on globalisation and OHS.

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