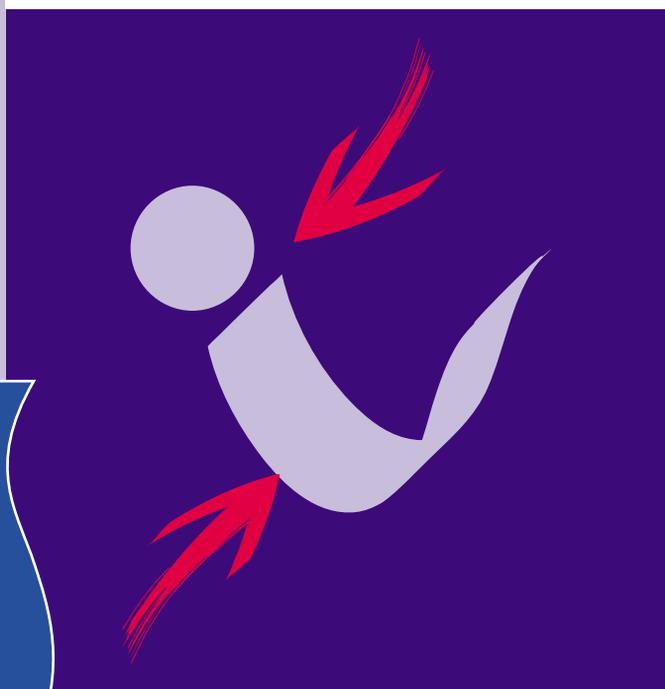


European Week for Safety and Health at Work

2001

S u c c e s s i s n o a c c i d e n t

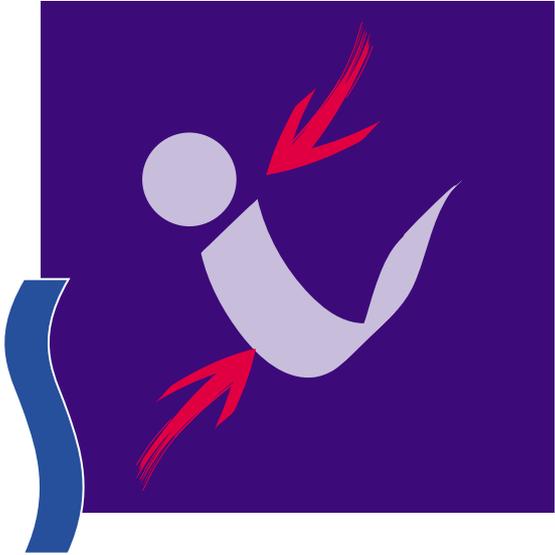
ACCIDENT PREVENTION IN PRACTICE



1996-2001

European Agency
for Safety and Health
at Work

S u c c e s s i s n o a c c i d e n t
ACCIDENT PREVENTION IN PRACTICE



A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (<http://europa.eu.int>).

Cataloguing data can be found at the end of this publication.

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1.



INTRODUCTION

Background

Every year nearly 5 million people in the European Union suffer workplace accidents resulting in more than 3 days' absence, amounting to around 146 million working days lost⁽¹⁾. Some effects are permanent, affecting people's ability to work and their life outside work. Work-related accidents occur in all industries and include slips and trips, falls, falling from heights, and accidents involving vehicles and machinery.

Many of the problems can be prevented with good management.

The cost of occupational accidents is high for enterprises, including: sick pay, overtime payments, temporary replacement labour, early retirement, recruiting new labour, retraining, lost production time and business damage to plant, equipment, materials, products, management time to deal with accidents, increased insurance premiums, lawyers' costs, lower worker morale.

Accident risks are even higher for those employed in small and medium-sized Enterprises (SMEs). The incidence rate for fatal accidents to workers in enterprises of fewer than 50 employees is around double that of larger units⁽¹⁾. Yet many of the problems can be prevented with good management.

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 accidents. This includes assisting and stimulating the sharing of information to solve common problems. This publication and the Agency's website aim to show that work-related accidents can be solved in many ways. They provide real examples of how companies and organisations have made interventions and sought to reduce accidents 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 workplace concerned (see box 1). Nevertheless, accident risks are rarely unique and solutions can be relevant and transferable across various sectors, types and sizes of enterprises.

The practical examples

The 22 examples of good practice on accident prevention presented here are all award winners or commended entries in a European competition run as part of the European Week for Safety and Health at Work 2001. The aim behind this European Agency initiative has been to support the dissemination of good practice information about work-related accidents and to increase the exchange of information about effective ways of prevention and 'practical solutions' in Member States and at European level. The examples come from 14 EU Member States and include small and medium-sized enterprises, large

⁽¹⁾ Accidents at work in the EU in 1996, Statistics in Focus, Theme 3 - 4/2000, Eurostat.

Box 1.**Risk assessment**

Before Good Practice information is applied, an assessment of the 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)

companies, a trades union and specialist safety and health institutes and prevention services, operating in very different sectors. Each example describes the nature of the problem, the solution applied and the results. 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 provide detailed 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 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 work-related accidents. 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 examples were initiated by trade union organisations. A table at the end lists the title of the example, source of problem, industry and intervention.

What the judges were looking for:

In selecting the examples the judging panel for the Agency competition looked for solutions that showed:

- risks tackled at source - some solutions involve training programmes. Training alone will not overcome risks inherent in the workplace. So only training programmes that were part of a comprehensive management programme were considered;
- real improvements following implementation in the workplace;
- sustainability - solutions that would last over time. This requires evidence that a good management system is in place and that the solution has effectively tackled the real problem;
- consensus - solutions that demonstrated effective involvement of the workforce;
- transferability - solutions that could be used or adapted for use in other workplaces, other sectors and other countries.

Not every example fully satisfies all of these criteria, but meets a sufficient number to be considered worthy of merit.

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, 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 work-related accidents 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.

Each example describes the nature of the problem, the solution applied and the results

European prevention approach

- avoid risks;
- evaluate risks that can not be avoided;
- combat the 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.

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 2001**

2.



PRACTICAL SOLUTIONS

2.1 'BUTCHERS SAY NO TO ACCIDENTS'



Slagteribranchens Arbejdsmiljøudvalg Slagteri- og Kødbranchens BST

The Abattoir Sector's Working Environment Committee

The Abattoirs' Employers' Associations

Vesterbrogade 6 D

DK-1620 Copenhagen V / Denmark

Tel.: +45 33 13 46 00 Fax: +45 33 93 72 03

The Abattoir and Meat Sectors

Project partners:

Ledernes Hovedorganisation

Slagteriernes Arbejdsgiverforeninger

Nærings- og Nydelsesmiddelarbejder Forbundet

HK HK/INDUSTRI

Task

Work in abattoirs.

Problem

The Danish abattoir and meat sector has approximately 18 000 employees in 150 small, medium-sized and large companies. In 2000, the sector had approximately 2 265 accidents which resulted in approximately 18 473 lost working days. This is an incidence rate of 125 per 1 000 employees. Table 1 shows the type of accidents. The figures are from the Abattoirs' Employers' Associations.

Solution

The sector's working environment is monitored by the Abattoir Sector's Working Environment Committee, which consists of representatives of employers and employees in the sector. The Committee formed several project groups with the object of improving the working environment in the abattoir sector. These project groups consisted of labour market parties and working

Table 1 - Causes of accidents and days of absence per accident

Year	Knife	Mangling	Knife hand	Fall	Tearing	Machinery	Total
1999	38	24	18	10	4	3	97
2000	36	27	15	9	5	3	95
Change	-2	3	-3	-1	1	0	-2
Days of absence per accident							
1999	7.04	11.67	7.54	11.50	7.57	12.96	8.96
2000	6.85	9.53	6.14	11.65	7.23	9.15	8.01
Change	-0.19	-2.14	-1.40	0.15	-0.34	-3.81	-0.95

environment experts from the Abattoir and Meat Sector's occupational health service, which is the sector's independent advisory service on the working environment. With support from the Working Environment Council Sector – 'from farm to table', the Committee carried out a number of activities aimed at the prevention of accidents in the period 1999 to 2001. These activities formed the "Butchers say NO to accidents" campaign, directed by central administration in the sector.

The expectation was that each individual company in the sector should prepare an action plan for reducing the risk of injury when working in an abattoir. They produced a folder containing a range of practical tools to enable companies to meet this requirement including:

1. Analysis forms for accidents that have occurred.
2. Analysis forms for near miss incidents.
3. Guidance on how to record accidents and use the analysis forms.
4. Sector specific tool for the assessment of accident risks.
5. Standardised definitions relating to accidents and compensation.
6. Complete tool for accident prevention for companies in the sector that, in addition to the above items, contained guidelines, suggested work procedures and management instruments for a targeted preventive initiative in each individual company, covering areas such as safety culture; internal safety documentation and review; learning from accidents; employee involvement; safety education; identification of risks; safety management and policy; economic evaluation of safety.

All the tools are based on involving the local workforce and/or the individual employee. This applies both in relation to the identification of risks and to proposals for remedying and checking the effects of proposals.

The companies were able to obtain help in the use of the tools and the preparation of action plans from the Abattoir and Meat Sector's Occupational Health Service. This help included training in the use of the materials, advice on

the analysis of accidents etc. They contacted and held meetings with all safety organisations in the sector about the "Butchers say NO to accidents" campaign.

The Abattoir Sector's Working Environment Committee brought the campaign to the attention of the industry and motivated involvement through various activities:

- implementation of campaign by general circulars;
- calling for action plans by a given date;
- awarding prizes to companies with the best work practices;
- sector activities during the European working environment week;
- calling for documentation on the level of activity by a given date.

The practical tools for accident recording and analyses and risk assessment etc. were developed and tested in pilot studies in close collaboration between the project group and the individual pilot companies' safety organisation before being launched. This was done by reviewing all the events leading up to industrial accidents reported in the two pilot companies, by testing materials, and by dialogue between the project group and the pilot companies' safety organisations. A nation-wide survey of all industrial accidents in the abattoir sector was also carried out using the sector's electronic industrial accident registration. The tools were then finally adapted on the basis of experience gained in the testing.

The project group's role was as instructor and initiator, after which the company safety organisations were expected to show that they were able to work with the tools themselves, which proved to be the case.



*Employee at the screw conveyors, which are covered by mesh to prevent accidents.
Medarbejder ved sneglene, som er dækket med net for at forebygge ulykker.*

After the final pilot testing, the project group gathered the experiences of local participants by interviewing key personnel and by holding an evaluation conference. These experiences were then passed on via the folder to employees, the safety organisation and management in each of the 150 small and large-sized companies in the Danish abattoir sector.

Results

As part of the pilot testing process a review was made of changes in accident rates and accident prevention behaviour as a result of the interventions and using the tools. More than 50 changes in the companies of a technical, organisational, methodological and behavioural nature were undertaken in the testing period to remove or reduce causes of accidents. In both companies accidents reduced over the year of the project period and prevention activity increased. Preventive arrangements require a certain period of incorporation, and it is hoped that in the longer term there will be a lasting reduction in the frequency and seriousness of industrial accidents in the companies.

Apart from these measurable gains, there were a large number of other positive effects:

- A higher level of wellbeing was reported (employees felt safer in their work and better looked after).
- Problems relating to workplace equipment and working positions were solved, causing less strain.
- Organisational and methodological uncertainties and errors were solved. This enabled more efficient working.
- Safe behaviour became a focal point for the companies and gained substantial favour with employees.

2.2 SAFE CROSSING - PROTECTION OF TRANSIT PATHS AND DANGEROUS AREAS IN SAWMILLS



Local Health Unit Enterprise of the Province of Sondrio

Via N. Sauro 38

23100 Sondrio

Italy

Tel.: +39 342 521126 Fax: 521475

e-mail: serv1@asl.valtellina.net

Contact: Dr. Roberto Pattarin, Dell'Ava Flavio (Eng.)

Service for Accident Prevention and Safety at Work

via Stelvio 35 I-23100 Sondrio / Italy

Tel.: +39 342 521454 Fax: 521531

Task

Movement of people in automated wood sawmills.

Problem

Sawmill work consists of transforming the logs into beams, planks, slats and chips. It involves debarking and various cutting, trimming, stacking and handling operations. Automatic transport lines in sawmills connect various machines in systems that are becoming increasingly complex and fast moving. In the most modern mills the process is completely automated from the first debarking stage to the final plank stacking stage. This creates various serious accident hazards including people being hit by logs and planks being moved by automatic machinery. The risks are to workers in the sawmills and visitors entering the plant, for example to see the manager.

The complex sawmill systems are controlled by operators of single machines working from overhead control seats, replacing the manual insertion and handling of pieces through various machines. The introduction of such systems, however, has taken place within pre-existing work environments which has meant adapting the transport lines to the spaces available. As a result, access

to the various operator work stations often means crossing the transport lines or the sawing machine tracks.

An analysis of accidents showed that hazards to people crossing the transport lines and sawing machine tracks included:

- coming into contact with the blades of the cutting machines, often after slipping and falling near the machine - nearly a quarter of all accidents;
- being hit by logs and planks when crossing transport lines;
- being hit by the logging car when crossing the sawing machine tracks;
- falls from heights when crossing over the loading decks.

Solution

The solution included the use of interlocked gates and photo-detectors on access paths to dangerous areas and fixed or mobile bridges to cross transport belts to protect transit paths, to prevent persons from being hit by logs and planks being moved by automatic machinery. These measures prevent the risk at source and are flexible enough to be adaptable to different sawmills and to different processes within the sawmills.

The various log processing systems, such as logging car-log saws and frame saws, re-sawing machine and trimming machine areas and transport lines, were equipped with devices to prevent access to the danger areas when in operation and protect access paths between the various workstations.

Gates equipped with an electronic locking device were installed on access paths to the work stations and to the actual log processing areas. The logging car, transport lines and cutting blades etc. stop immediately the gate is opened. The logging car or plank line stops and a protective shield descends over the cutting area when the gate is opened. The gate cannot be opened when the systems are in operation, and a specific device is used (sound and/or visual device) to



communicate with the person in charge of the system who stops the system and in order to open the gate.

In other cases, electrical protection devices (infra-red ray barriers) were installed instead of gates near the danger areas, so that if someone enters the operational area the logging car or machine line automatically stops and a protective cover is lowered over the band saw blade. The band saw cannot start again unless the special consensus command has been given.

In some large plants, raised gangplanks were installed in order to cross the danger area without access to the machines. In some small and medium-sized plants, small removable iron gangplanks were also used where transport lines were on ground level.

The project was carried out in all the wood sawmills in the Province of Sondrio. Each employer was able to adapt the solution to their specific needs and conditions in their particular sawmill. The solution is low cost and technically simple to implement. It can, in fact, be partially constructed by the company itself, with support from electrical technology experts.

Results

The project covered the entire sawmill sector in the Province of Sondrio (25 production units and 190 workers) and the solution has been applied in all the companies.

The measures effectively prevent the risks of being knocked down and of coming into contact with dangerous working parts. They have allowed safe walkways to be defined and have discouraged the use of unsafe routes where there is a risk of falling on to the moving loading decks. There is now greater awareness of the hazards and improved management of access through the plant by external people.



2.3 'SUPPORTING MICROENTERPRISES' - TRAINING AND INTERVENTION PROGRAMME

Union Syndicale Artisanale Tarnaise

Union of Small Businesses in the Tarn Region
40, av. De Lattre de Tassigny,
F-81020 Albi cedex 24 / France

Contact: M. Francis Rabary
Tel.: +33 5.63.49.49.00 Fax: +33 05.63.49.49.
e-mail: Francisrabary@msn.com

Project partners:

Contigraph 81

Bourrel Serge

Najac Robert

Sarl Ser-Pug

Sarl Europlatre

Sarl Cros



Task

Various activities in 6 microenterprises: masonry work, plastering, pork butchering, printing and locksmith work.

Problem

Lack of knowledge and expertise to manage accident risks in very small enterprises. Risks included falls from heights and on level ground, transport accidents, carrying heavy loads, handling and storage, noise, handling dangerous substances (glycol ether, asbestos, fibreglass, etc.).

Solution

The Union of Small Businesses in the Tarn Region developed a programme of individual training interventions to support the 6 small businesses to develop their own safety and health competence and plan prevention measures. The project team included USAT's occupational safety and health (OSH) officer and two ergonomists from the firm *SARL MB2 Conseil*. The training activities were carried out through:

- joint meetings with various heads of the businesses concerned (organised by the OSH officer and the two ergonomists);
- workplace visits by the USAT's OSH;
- workplace visits by the ergonomists.

The work of the OSH officer and ergonomists was done largely on a 'pooled' basis in order to optimise the impact of the measure (presentation, analysis and discussion with the management and workforce of the businesses concerned) and to keep the amount of company working time taken up by this measure to a minimum.

The method included working with each business, using information supplied by them, to make a risk assessment. This was done through a multidisciplinary exercise involving the workforce and the ergonomist/OSH officers. The process was assisted by each business's works medical service and information and support from the Regional Health Insurance Fund (CRAM). The method is also designed to promote a more collaborative management style to enable joint working on health and safety between staff and management.

This assessment phase was followed by an in-depth analysis phase to set a multiannual accident prevention programme for each business. This included defining the management and organisation measures that each company needed to take and setting priorities for action. Technical, economic and



organisational factors were taken into consideration in order to ensure that the health and safety plans were feasible and acceptable to the businesses.

The assessments included drawing up plans for practical prevention measures. A separate study will look at the effectiveness of these solutions.

The project is being monitored by a broad-based steering committee whose membership is drawn from the following bodies: the Regional Directorate for Labour, Employment and Training (DRTEFP), the Departmental Directorate for Labour, Employment and Training (DDTEFP), the Union of Small Businesses in the Tarn Region (USAT), unions representing the workforce (CFDT, FO, CGE, CGEC, CFTC), the Regional Health Insurance Fund (CRAM), the Body for Occupational Safety and Health in Construction and Civil Engineering (OPPBTP), occupational medical services, MIDACT (improvement of working conditions in the Midi-Pyrénées region) and the Regional Union of the Confederation of Small Construction Businesses (UR CAPEB).

A technical committee made up partly of representatives of the above bodies has been set up to discuss the methods and instruments needed to apply the intervention to other similar businesses.

USAT envisages making the measure permanent by creating and operating local 'Performance and Safety' clubs, starting from the nucleus of the 6 employers involved here: their job would be to brief businesses (in all sectors) on matters of safety and raise their safety awareness. This work could be organised jointly with the Regional Health Insurance Fund (CRAM).

Results

The initial effect of the measure has been to get health and safety management moving within each business, with immediate decisions being taken for change, reorganisation or investment which will bring improvements in both performance and safety. It has enabled both the management and workers to become very aware of risks and the practical measures that can be taken to prevent them. It has enabled the businesses to see that improved safety performance can go hand in hand with good business performance and the positive effects of joint work with the workforce on health and safety in order to take into account their opinions and needs.

2.4 SAFETY AT WORK NOW AND ALWAYS



INDUSTRIAS SERVA S.A.

Poligono Malpica C/F Oeste nº 59
E-5016 ZARAGOZA / Spain

Contact: Jorge Hernansanz, Laura Ambroj
Tel.: +34 976 46 51 15 Fax: +34 976 46 51 21
e-mail: jorge.hernansanz@dana.com, laura.ambroj@dana.com

Task

Manufacture of engine sealing elements (gaskets and joints): cutting, perforating, rubberising, calendering, hot-die-forging, brushing, pressing, rivetting, printing (lacquering/impregnation/curing/rubber-sticking), checking, packing, stock and despatch.

Problem

High incidence of slips, trips and falls and mishaps. Problems found included:

- glare and reflections due to excessive sunlight, causing bumps, mishaps and falls;
- unsafe floors: slippery, with poor organisation of materials, with waste materials, spilt liquids etc. not cleared away;
- need for general cleaning and window cleaning;
- excessive use of step ladders;
- use of inadequate footwear.

Solution

As part of its general prevention plan, the company introduced an action plan aimed at reducing slips and trips. The prevention plan included risk assessment and accident analyses; special, programmed inspections for tidiness and cleaning; a preventative maintenance plan; and training and communication with staff and trade unions.

Slips, trips and falls prevention measures have included:

- general improvement in lighting conditions, including centralised lighting, changing skylights and repainting the factory and fitting blinds to reduce reflection and glare;
- improving work surfaces, for example non-slip steps in the offices, providing gratings for floor areas that got dirty easily or where there were spills;
- placing trays under the hydraulic presses and lacquering rollers etc. to prevent spills;
- relocating machines, supplying trolleys and drawers for material and tools, the use of supports for rolls of material (paper, metal, fibre);
- providing shelving and trolleys for storing materials and lockers for storing personal belongings;
- fitting/upgrading banisters on stairways;
- waste management measures such as provision of bins for specific wastes;
- redesigning the working space of those areas with a lot of accumulated waste materials and providing specific stores for some materials such as chemical products;
- moving machines to create access zones for maintenance;
- safe working practices in the cleaning of floors, with the use of white and red strips to define the areas being cleaned. For the window cleaning, because of a lack of safety anchorage points, platforms were acquired;
- relocating the storage area to drastically reduce the use of ladders and properly maintaining remaining ladders through a preventative maintenance plan;
- replacing the wooden clogs worn by workers, especially dangerous for some tasks such as climbing ladders and load handling, with non-slip protective footwear. Office workers required to enter the plant must also use safety footwear;
- improving signalling and sign posting, for example to indicate where trolleys may not be left;
- upgrading access platforms, for example to the ware house;
- improving the method of window cleaning.



The process is ongoing and health and safety is part of the company's quality management processes. All accidents are analysed and meetings are held between supervisors and staff to discuss the results and preventative measures. In addition, short daily meetings to discuss safety issues with staff take place at the start of the working day. Worker prevention delegates, directors and technicians take part in these meetings. Email and the in-house magazine are

used to communicate health and safety matters to staff and an ideas system for improvements has been established. In addition to the joint safety committee, working groups are set up to tackle a specific issue.



Results

- reduction in the accident rate 1997-2000 by 70%;
- reduction in the number of accidents per million hours worked and the number of accidents by 70%: 2000: 13.4;
- reduction in the number of days lost per thousand hours worked by 55%: 2000: 0.21;
- reduction in the number of accidents per thousand workers by 71%: 2000: 23.13.

2.5 "DRY" FLOOR CLEANING

Engel-Yhtymä Oy

Lintulahdenkatu 10,
FIN-00501 Helsinki / Finland

Contact: Deputy Managing Director Tuija Lehtonen
Tel.: +358 20 424 2114 Fax: +358 20 424 2118
e-mail: tuija.lehtonen@engel.fi
<http://www.engel.fi>



Task

Cleaning floors.

Problem

Cleaning floors using mops and water creates a slipping and tripping risk both for the cleaners themselves and for others passing through the area being cleaned. The floor can remain wet and slippery for a considerable time after cleaning. Measures can be taken to reduce the risk by using portable warning signs and cordoning off the wet area. These obstacles themselves can create additional tripping risks and do not remove the risk at source. In addition, mopping work puts a heavy musculoskeletal strain on cleaners themselves as it involves forceful, repetitive movements, and bending and carrying of the bucket etc. There are also health risks if cleaning agents are added to the water. The majority of cleaners are women, half of whom are over the age of 45.

Solution

A large firm providing cleaning services decided to see if there was an alternative to traditional bucket - and - mop floor cleaning. Although the 'Engel economic cleaning model' was primarily produced to reduce the workload and musculoskeletal disorders to cleaners, its potential to avoid slipping and tripping accidents is also significant.

The process reduces the use of water as dry loose dirt is removed by a dry microfibre mop method. Individual stains on surfaces are dampened with water in a spray container and wiped off. For dirtier surfaces, a damp or moistened



The microfiber mop is light in use.

mop is required. The mops needed are dampened in advance at the cleaning centre. Neither water nor cleaning agents are brought to the place to be cleaned.

There is less need for floor waxing: in addition to the manual working methods used with the microfiber method, there are also mechanical methods to manage the floor's waxed surface and lighten the daily cleaning load. This method helps to preserve the floor in a uniform state, and the need to renovate floors is reduced. The risk of slipping on floors typically associated with washing and waxing is therefore reduced.

Additional improvements for the safety and health of cleaners include:

- convenient, adjustable working tool handle to reduce musculoskeletal disorder risks;
- reduced use of cleaning chemicals;
- minimal exposure to water and cotton gloves with vinyl dots can now be used for the mopping work, reducing skin problems that can be caused by the use of impermeable rubber gloves;
- health and safety training and specific training in the use of the microfiber method.

Results

- reduced slips, trips and falls for workers and the public;
- reduced health problems for cleaners.

This shows that good solutions can help reduce both safety and health risks.

2.6 SAFETY AND HEALTH PERFORMANCE CHECKER FOR ROAD TRANSPORT

BGZ Wegvervoer

(Road transport occupational health service)

Postbus 221

NL-2800 AE Gouda / The Netherlands

Tel.: +31 182-580266 Fax: +31 182-517740

e-mail: info@bgz.nl

Project partner:

TNO Arbeid



Task

Occupational driving in the road haulage sector.

Problem

The road haulage sector is characterised by small businesses working in a very competitive sector. For companies fighting for survival, health and safety will not automatically be a priority. There are communication and coordination problems as drivers out on the road all day are not at a fixed workplace with their employer. In the smallest enterprises employers may be working from their kitchen table and not an office. Therefore employers need practical support on meeting health and safety requirements to carry out risk assessments and implement the necessary prevention measures.

Solution

BGZ Wegvervoer, the road transport occupational health service, developed an Occupational Safety and Health (OSH) Road Transport Check to help road haulage enterprises to evaluate and record the most important risks to drivers and draw up an action plan. It is aimed at enterprises with fewer than 15 employees. The OSH Check is a booklet that is completed by employers in consultation with their employees. The Safety, Health and Welfare Service (Arbodienst) provides help in completing the OSH Check and checks the end result. The whole package includes a five-yearly monitoring process and annual assistance with reporting on the action plan.

Most of the booklet consists of risks and prevention measures grouped by operational process, together with advice on how to organise and manage safety and health. The recording process includes entering whether the measure has already been implemented, has yet to be implemented or is not applicable, enabling a good overview to be obtained of what still needs to be addressed. The points to be addressed are then included, in order of importance, in the action plan.

The OSH Check includes practical documentation for:

- recording industrial accidents;
- drawing up an action plan with priorities for action;
- annual reporting on the action plan; and
- checking of the results by the Safety, Health and Welfare Service.

Monitoring by the Safety, Health and Welfare Service provides the additional support to enterprises to solve their individual problems or explain the process.

Results

The OSH Check has helped road haulage employers to assess risks and implement prevention measures in a realistic way, and provides the necessary documentation for monitoring safety performance and recording and investigating accidents. Using the process has also helped the employers and employees develop their own knowledge and awareness of risks and how to prevent them in their sector.

2.7 PRACTICAL SOLUTIONS IN A SMALL WOODWORKING FACTORY

Fenster Mersch S.A.

L-9641 BRACHTENBACH 2 A
Luxembourg

Contact: Pit Mersch

Tel.: +352 9940671 Fax: +352 994274

e-mail fenmer@pt.lu

<http://www.fenstermersch.lu>. (German, French and English).



Task

Production of wooden window frames and doors.

Problem

Accident and ill health risks from woodworking machinery, paints and varnishes, manual handling of heavy and bulky loads and awkward working postures in a small company (26 employees).

Solutions

Based on a risk assessment of all tasks the measures taken included:

- upgrading of work equipment used, ensuring that all equipment complied with the relevant safety standards and that workers received adequate training in its use;
- introduction of a separate painting facility and substituting water-based paints for solvent based paints;
- removal of dust at source through the use of filters, fans and exhausts;
- measures to reduce manual handling accidents.



Risk assessment found manual handling accidents to be a particular problem. Production work as well as material flow through the factory was carried out at various floor heights resulting in considerable musculoskeletal effort for the workers. Therefore an in-depth ergonomic analysis was carried out of all work processes to find ways of avoiding strenuous working positions and manual moving of heavy loads. Better organisation of the workplace and ergonomic improvements have also helped to reduce accidents such as slips and falls.



Solutions included:

- using lorries or conveyor belts to reduce manual handling of raw parts;
- using a height adaptable assembly machine and assembly press;
- applying treatments to wood on individual working tables;
- using overhead cranes to carry the heavy assembled frames to the closed painting unit;
- applying similar strategies to storage tasks.

The ergonomic solutions include both low-cost adaptations of the individual working tables and technical solutions for the intermediate storage and assembling units.

Results

Accidents at work and occupational diseases with more than one day's absence have decreased substantially and consequently there is less lost production time from accidents. The working climate has been improved and staff turnover has reduced.

2.8 AUTOMATING FOR SAFETY - WITHOUT CREATING MAINTENANCE PROBLEMS

Abott Ireland

Ballytivnan
Sligo
Ireland

Contacts: Aideen Sweeney, Nicola Gilmartin
Tel.: +353 71 55600 Fax: +353 71 55608
e-mail: aideen.sweeney@abott.com
nicola.gilmartin@abott.com



Task

Small component assembly line work during the production of enteral feeding sets used in hospitals.

Problem

Exposure to solvents used to bind components. It was decided that the solvent problem should be addressed at source by introducing automatic machinery. However new hazards linked to the machine had to be eliminated prior to its installation. This shows the importance of not replacing one hazard with another one.

Solution

The solution was developed as part of a programme of measures to improve health and safety. A proactive approach involving employees was used to address both the needs and concerns of operators and maintenance personnel. A task team including operators, maintenance staff and engineers was established. The solution had to be approved both by the company health and safety officer and the environment officer.

The new automated process greatly reduced the number of operators exposed to solvents. However the problems of increased noise and safe maintenance had to be addressed before it could be implemented. For example regarding accident risks from maintenance, the machine was guarded by electrical interlocked doors. The machine will not operate if one or more doors are open.



For maintenance to be carried out it was sometimes necessary to be able to open the guard, in order to observe the machine in operation to locate the problem. To solve the maintenance risks:

- a system has been installed which means the doors first have to be disarmed with a keyswitch, the machine switched to 'jog mode' and a special hand held 'jog button' plugged in. The machine can then only operate if the jog button is pressed and not more than one door is open;
- the 'jog button' has a built-in emergency stop. For the machine to run it has to be pressed and held in mid position. In an emergency the natural response is to press harder. This makes the machine go into emergency stop mode;
- the machines were designed with attention to the need for good access. Easy access through an electrically interlocked door is provided to the motor cabinet to facilitate regular cleaning of debris. This is important as the debris can cause a fire hazard if debris builds up, because of the heat generated by the motor. In the old machines access was difficult which meant long periods would elapse before it would be cleaned;
- lights were fitted in the lower chassis of the machine to improve visibility during maintenance.

Results

A safer working environment for both assembly workers and maintenance workers, improved productivity and improved work morale as a result of involving workers in problem solving.

2.9 COOPERATIVE PROBLEM-SOLVING PROCESS - FORK LIFT TRUCK SAFETY BARRIER

Ford Motor Car Company - Bridgend Engine Plant

Waterton Industrial Estate
Bridgend
Mid Glamorgan
CF31 3PJ
United Kingdom

Contact

M. Hughes

Tel.: +44 1656 672399 Fax: +44 1656 672201

e-mail: mhughe14@ford.com



Task

Removing engine from vehicle manufacture assembly line and placing onto engine rack.

Problem

When engine racks are full the fork lift truck driver has to drive into the work area and start to remove the engine racks. This took place while operators were still removing engines from the assembly line and loading them into the remaining racks. The high frequency of fork lift truck movement increased the risk of collision between the operator and the fork lift truck. There had been several accidents during the previous 10 years involving pedestrians and the movement of fork lift trucks within the company's plants.

Solution

An effective solution was found and implemented through a systematic process involving staff, managers and experts. The factory workers themselves were the main protagonists in developing the solution. The prevention measure developed involved placing a physical barrier to stop fork lift trucks from



entering the work area until the operators have moved to the next bay. The last operator in the area lowers the barrier and sets off audio and visual alarms to ensure that no operator enters the area. Lights are used to indicate to the driver that the bay has been evacuated and they can enter to remove racks of completed engines and replace the empty racks. The prevention process involved:

Hazard identification: the problem was first brought to light by the staff themselves. A team of operators and maintenance personnel at one plant identified a risk of crushing injury and decided to try and minimise the risk whilst fork lift trucks were operating in their area.

Risk assessment: the group leader of the work team called a special meeting to address this major safety concern. The first step in the process was to carry out a risk assessment of the potential safety problem. The risk assessment rating was calculated and the results showed a very high risk of accidents because of fork lift truck movement in and out of this area. The team wanted to reduce the risk of injury to a minimum (zero accidents).

Search for prevention measures: during the meeting team members were asked for ideas which would reduce the risk. Several good ideas were suggested (e.g. light barriers, check-out straps etc.). The maintenance staff in the team said the only way to eliminate the risk was to use a physical barrier to stop fork lift trucks entering the area until the operators required one. The team agreed and asked the maintenance staff to design a barrier and present it to the team at the next meeting.

Developing the prevention measure: a 15cm model was made by the maintenance personnel and presented to the team who agreed that it was a valid idea. The team then decided that a full-scale model should be built, so

they could see it in operation and get a better idea as to how it looked and worked.

Getting agreement on implementing the prevention measure: a full-scale model was then built out of scrap wood and placed in position. Representatives from the health and safety committee and various other departments along with senior plant management were invited to view the device. Everyone present agreed to the idea and asked the maintenance personnel to build a working model.

Testing and modifying the solution: while building the working model a few modifications were included (e.g. pneumatically operated raise and lower controls rather than manually operated). When the device was completed it was fitted into position and the fork-lift truck drivers and team members were asked to use the device over a test period to see if there were any problems. During this test period, drivers found that the chamfers on the leading/trailing edges of the device were too steep and caused problems. The device was removed and new chamfers made, and then replaced in position. This resulted in a vast improvement to the device. After a few shifts without any problems, the infrastructure for the device was installed along with warning lamps, beacons and audio alarms to warn operators of imminent fork lift truck activity in their area.

Design engineers were then called in to make engineering drawings, which were tabulated so the device could be made to any size and fitted at any company plant.

Final agreement on implementation: trade union health and safety representatives and senior plant management were then shown the full version and agreed to its implementation.

Sharing the solution with other work areas: following the success in the original work area, modified versions on the device were produced so that it could be used in different areas throughout the plant. There are also plans to introduce it into other plants of this multinational company.

A safe idea created from start to finish by shop floor workers for shop floor workers.

Results

In addition to the safer working environment and reduction in the risk of injury, operators experience less stress as they have confidence in the effectiveness of the safety barrier. The method used to develop the barrier has proved to be a powerful and successful example of employee involvement.

2.10 WORKING WITH EXTERNAL HEALTH AND SAFETY ADVISERS



Cosat - Consultores de Higiene, Segurança e Saúde no Trabalho, s.a.

Avenida Elias Garcia, n.º 147 3º Dtoº
P-1050 – 099 Lisboa / Portugal
Jorge Honório da Silva & Filho, Lda, Cartaxo

Contact: Santos Martins
Tel.: +351 21 793 11 15 Fax: +351 21 793 11 06
e-mail: dgcosat@net.sapo.pt

Task

Fitting and finishing insulated containers for transporting food products.

Problem

This established company of 140 employees, which had grown out of a blacksmith's forge, realised that it needed to revise and improve its safety and health measures, including work organisation as well as the working environment. Particular problems had been identified in the fitting and finishing sectors.

Although the company was aware of safety problems and had a trained competent member of staff to manage safety matters, the company realised that it did not have the necessary expertise or resources to tackle the problems itself. It therefore engaged an organisation able to provide expert health and safety advice to support it.

Hazards identified included:

- use of the fork-lift in limited space for example to move bulky panels to the preparation area and without planning of vehicle routes etc. caused injuries to workers and damage to products. Also the trucks were being used to lift people. This is very dangerous;
- manual handling of heavy loads such as panels and the resin distributor and incorrect working heights and awkward postures to measure, sand, rabbet and cut the panels;

- dust particles, burns and noise etc. from manually operated equipment for sanding, rabbeting and cutting the panels;
- the use of compressed air jets to remove dust from panels and workwear. This is very dangerous as it can cause deafness and internal haemorrhages from burst blood vessels;
- very reflective walls which affected vision and work performance;
- handling glassfibre mat and resins without adequate protection;
- no mechanical locking system on the panel transporting machine or signalling caused risks of falls from a height and hitting workers or other panels, equipment and tools;
- incorrect use of step-ladders for putting the roof panel in place;
- disorganised workspace and equipment, cables and hoses spread around the floor caused frequent falls or people bumping into objects;
- unbalanced postures when working at heights;
- use of boards between step-ladders and the lack of guardrails on the scaffolding;
- large number of workers carrying out various activities at different height levels gave rise to the risk of people below being struck by falling objects;
- lack of collective and personal protective equipment, for example for working at heights or with paints or acetone.

In addition to the injuries to workers, the accidents were causing damage to products.

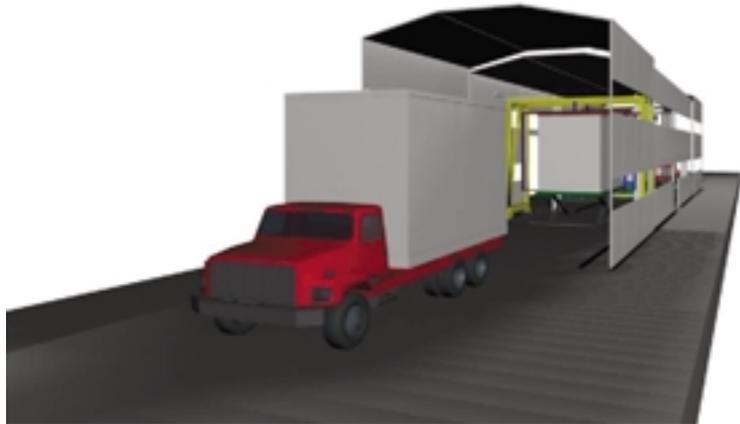
Solution

The advisers worked with the company through the whole risk management process from the detailed hazard identification stage through to the implementation stage of preventative measures and monitoring of the results. Preventative measures developed with the advisers included health and safety management improvements as well as specific risk prevention measures.

The methodology used included the following stages:

- collection and processing of information from the employer and suppliers;
- identification and assessment of the occupational risks and the impaired functioning of the production system;
- selection and implementation of the prevention measures, including analysis of the assessment results and approval of measures with the employer, planning and prioritising the measures and setting an implementation time table;
- training of staff and supervisors.

At the very start of the project the advisers held a meeting with all the supervisory staff to explain the process and to get their support and participation. The risk assessment team included the company doctor, an ergonomist, an occupational psychologist and a hygiene and safety specialist and staff from the company. Methods used included observation of work



activity using video recording, interviews with workers, questionnaires and work analysis charts. Computer simulation was used to help prepare various redesign proposals. Meetings with the employer using techniques such as brain storming were used to decide intervention measures and set priorities for the short, medium and long term as part of the risk prevention plan.

Short-term measures included:

- resurfacing the floor with anti-slip, hard-wearing vitrified stoneware;
- painting the central factory to reduce reflections;
- using mechanical devices to place the panels on the machine that joins them in the fitting area and correcting working heights in the panel preparation area;
- reorganising the workspace, including relocation of the storage area to create more space in the production area;
- introducing marking/ signalling;
- marking the overhead gantry and installing a mechanical safety locking system;
- installing overhead trunking where the sockets and respective power and compressed air supplies used to operate the manual tools were located in order to eliminate or minimise the risk of tripping and falling over equipment cables and hoses;
- providing step-ladders with a telescopic support base and handrail and acquiring scaffolding with guardrails;
- introducing trolleys to keep tools in order and special containers for clean and dirty acetone, to allow it to be recycled;

- introducing gas and dust suction equipment and a floor suction and cleaning machine;
- providing some on-site introductory training about the new measures to workers and supervisory staff;
- revising the safety manual, covering health and safety policy and new measures.

Medium-term measures included:

- setting up a safety committee;
- further training, for supervisors on their health and safety functions and for all staff on the risks in the work place, prevention measures and procedures. The advisers devised and carried out the training, basing it on the real situation in the factory and the new measures that had been introduced.

Long term measures include:

introducing an insulated container production cell.

Results

- accidents rates reduced by 71%;
- levels of exposure to noise reduced to levels below the maximum values;
- an improvement in communication and dialogue within the company;
- 66% increase in production;
- 20% reduction in social security contributions due to improved safety performance.

2.11

SEA SAFETY - ACCIDENT PREVENTION IN THE FISHING SECTOR



MiVeDi bvba

Kroondreef 70
B-8490 Jabbeke / Belgium
Tel.: +32 50 81 62 44 Fax: +32 50 81 63 12

Contact: Mr Ignaas CROMBEZ
e-mail: ignaas.crombez@mivedi.be

Project partner:
ZEEVISSERSFONDS

Task

Work on board boats in the commercial off shore fishing sector and the management of safety by fishing companies. The project covered about 125 fishing boat operations belonging to various companies. The total direct employment in the sector (crews) is estimated at some 600 fishermen. All the fishing companies employ fewer than 20 employees. Most of the companies have an average of 6 or 7 employees.

Problem

Research in recent years conducted by the Commission of the European Communities has demonstrated that, of all the occupational activities within the countries of the European Community, offshore fishing has the highest accident rate. The annual mortality for the entire Community is an average of 2 per 1 000 as opposed to 0.3 per 1 000 for the other "dangerous activities" such as construction, mining, and agriculture.

Statistics from the Industrial Accident Foundation concerning the number of industrial accidents on board fishing boats have shown that working on board a fishing boat is especially dangerous. Many accidents are caused by unsafe work with equipment on board, failure to respect a number of elementary basic rules on board, the use of inadequate equipment, unsafe work with dangerous

technical material, and boats inadequately equipped with the necessary safety-enhancing equipment.

The specific character of the fishing sector does not easily lend itself to the development of a good safety culture. The sector has the reputation of being “hard” and accidents are “simply a normal phenomenon”. Expressions such as “a ship is no place for weaklings” and “in fishing, you have to be able to take it” are still common. In this sense “the raising of reluctant consciousness” had to be taken into account from the outset and a step-by-step approach adopted to the introduction of safety measures. The function of the “accident-prevention expert” in the firm (here, the boat owner) was an unknown before the project started.

Solution

Fonds, the organization that represents the interests of those involved in the fishing sector, in consultation with the ‘sub-commission’, decided to launch campaigns to improve the working conditions and to reduce the number of accidents over time. The objective of the project was to encourage all ship owners and crew to pay more attention to safety in all its aspects. The intention was also to organize the project in consultation with the supervisory authorities and the social partners to achieve broad dissemination of information and communication about the project.

The project was planned and carried out in consultation with the sub-commission that is concerned with the prevention of industrial accidents in the fishing sector. This sub-commission consists of sector representatives of the shippers, the fishermen, and the authorities. It is an advisory commission, and its function consists of monitoring industrial accidents in the fishing sector.

First of all, a working group was formed. The task of the working group was to evaluate the activities of the project coordinator and to monitor the progress of the project. The working group was composed of people who were closely involved in the problem of safety in offshore fishing (boat owners, sector representatives, union representatives, Industrial Accident Foundation). For the execution of the project, an external expert was appointed to coordinate the project. Because various foundations were approached to finance the project, the project was restricted in time. All the campaign elements were carried out between 1999 and June of 2001.

The campaign was aimed at raising the awareness of the sector of the dangers and risks on board and at reducing the number of industrial accidents. The campaigns had to be specifically aimed at the sector and had to motivate the people to engage in safe behavior. This included motivating ship owners to invest in safe equipment and techniques and the crews to be attentive to unsafe situations and acts. The project was planned as a “bundle of various campaign activities”.

The first activity concerned compiling background information. Little usable information was available at the start of the project either for campaigning or for developing practical prevention instruments. An inventory and analysis of all the national and international (European directives) laws and regulations that concerned safety on board fishing boats was made. This phase was necessary to obtain a clear overview of the obligations that were applicable. An update



There are various hazards in the fisheries sector.

and analysis of existing industrial accidents was also made. This was necessary to chart the number and causes of industrial accidents in order to emphasize them in campaign activities and set priorities.

The second activity consisted of organizing several study days within the sector, focused on specific items and presentation of the research results. In the course of the project, several study days were organized for specific target groups and with specific subjects for the fishing sector.

The third and most important activity involved the preparation of a checklist. The sector already recognised that this kind of instrument would be very useful. The aim was to develop an instrument that could be used by the various parties to tackle safety issues that covered the most frequent causes of accidents, the specific circumstances of working on board and the legal obligations as embodied in the various regulations (ARAB, Codex Welzijn, Zeevaartreglement, European directives). It was aimed primarily at boat owners and crews to focus their attention on the critical safety aspects and to provide a guide to elementary safety requirements.

Results

Although the benefits of the project will only be measurable through accident statistics over the long term, the project has been judged positively by the various partners, particularly the development of the practical help to tackle safety in the form of the checklist. It is useful as a guide, provides information about the minimum obligations, and also contains recommendations for follow-up. The checklist has been disseminated within the sector in the European Community. The results of the limited "trial study" were presented at a study day for the Flemish and Dutch fishing cooperatives (Ostend, May 2001).

The campaign appears to have had a positive effect on raising awareness and commitment to safety. The ship owners (employers) were positive particularly because account was taken of the specific character of the companies and because of the joint involvement of all parties in the sector in the project. The crews – and the union representation – were involved throughout the project. The union representation considered the project to be a first step towards improvement of the working conditions.

In the course of the project, there were regular contacts and exchanges with Dutch organizations that are active in the area of safety in the fishing sector. These international contacts have led to the Belgian (Flemish) fishing sector becoming involved in the campaigns that are being developed in the European Union regarding on-board safety.

2.12 PROTOCOL FOR SAFE BUILDING RENOVATION

Unità Funzionale di Prevenzione Igiene e Sicurezza nei Luoghi di Lavoro Alta Val d'Elsa, Azienda USL 7 di Siena

c/o ex Ospedale P. Burrresi
Via Pisana 1
I-53036 Poggibonsi
Siena / Italia
Tel.: +39 0577/994922 Fax: +39 0577/935680

Contact: Fabio Strambi
e-mail: prevlav.poggibonsi@usl7.toscana.it

Project partners:

Comune di Casole d'Elsa
Castello di Casole SPA
Ex Agreste Mensano SPA
Coop. Edile Montemaggio
AGS Itaca; SAMAR SAS; UIL; CISL; CGIL



Task

Renovation of a historic 14th century country house and its buildings in its grounds (lemon-house, cellar, storerooms) in order to create a large, luxury hotel complex and the creation of a business centre for the farm's production activities.

Problem

There is generally a high accident rate in building work. This particular project was difficult because of the need to preserve the historic features of the building and renovate to modern standards. The age of the buildings meant that there could be additional and unknown safety and health risks to the building workers present, for example due to weaknesses in the building structure. Many of the various contractors involved were small, specialist craft firms, who do not have many health and safety resources. This meant that careful project planning and coordination was necessary both for the preservation of the building and the preservation of the workers' safety and health.

Solution

Health and safety planning and coordination for building work is a legal requirement. To implement this in practice a protocol agreement sponsored

by the Commune of Casole d'Elsa was designed that involved the supervisory body (The Local Health Unit Enterprise), the workers and their representatives, the companies, the contractors and their technical agencies. This protocol proposed a series of measures, work methods and documentation in order to:

- involve all persons working on the building site in the safety project;
- check that the companies and the workers involved complied with legal requirements;
- provide specific training for all persons on the job;
- analyse the accidents that had occurred in order to carry out corrective measures;

- collect and analyse data to evaluate the project and its benefits.

To achieve this the following measures were undertaken:

- involving the contractor in the project for safety on the site. This measure enabled safety plans to be drawn up before the work started. These covered



the sequence of safety measures to be taken, the execution of the various processes in compliance with the principles of accident prevention and the co-ordination between the various companies working on the site;

- involving workers and their representatives in the design stage of the intervention in order to bring the characteristics of the work itself, the operations that have to be carried out and the risks to their safety to the knowledge of the people who actually do the work;
- using recognition badges for workers on site, which indicate that they are authorised workers, for which work processes they are authorised and that training has been received;
- providing training on the risks and prevention measures in the building industry in general and, more specifically, on this building site. The Local Health Unit, companies and site technicians were involved in developing the training. The training covered not only occupational safety and health, but also productive aspects, based on the assumption that if workers know how to work well, they are able to reduce the work risks at the same time. The training helped to make the workers from different companies part of a collective team.



The occupational health experts from the Local Health Unit, together with the Commune of Casole d'Elsa and trade union organisations were involved in developing the project.

Results

Accident rates at this site were compared to available accident data in the Italian building sector and it appears that accident rates were considerably lower than average on this site. Some 16 workers from three companies and four self-employed workers worked in the experimental site for a total of 25 442 hours, during which time three minor accidents occurred.

In addition better management and organisation of health and safety on site helped to improve the organisation of the work in general. This enabled work times to be reduced and the quality of the work to be improved. It helped to restrict the difficulties concerning the sequence of measures and improve co-ordination between the companies working on the site, even though they differed in specialisation and organisation.

2.13 CONSTRUCTION SAFETY PLANNING TOOL



ARBOUW

Postbus 8114
NL-1005 AC Amsterdam / The Netherlands
Tel.: +31 20 5805580 Fax: +31 20 5805555

Contact
A.C.P. Frijters
e-mail: frijters@arbouw.nl

Task

Drawing up effective safety plans to manage and coordinate safety and health on temporary and mobile construction sites.

Problem

Planners and construction companies are required to identify project-specific risks and establish the measures required to deal with them at the project planning stage. They may lack information and a systematic approach for making these plans.

Solution

The Arbouw S&H Planner is a tool for drawing up a safety and health plan on the basis of a construction-specific database (KAM DATABANK). The database covers risks and relevant measures for each phase of a construction job. The measures relate to the planning, preparatory and actual construction phases. It includes tasks from civil, commercial and industrial construction. The data is organised so that it follows the production process and ties in with the working methods of construction enterprises and planning offices (architects, structural engineers and consultants). There is information that supports financial planning, tendering and purchasing processes as well as the planning of the actual construction work. Information from the standard database is used to develop specific plans for individual construction projects.

The tool has been established as a joint venture between Arbouw, Stichting Arbeidstechnisch Onderzoek Bouwnijverheid (an organisation conducting

research into the technical aspects of working in the construction industry) (SAOB) and Stichting Bouwresearch (Building Research Association) (SBR). The databank is based on job analyses and risk analyses developed for these jobs.

For each phase in the construction project risk inventories and working method charts with information on working conditions, problems and solutions are used to produce a specific plan. For example, the working method charts for the construction phase itself show what is required of the construction site, what essential materials need to be available, the requirements the materials must meet and the instructions that must be given to employees. The tool is flexible and adaptable to users specific needs. For example they can develop an enterprise-specific database and the S&H PLANNER can be used to create and manage multiple project-specific plans. It can be adapted during the project and as it is computer based it can be stored and used or adapted for subsequent projects. Individual elements of the safety plan such as individual risk inventories can be handled separately, for example for sharing with subcontractors thereby helping the coordination process between contractors and subcontractors. The construction phase elements can be used to prepare guidelines, training and instruction materials.

The division into elements of the construction process is based on the SfB classification system for classifying all information relevant to the construction process which was developed in Sweden in 1950 (Samarbetskommittén för Byggnadsfrågor - Coordination committee for construction issues). The system is compatible with systems based on ISO standards and OSHAS 18001.

Results

Ten companies have tested the program in practice for three months. The majority were satisfied with the program's operation, the database content and the form and content of the safety and health plans they drew up. On the basis of the users' test, a number of changes have been made, ensuring that the program meets companies' needs even better. The time to draft a safety plan can be reduced from an average of 40 person hours to 8 while the quality of the plan is generally improved.



TARGET GROUPS FOR THE S&H PLANNER AND THE KAM DATABANK

USERS AND TERMS OF REFERENCE IN S&H MANAGEMENT

PLANNING OFFICES (ARCHITECTS AND ENGINEERS)
CONSTRUCTION SUPPORT OFFICES

Coordinator, planning phase
Responsible for drawing up the S&H plan and for the quality of the S&H plan.

Planner and structural engineer
Directly involved in drafting of S&H plans. Makes choices regarding the plans and is primarily responsible for OSH-compatible planning (material, form and location).

Draughtsman
(Co-) compiler of S&H plan for planning phase. Elaborates the plan, largely responsible for implementation details and feasibility.

Specifications draughtsman
(Co-) compiler of S&H plan for planning phase. Elaborates the plan, largely responsible for implementation details and feasibility.

Calculator, costing expert
Effects advance calculations to determine the budget within which the contractor must work.

Project manager
Responsible for preparing the overall plan.

CONSTRUCTION COMPANIES

OSH coordinator at company level
Has ultimate responsibility for working conditions in the implementing company. Guides those drafting S&H plans.

Coordinator, construction phase
Involved in drafting of and responsible for S&H plans.

Calculator
Makes tender and operating estimates and usually determines in the process the budget the contractor must devote to working conditions.

Planning officer, organisational employee
Draws up S&H plans.

Project manager
Has ultimate responsibility for project implementation.

Buyer
ESTABLISHES THE FRAMEWORK CONDITIONS WITHIN WHICH SUBCONTRACTORS AND SUPPLIERS MUST COMPLY WITH WORKING CONDITIONS ON THE SITE.

Contractor, site manager
Day-to-day management on the construction site. Provides instructions and information. Carries out checks.

Health, safety and welfare services and consultants.
Provide advice on the organisation of health, safety and welfare in the workplace.

PRACTICAL VALUE

Support for drafting of the S&H plan for the planning phase and the S&H plan for the construction phase (for construction support offices)

Quick scan for completeness of the S&H plan for the planning phase. Basis for effecting coordination. Use by compiler of the S&H plan.

Fulfillment of (statutory) obligations and delivery of a socially responsible plan. Making of OSH-compatible choices.

Support for making choices while drawing up a plan.

Support for making choices. References to information sources.

Information on working conditions in conjunction with different elements of the construction process. Basis for cost comparison and cost estimate.

Appraisal of choices made by others as regards which this official is responsible for identifying any negative consequences.

Support for establishment and management of OSH-compatible working methods and the S&H plan for the implementation phase.

Establishment and management of OSH-compatible working methods and high-quality S&H plans.

Quick scan of S&H plan, construction and planning phases. Output is the basis for day-to-day operations (information and coordination).

Information on working conditions in conjunction with different elements of the construction process is the basis for cost comparisons and estimates.

Support for making choices, implementation planning and drafting of S&H plans.

Evaluation of choices. Making the task of fulfilling responsibilities easier.

Information relating to materials procurement and subcontracting of operations.

Support for information and instructions to staff, planning of operations, evaluation of workplace and activities, basis for consultation and instructions.

Information on main risks in realising elements of construction projects.

2.14 'LOOK OUT FOR MY DAD' - ROAD CONSTRUCTION SITE SAFETY CAMPAIGN

Branchearbejdsmiljoradet for Bygge- of Anlaeg

Ramsingsvej 7
DK-2500 Valby / Denmark

Contact: Charlotte Martin
e-mail: cma@bar-ba.dk

Project partners:

The Danish Road Directorate

Association of County Councils in Denmark



Task

Road maintenance and construction work

Problem

Road workers face the risk of being hit by passing traffic. The risk is increased where drivers do not respect roadwork caution signs, speed restrictions, lane diversions and traffic control markings etc. Work in areas with traffic poses the risk of collisions. Workers suffer stress from daily near-miss experiences, in addition to the injuries or deaths when collisions that actually occur. In 1999 four road workers were killed and three were severely injured in connection with their work in traffic areas. In addition, a long list of near-miss incidents was reported.

Solution

A campaign was run to prevent fatalities and injuries from road traffic to road workers and to reduce the stress from being exposed to such risks in their daily work.

Employees' associations, trade unions and road authorities agreed that something should be done to raise awareness and tackle the problem. The

campaign "Look out for my dad" was run from April to October 2000 and involved co-operation between the Board of Occupational Health and Safety in the Building and Construction Industry, the Danish Road Directorate and the Association of County Councils in Denmark.

It was recognised that both road users and those involved in roadwork operations had to be involved in the campaign. The campaign was therefore directed towards the target groups below:

- the road users, which constitute the risk factor;
- the contractor who is responsible for the planning of the work via the elaboration of plans for road marking, and who has the duty of training the road workers in connection with the marking of road works;
- the road workers who carry out the specific marking of the road works.



Images and messages were used to try to appeal in a positive way to road users, instead of the usual negative approach. A little girl with a yellow helmet was therefore chosen as the campaign's central feature and has been used in different connections to communicate the campaign message. The images also needed to be effective with the road workers themselves.

The message and campaign information was directed at:

- making the road users more attentive at roadworks by making them aware of the danger that they expose the road workers to by not respecting the marking;
- instructing contractors and road workers thoroughly in the correct marking of the roadworks and making them aware of their duties and responsibilities in connection with the planning and carrying out of the work.

Information to the road users

The information part directed towards the road users consisted of three different roadside signs with a picture of the little girl that were erected at the approach to roadworks:

- "1 000 meters to my dad";
- "My dad works here";
- "Thank you for looking out for my dad".

In addition to this, a poster with the writing "My dad is a road worker - slow down when you pass him" was made. It was put up at pull-ins and petrol stations and was also sent to Dansk Kørelæreunion (the Danish Driving Instructor Union). A banner for cars was also produced.

Information to road workers and contractors

The main information for road workers and contractors consisted of a pamphlet, which briefly outlined the campaign, responsibilities and duties, the legal grounds for the marking of roadworks and what needed to be done. To accompany the pamphlet was a poster with the writing "Dad, tell the cars that they must slow down" with the subtitle "Last year 4 people were killed in connection with road work - your effort is important too". The poster was distributed with the aim of having it put up in mobile rest rooms and offices.

Other activities:

- the police and the road authorities carried out traffic speed monitoring in the areas where the roadside signs had been placed;
- media activity, using the powerful images and campaign headlines, played an important role in disseminating the message.

The campaign also resulted in the development by the road authorities of a set of rules "Road rules for marking of roadworks", drawn up based on good practice by contractors.

All organisations and authorities who have responsibilities for roadworks cooperated in running the campaign, including the Board of Occupational Health and Safety in the Building and Construction Industry where employers

associations and workers unions are represented, the Road Directorate and the Association of County Councils in Denmark. A task group was established to organise the campaign. The task group consisted of representatives from the three project parties. In addition the Rådet for Større Færdselssikkerhed (the National Board for Prevention of Accidents) participated as a consultant. A broader reference group with representatives from a number of organisations with an interest in road network issues was also established. The involvement of various project partners helped to ensure a wide dissemination of the campaign.

Results

An evaluation of the campaign showed a positive effect on the safety of the road workers from the use of the limited, low budget and simple campaign methods. It was the first campaign of this type within the building and construction industry, involving employee associations, trade unions and road authorities. The campaign has also helped to build networking between these organisations.

The effect on the workers health and safety

The campaign was run in 2000 and in that year there were no road worker fatalities from traffic collisions. A survey was conducted in which two thirds of road workers reported feeling safer at work and 60% reported a reduction in the speed at which traffic passed roadworks. Practice concerning the planning and marking of roadworks also appears to have improved. Road workers reported receiving and reading the pamphlet and holding meetings about the campaign and that it was widely discussed in breaks etc.

The campaign's effect on the road users

Interviews with the road users showed that 85% had noticed and understood the campaign message of the need for increased attention and reduction of speed in connection with roadworks.

2.15 PREVENTING FALLS OF ROOF CARPENTERS

Oxford Safety Components Ltd

Oak View, Somerton Rd, Upper Heyford,
Bicester, Oxfordshire OX6 3LB / United Kingdom
Tel.: +44 1869 233144 Fax: +44 1869 233155
e-mail: hywel@dial.pipex.com

Contact: Hywel Lloyd
Tel.: +44 1869 233144 Fax: +44 1869 233155
e-mail: hywel@dial.pipex.com



Task

Sloping, timber framed house roofs are constructed from a series of timber 'A' frame trusses. The frames are hoisted into position by crane and then nailed together with cross bracing in order to make a strong, rigid roof framework. This work is done by roof carpenters.

Problem

The problem is how to safeguard carpenters from falls. These falls occur from inside the roof space down into the interior of the house – possibly several storeys. Before the frames are properly braced they are extremely flexible. The carpenters are standing on a series of narrow, wobbly rafters. They may have to climb up through the rafter system to remove crane hooks, or fix higher level braces in the roof space.

Safety harnesses are impractical as carpenters have to move around inside the frames in order to fix the bracing. Safety netting and other catching devices can help to avoid serious injuries but they do not eliminate the actual fall and



The problem

Acknowledgement: Health and Safety Executive



The solution

Acknowledgement: Health and Safety Executive

carpenters can hit the rafters on the way down. The outcome of a fall can be death or serious injury.

Solution

Two roof carpenters who wanted to find a solution to this hazard in their work developed the solution. They had the idea of using a trellis system of aluminium safety mats, spread progressively on top of the rafters, to create a working surface as the rafter trusses are put in place. They developed the concept, constructed prototypes with different aluminium extrusions, fixed at varying pitches, to find the optimum design. They then got the cooperation of some major house building companies to test the design on actual building sites. They established a method to interlock the mats together and the design was finalised and strength tested to European standards. It was important that the new solution did not introduce new risks. It had to be light in weight and easy and safe for roof carpenters to install and move and also strong and durable. It needed to be

practical: quick to install and flexible to fit different types and sizes of roof.

The solution is an expanding aluminium safety trellis system of mats or temporary decking. These mats are spread on top of the rafters as the rafter trusses are spread and placed in position. The mats form a working deck that eliminates falls and assists the easy fitting of bracing by carpenters, as well as other roof facilities such as water tanks, plumbing connections, etc. It allows operators to see what they are standing on. It is light and folds away into a compact unit for hoisting up to roofs and for storage. It is also strong and weather proof.

Results

The mat system fits virtually any type of roof, to prevent any fall. It increases productivity of the carpentry work, since carpenters can see what they are standing on and can move about the firm, temporary platform more easily. The cost of use is reduced by the improved productivity.

2.16 BUILDING SITE ORIENTATION TRAINING AND COLOUR-CODING

London Borough of Greenwich

Room 211, Peggy Middleton House, 50 Woolwich New Road,
Woolwich
London SE18 6HQ / United Kingdom

Contact: Danny Mulqueen
Tel.: +44 208 9215561
e-mail: daniel.mulqueen@greenwich.gov.uk



Task

Construction work on municipal government properties.

Problem

A practical system was needed to improve control and coordination of contractors engaged to carry out building work, in order to control accidents and comply with construction site safety regulations - in particular to control access to sites and ensure that everyone on site had received training. The work included large refurbishment projects on occupied publicly owned housing estates and involved many high-risk activities such as hot work, working at height, roofing, demolition and asbestos removal.

On a site there may be many workers of various trades and contractors working for different contractors. There was no means of identifying which staff worked for which contractor and whether they were trained and authorised to be in certain areas of the site. The specific site orientation training was often not provided for contractors or authorised visitors on sites. It was also found to be difficult to identify who had actually received the training due to the turnover of workers employed by specialist contractors, who often replace staff on site at short notice due, for example, to sickness or absence, in order to comply with their contractual obligations. An additional problem that required a solution was to reduce risks to residents and visitors where construction work is carried out on occupied housing estates.

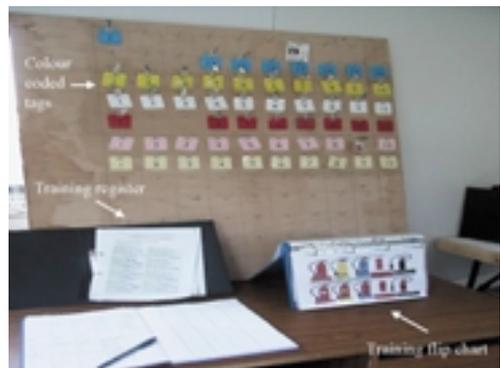
Solution

Each person has to participate in the site orientation training, prior to being allowed access to the site. The site orientation training packages were developed by the organisation’s occupational health and safety service and are based on the specific risk assessments for each site. Supervisors must receive training and instruction in the delivery of such training. A documentation system records who has received training.

A colour-coding system is used to identify which people have received the training and are authorised to be on site. Following the site orientation training each person/group is required to wear their specific colour-coded tag while on site and return them each time they leave the site. The colour-coded tags identify and distinguish each contractor and group of trades persons. The colour-coded tags are also numbered to denote the name, trade and designation of each worker and visitor to each site. In this way they indicate which areas of the site a person may enter. This provides the site management with a system that is simple to operate. Visual inspections by site management can be used to quickly spot any workers or visitors who are in areas of the site where they are not authorised to be. The colour-coded system also helps the site supervisor to ensure the completion of certain work activities before others start which can be important for safety, as the coding allows them to check which building operations are taking place.

Results

The colour-coding system has proved to be very successful. It is simple to set up and manage and requires a minimum of paperwork. It has resulted in a reduction in number and severity of accidents and a reduction in damage to plant and equipment. During 1996, a period of 92 056 hours was worked on construction projects without a lost time accident. It has assisted in improving the safety culture by demonstrating management’s commitment to good health and safety practices. This has also helped to improve industrial relations and staff morale. The system also assists in the management of site security as unauthorised persons on site are recognisable due to their lack of colour-coded identification tags.



2.17 ROADWORKS VEHICLE SAFETY - TRAINING PROGRAMME FOR CONTRACTORS INVOLVED IN WORKING ON ROADS AND IN OTHER TRANSPORT AREAS

The Finnish Road Administration

Traffic Services

PL 33

FIN-00521 Helsinki / Finland

Contact: Esko Tuhola

Tel.: +358 204 22 2288 Fax: +358 204 22 2418

e-mail: esko.tuhola@tiehallinto.fi

Project partners:

Technical Research Centre of Finland, VTT

Finnish Road Enterprise



Task

Use of vehicles in public roadworks and other areas where workplace transport is used.

Problem

Workers do not always recognise the dangers caused by traffic. Drivers of work transport are not always aware of risks to pedestrians on work sites. Consequently a significant number of work accidents resulting in death and injury involve transport. In Finland, construction work on roads is defined as a high-risk area.

Solution

To meet their duties to ensure that employees of contractors have been made familiar with risks at the workplace, the Finnish Road Administration (Finnra) is

introducing a work traffic safety training programme which must be given to the staff of contractors. The training is an eligibility requirement for contractors engaged in roadwork operations and is written into the contract agreement between Finnra and the contractor. The two-part training programme includes written examinations. The training does not replace the responsibility of employers to familiarise their employees with the basic work to be done.

Part 1 road safety training is for:

- people who participate in road-surfacing work;
- drivers transporting road-surfacing materials;
- operators of road construction and maintenance vehicles;
- those who participate in Road Safety 2 training;
- those involved in supervisory and control tasks for the Finnish Road Administration.

In future, part 1 training will also be for:

- people engaged in the inspection of tasks on Finnish Road Administration roads;
- those working on a regional contractor's road;
- those responsible for the occupational safety and road safety of other contractors.
- all staff working for contractors;
- others on whom the training requirement is imposed.

Training in Road Safety 2 is for:

- people responsible for occupational safety and road safety within the main roadwork developer organisation;
- those engaged in planning tasks for management, supervision and traffic circulation in work relating to road maintenance;
- Finnish Road Administration road engineers and road inspectors;
- those preparing contract documents;
- those preparing work permits for contractors;
- those preparing decisions on speed limits during working hours.

Safety performance and competence are components of the tendering and contract management process. Requirements are included in tender documents and the management system includes safety check-ups. Monitoring of the training forms part of this process.

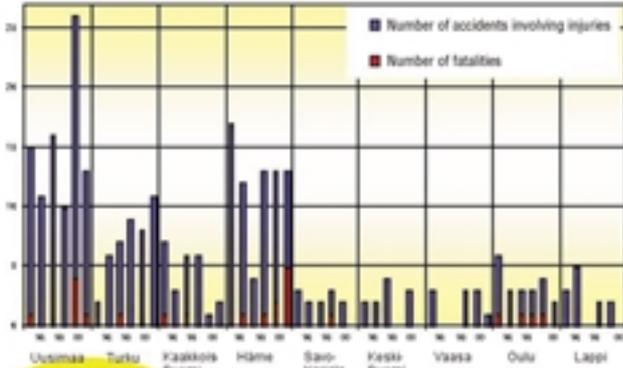
Results

A survey conducted by the Finnish Road Administration showed improvements in traffic circulation at work sites, improved visibility of work sites and higher hazard awareness. However it is too early to see significant improvements in accident rates.



The Finnish Road Administration

Construction accidents at the public roads 1995-2000



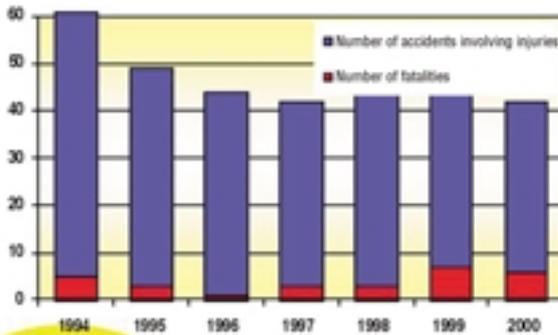
Explanation: On the X-axis, there are the different geographical areas/districts in Finland.

LibreTexts published: 8.2.2001
http://www.libretexts.org/Bookshelves/Health_Science/Book%20of%20Occupational_Safety_and_Health/02%20Accidents/02.02%20Accidents_in_Construction/02.02.02%20Accidents_in_Construction_in_Finland/02.02.02.02%20Construction_accidents_at_the_public_roads_1995-2000



The Finnish Road Administration

Maintenance accidents at the public roads 1994-2000



LibreTexts published: 8.2.2001
http://www.libretexts.org/Bookshelves/Health_Science/Book%20of%20Occupational_Safety_and_Health/02%20Accidents/02.02%20Accidents_in_Construction/02.02.02%20Accidents_in_Construction_in_Finland/02.02.02.02%20Construction_accidents_at_the_public_roads_1995-2000

2.18 'HEALTHY CRAFTWORK' - ONLINE RISK PREVENTION TOOL



Zentrum für Umwelt und Energie der Handwerkskammer Düsseldorf Handwerkszentrum Ruhr

Mülheimer Straße 6
46049 Oberhausen Nordrhein-Westfalen
Germany
Tel.: +49 208 820 555

Contact: Ms Wildförster, Ms Poth
The InfoManager Safety and Health in Craftwork is available at
<http://www.hwk-duesseldorf.de/infomanager>

Project partner:
Sozialforschungsstelle Dortmund Landesinstitut

Task

Various jobs in small craft firms including painting, decorating and butchery work.

Problem

When the new Safety and Health Act was passed in 1996, it was evident that many small craft businesses were having difficulties implementing the new requirements. The reasons for this included:

- existing guidance and manuals were geared to large firms and persons with prior training
- much of the available information was unclear;
- the available tools are directed at weaknesses; strengths were not utilised;
- smaller firms were doubtful that risk assessment was worthwhile;
- provisions for directly involving workers in risk assessment were inadequate;
- staff were therefore insufficiently motivated to put the rules into practice;

Solution

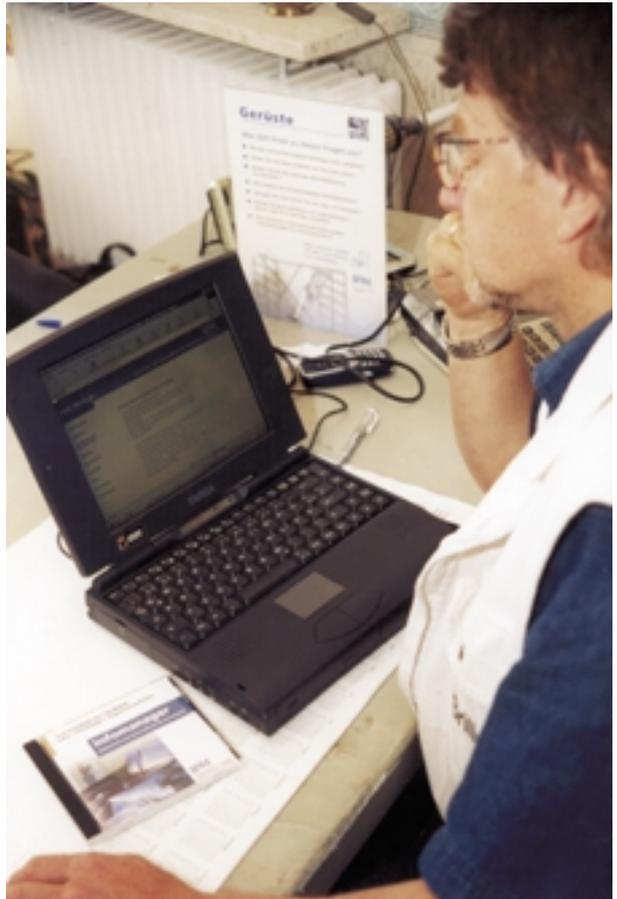
The Düsseldorf Chamber of Craft Trades worked with the Dortmund Social Research Unit in running the project ArGU!ment and the transfer project Healthy Craftwork, which comprised the designing and testing of a package of materials for training and advice on workplace safety and health for craft trades. The objective was to produce an integrated training system targeted at the requirements of the craft sector and specific trades. The main tool developed was an internet-based manual on risk assessment for craft firms - InfoManager Safety and Health in Craftwork. It is intended both as a source of information and as guidelines for action on risk assessment. It includes a compendium of ideas for action, documentation and useful facts directed at craft firms. A printed version was developed first, which was tested in the painting and decorating and butchery sectors.

Gefährdungsbeurteilung (Risk Assessment) can be regarded as the central element of the internet tool. It encompasses 20 action modules relevant to all trades, on the following subjects:

- | | |
|-------------------------|-------------------------|
| 1. Ladders | 11. Spaces and gangways |
| 2. Scaffolding | 12. Welding |
| 3. Electricity | 13. Building sites |
| 4. Tools | 14. Posture |
| 5. First aid | 15. Investment |
| 6. Fire precautions | 16. Machinery |
| 7. Warehouses | 17. Offices |
| 8. Substances | 18. Stress |
| 9. Lifting and carrying | 19. Leadership |
| 10. Transporting | 20. Organisation |

The content is based on existing materials and instruments, e.g. those of professional associations and the State Offices for Safety and Health at Work but each is adapted to a risk assessment in small craft firms. The guidance given on each subject consists of four parts:

1. economic and health related information for the employer;



2. posters/leaflets for staff for use in the workplace;
3. practical checklist and activity plan for identifying problems and solutions, to be used jointly by the employer and workers;
4. instruction aids for employers to use to instruct staff in risks of their work and precautions necessary.

The method is aimed at:

- drawing the employer's attention to hidden risks for example, hazardous substances, noise, lifting/carrying);
- creating mechanisms where staff suggestions and involvement is encouraged;
- using key questions etc. to provide clear information in an accessible format;
- presenting resources aimed at practical activities in a form appropriate to the craft trades.

Other resources include a glossary section, and downloadable documentation such as datasheets, operating instructions, forms for correspondence with service-providers and authorities and an electronic bulletin board for exchanges on health and safety between craftworkers and experts.

Results

Trials in firms have demonstrated that the procedure is practicable. The time and effort required are not excessively burdensome and the method has encouraged dialogue with staff in the firms on health and safety. The accessibility of the internet has enabled the Chamber of Craft Trades to greatly extend their health and safety services. The method has proved to be transferable. Other craft trade organisations are working on trade-specific adaptations of the InfoManager and are including it among the services offered to their members.

2.19 TRAINING AND STAFF INVOLVEMENT - IN A LONG-TERM ACCIDENT PREVENTION PROGRAMME

TITAN CEMENT Co S.A.

224 Halkidos Str.
111 43 Athens / Greece

Contact: D. Tzavaras, E. Zimalis
Tel.: +30 1-2591111
e-mail: tzavaras@titan.gr



Task

Cement Production.

Problem

A high accident rate, resulting in a high number of days off work and significant direct and indirect costs. This prompted the company to embark on a programme to improve occupational safety and health. Measures were taken to improve the working environment, safety experts were appointed and joint prevention committees set up in the local factories. Although accident levels dropped in number and severity, the company realised that a programme of training was also needed both to train employees in the measures they needed to follow and to engage their active involvement in accident prevention.

Solution

In parallel with work environment measures to reduce risks, the company introduced a number of training and staff motivation activities:

- offering workers the possibility of continuous training to maintain their competence, for example training seminars;
- producing supporting training materials: audiovisual material, leaflets, posters and books;
- the company's factory with the best annual safety performance is rewarded;

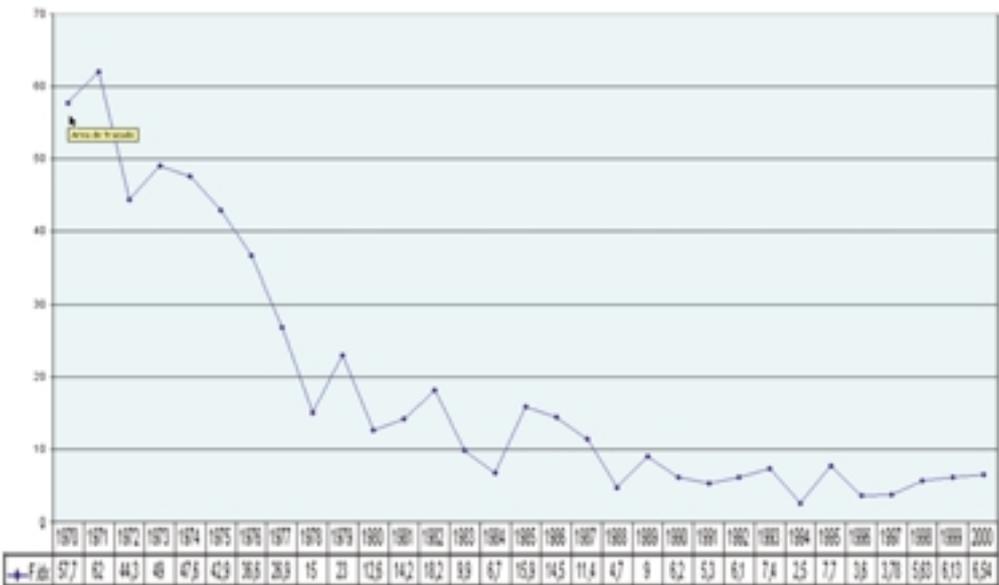
- running a poster and motto contests for employees, to which the members of the employees' families may also participate;
- placing emphasis on the transfer of experience and good attitudes to health and safety from older employees to new, young recruits.

The practices were developed and revised over time to improve employee participation. Human resource personnel worked with safety officers to develop appropriate methods. A firm commitment to health and safety has been established at the head office. Practices were developed centrally and a common system disseminated to the factories for implementation. The project was implemented with the involvement of the factory safety committees and with the support of the trade union representatives.

Results

By actively engaging staff in safety issues in these ways, accident rates dropped significantly during the time period of the project and rates have remained stable since then.

TITAN CEMENT Co S.A. FREQUENCY INDEX FOR ACCIDENTS PERIOD 1970 - 2000



2.20 EMPLOYER AND TRADE UNION PARTNERSHIP

Hickson & Welch Ltd

Wheldon Road
Castleford
West Yorkshire
WF10 2JT
United Kingdom

Contacts: Dr Ken Patterson, Mr Chris Emsen
Tel.: +44 1977 556565 Fax: +44 1977 712 542
e-mail: ken.patterson@hickson.co.uk

Project partners:

Hickson & Welch branch
Transport & General Workers Union



Task

Chemical manufacturing.

Problem

The enterprise is engaged in high risk operations with chemicals (a top-tier SEVESO 2 site) and production is carried out continuously by the 400 employees using shiftwork. The accident rate was generally high and in 1992 there was a serious accident on site. At this time the union safety representatives and management were not working together on safety issues and most employees saw profit as the driving force of the company, not safety.

Solution

Both unions and management were determined that safety had to improve and that they needed to understand different points of view and work together. To facilitate this they introduced an agreement on safety and health between the trade union and management, based on partnership working. The last 10 years have seen closer and closer working between the company management and the union. At the heart of this close working has been the shared determination to achieve a safe working environment.

Steps in the safety improvement programme:

- senior management commitment, to both health and safety and to partnership;
- partnership - safety culture;
- safety management programme, including setting targets for improvement;
- communications;
- injury care management;
- safety award scheme.

The senior union representative was given a new role in the safety department with special responsibility for safety communication. In conjunction with other union safety representatives he started a system of monthly 'safety briefings' which are given to all staff.

The site changed its working practices to one of empowered teams. The teams had responsibilities for all aspects of plant operation, including safety. The teams had to carry out plant general inspections and safety audits on a regular basis and report their findings to a central database. The problems were followed up using this database, removing thousands of potential hazards before they could cause harm or loss.

All union safety representatives and first line managers now attend a joint health and safety training course. Officials from the regional union organisation provide the training. The syllabus is agreed with the company but is based on the union's own training needs analysis. The joint training helps ensure that there is a common understanding of health and safety issues and reduces misunderstandings and hence unproductive friction.

The joint management and trade union 'Safety, Health, Environment and Quality' committee and the senior trade union representative play significant roles in the safety management system. The committee meets monthly and is co-chaired by the site safety manager and the senior trade union representative. Trade union safety representatives, from all parts of the workforce, form at least 50% of the committee. The committee has responsibility for developing, approving and monitoring the implementation of the company's annual safety programme. It approves the introduction and modification of each part of the safety management system, which has been developed to actively involve the trade union.

The site-wide committee is supported in its work by area safety committees, which cover either geographical areas or functional areas, for example offices, laboratories, contractors. Trade union safety representatives always chair the meetings and the minutes are reported to the site-wide committee.

The safety management system includes the involvement of trade union safety representatives in all accident investigations, for example, and the investigation is not finished until the safety representative has signed it as complete. Similarly

modifications to plant and operations are discussed with the trade union and plant operators have the responsibility of checking the plant operating instructions when they are introduced or revised.

The company has an active 'Injury Care Management' scheme that again was developed with the trade union. The site medical team is involved in care and assessment of injuries. It involves managers ensuring that appropriate treatment is given and then visiting any injured member of staff. Any injured person is involved in the investigation of the incident and all employees are given the chance to return to suitable, useful work as soon as is appropriate after any injury. The scheme extends to illness and injuries at home and it is actively monitored by the trade union.



Safety has been made part of everyone's job and is included in job descriptions. Objectives for safety performance are set and used in performance assessment. All staff are expected to discuss safety performance with their manager at least once a year. These discussions have helped to identify good and bad practice in the company. At the same time the right and duty of all staff not to carry out a job they feel to be unsafe has been made explicit.

The final element in the partnership programme is the safety award scheme. A joint team from the management and the trade union designed its form and scope.

Although partnership is central to the programme it only works if the senior management are committed to partnership and safety improvement. Senior managers are expected to lead by example, by carrying out safety audits and by attending safety committees. In the words of one senior manager "the highest safety standard we will achieve is the lowest standard we managers will tolerate. We can only tolerate the best." Health and safety performance is the first item on all regular management meetings, including the monthly company board meeting. The discussion of the company's performance normally occupies the first hour of the meeting.

Results

The partnership has played a very significant role in the sharp reduction in the accident rate on the site. The system also contributes to the low level of absenteeism, which currently runs at 1% to 2% in the company. Only by maintaining it – with commitment from both sides – will the site be able to sustain its present high standards.

2.21 PARTNERSHIP WORKING – IN THE METALLURGICAL AND MECHANICAL SECTOR



ULSS (Local Health Unit) N. 6 “Vicenza”

Department of Accident Prevention / Service for Accident Prevention and Health and Safety at Work

Via IV Novembre n. 46

I-36100 VICENZA - Italy

<http://www.prevenzioneveneto.com>

Contact

Celestino Piz

Tel.: +39 444 992213 Fax: +39 444 992333

e-mail: rv.assl6.dp.spsal-02@libero.it

Project partner:

Direzione per la prevenzione - Regione Veneto

Task

Metallurgical and mechanical manufacturing operations using machine tools, as well as welding, painting, the use of lubricating and refrigerant oils.

Problem

Accident and ill health hazards in this sector include the machinery, various dangerous substances including welding fumes, oils, solvents and noise. National Health Plans had been introduced concerning risk prevention in the sector, but the small and medium-sized companies themselves lacked the technical knowledge to implement them and tackle the hazards and the incidence of reported accidents and occupational diseases was high. The competence of employers on health and safety needed to be increased and they needed to be convinced that the Accident Prevention Service was also capable of providing them with technical support.

Solution

The Accident Prevention Service decided to develop a new model to provide assistance to the production sectors: information and intervention measures in

collaboration with employers' and workers' organisations.

To decide which manufacturing activities to target and to define both the problems and the possible solutions, they analysed accidents and occupational disease statistics and carried out on-the-spot investigations in companies. Accidents of over 20 days' absence were analysed to identify the causes. A similar exercise was performed for occupational diseases.

The measures taken by the accident Prevention Service included:

- preparation of information, guidelines and a risk assessment questionnaire in collaboration with employers' organisations and trade union associations;
- training the Prevention Service Inspectors;
- circulation of guidelines, self evaluation questionnaire and details of the project to companies;
- small, local meetings with companies about the guidelines, the intervention procedure and what they are required to do;
- companies taking the necessary action to put the required safety and health measures into practice;
- company inspections by the local Prevention Service;
- evaluation of effectiveness.

A process based on cooperation and collaboration is particularly important to get the companies to act. The preliminary agreement with the trade unions and employers sets objectives, procedures, the common programme of work and the information required. This helps to make the process transparent and reduces suspicion and increases cooperation when the workplace inspections are carried out. The meeting with the employers provides the opportunity to explain the reasons for the process further and also to present examples of practical solutions that have already been implemented in similar companies. This also increases employer cooperation and motivation and provides the opportunity for employers to raise any doubts or queries about the information or process.

Results

The process stimulates the companies involved to take action on their own initiative after the meeting to implement the safety and health requirements and not merely wait until an inspection visit to take action. This increases the number of companies complying with the law and reduces the inspection work load of the Prevention Service. In this way the Prevention Service is able to reach and stimulate action in a greater number of companies than by relying solely on workplace inspections.



2.22 USING NEAR-MISS ACCIDENT ANALYSES



RHI AG (Radex Heraklith Industriebeteiligungs AG)

Millstätterstr. 10
A-9545 Radenthein / Austria

Contact: Stefan A. Bayer
Tel.: +43 4246 2100 4625 Fax: +43 4246 2100 4348
e-mail: stefan.bayer@rhi-ag.com
<http://www.rhi.at>

Task

Production line work at *RHI AG* (Radex Heraklith Industriebeteiligungs Aktiengesellschaft), an international industrial group manufacturing fire resistant materials and noise proofing equipment, with 180 production and service locations spanning five continents.

Problem

Work on the production line of the RHI AG is heavy physical work and includes night shift and other physical stresses like high temperature, noise etc. The number of workplace accidents had begun to rise, however the differences between locations showed that there was a potential for accident prevention.

Solution

To tackle this problem in a participatory way a project was started within the enterprise to involve everyone in looking at and discussing the causes of near miss accidents and minor incidents and the lessons that should be learned from them. The project "Rückkehr heisst Investment" ('return means investment') is part of a wider strategy in the enterprise. The planning involved all relevant groups including the employer, representatives of employees, safety engineers, occupational doctors and safety personnel. The idea is that the analyses of the near-miss incidents can show where working procedures need to be changed or improved as well as if employee behaviour can be altered to prevent accidents. Good and bad experiences should be included in the planning of the

accident prevention activities in the enterprise.

The project was initiated through the general safety committee in which employer and employee representatives, safety engineers, occupational doctors, and safety personnel actively participated. They established a time schedule for the next steps, describing the activities foreseen related to all workplaces and working groups. The project plan was published in the employees' newspaper and in parallel promotion activities took place such as displaying posters in different places. They developed a form together with the employees. This form has to be filled in after each accident, after each near-miss accident and also after accidents during the journey between work and home. The form also has to be completed after employees return from sick leave caused by any incident at work. All near-miss accidents have to be registered and described.



The preventive service is included and consulted in all stages such as discussions with staff and management and the evaluation of near misses, accidents or other dangerous working incidents. For the project to work the management level has to show commitment and motivate the employees. The approach to prevent accidents is practical and based on legislation. All changes introduced have to be evaluated afterwards.

The process includes regular discussion on safety issues and the evaluation of workplaces and working procedures as well as addressing the behaviour regarding prevention of accidents of employees. In particular managers have to discuss safety and health at work issues on a regular basis with their staff. The management of the enterprise, including the director, received training to help them communicate with staff effectively and ensure that the meetings are productive.

The employer's commitment to implementing improvements is the key element in preventing accidents, however the behaviour of employees, their commitment and active participation is also important. The knowledge of experts alone within the preventive service is not sufficient for sustainable success. There is a need for good co-operation and communication between all parties. The motivating discussions were aimed at decreasing accidents at work by a domino effect within the enterprise.

Results

The accident statistics within the enterprise show that the scheme is having an effect. By having the problems tackled by workers' immediate superiors, not only the number of workplace accidents are expected to fall, but also the number of accidents which take place in the workers' own time. The statistics confirm this.

The costs of this project have been around € 38 000 and include primarily the working time taken up by the talks. A 10% reduction in the rate of absence as a result of accidents would lead to a benefit in the order of 1:7. Other positive aspects like motivated people, better working climate, better understanding of working procedures by management etc. cannot be expressed in figures.



3.



ANNEXES

3.1 SOURCES OF FURTHER INFORMATION



More information about preventing work-related accidents 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 good practice solutions can be found at http://europe.osha.eu.int/good_practice/

This includes links to guidelines and solutions to accidents risks gathered from Member State, European and International sources:

http://europe.osha.eu.int/good_practice/risks/accident_prevention/

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.

AGENCY REPORTS

The European Agency has published a range of reports, fact sheets and campaign material relevant to accident prevention. All of these are available on line at the Agency's website <http://agency.osha.eu.int/publications/> and in a limited number of printed copies from the EC's Publications Office EUR-OP in Luxembourg (<http://eur-op.eu.int>), or from its sales agents (<http://europ.eu.int/general/en/s-ad.htm>).

Information reports

- The State of Occupational Health in the European Union – a pilot study. This wide-ranging pilot study provides a snap shot of the current state of occupational safety and health in the European Union. It combines statistical evidence on OSH with the qualitative knowledge and experience of all the key actors involved. 478 pages, A4 (available in English). Cat TE-29-00-125-EN-C

(Summary reports in all languages) CAT TE-29-00-133-X-C.

- How to reduce workplace accidents – describes 22 case studies of accident prevention interventions in Europe. CAT TE-37-01-607-EN-C.

Agency facts

Factsheets provide concise information on a range of OSH issues and are usually available in all 11 official Community languages.

- Facts 13 – Successful Management to Prevent Accidents
- Facts 14 – Preventing Work-Related Slips, Trips and Falls
- Facts 15 – Accident Prevention in the Construction Sector
- Facts 16 – Preventing Vehicle Transport Accidents at the Workplace

- Facts 18 – Preventing Road Accidents involving Heavy Goods Vehicles

- Facts 19 – Work-related Accidents in the EU - the Statistical Picture (1998-1999)

- Facts 20 – How to reduce workplace accidents

Campaign materials

- European Week for Safety and Health at Work 2001

The Agency has produced an information pack consisting of posters, leaflets, factsheets and postcards to promote the European Week 2001 and its theme of the prevention of work-related accidents, available at <http://osha.eu.int/ew2001/>

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

3.2 OVERVIEW OF PRACTICAL EXAMPLES

Country	Title	Industry/ Workplace	Main source of problem	Main intervention
A	Using near-miss accident analyses	Manufacturing	Various	Analysis of near-miss accidents to improve prevention
B	Sea safety	Sea fishing	Various	Awareness raising and risk assessment tool
DK	Butchers say NO to accidents	Abattoirs	Work equipment	Risk assessment support
DK	Look out for my dad	Road construction and maintenance	Road traffic	Campaign aimed at road users and workers
FIN	Dry floor cleaning	Cleaning	Slips, musculoskeletal	Redesign of traditional floor mop
FIN	Roadworks vehicle safety	Road construction and maintenance	Work transport	Training programme for contractors
F	Supporting microenterprises	Various	Various	Training and support programme
D	"Healthy craftwork"	Craft industries	Various	Online risk assessment and prevention tools
EL	Training and staff involvement	Cement production	Various	Training activities as part of a long-term prevention programme
IRL	Automating for safety - without creating maintenance problems	Small component assembly	Machine maintenance	Proactive participatory risk-solving approach
I	Partnership working	Metallurgical and mechanical manufacturing	Various	Prevention service programme developed with employers and unions
I	Safe crossing	Sawmills	Workers struck by machinery	Separating pedestrians and equipment and automatic shut-down devices
I	Protocol for safe building renovation	Construction - renovating historic buildings	Various	Safety protocol agreement with contractor
L	Practical solutions in a small woodworking factory	Manufacturing window frames, etc	Various including work equipment	Systematic risk assessment and intervention
NL	Construction safety planning tool	Construction	Drawing up safety plans	Computerised planning system and database
NL	Safety and health performance checker for road transport	Road haulage	Driving	Practical risk assessment and management materials
P	Working with external health and safety advisers	Manufacturing insulated containers	Various	Implementing safety solutions using a consultancy
E	Safety at work now and always	Manufacturing engine parts	Slips, trips and falls	Targeted prevention plan
UK	Co-operative problem solving process	Engine manufacture	Fork-lift truck accidents	Worker participation problem-solving process to develop a barrier
UK	Preventing falls of roof carpenters	House construction	Falls from heights	Aluminium safety mats
UK	Building site orientation training and colour-coding	Public building improvements	Ensuring training and authorisation of contractors	Specific training requirement and colour badges to monitor site access
UK	Employer and trade union partnership	Chemical manufacturing	Various	Safety programme and interventions developed through participation of partnership

European Agency for Safety and Health at Work

Success is no Accident

Luxembourg: Office for Official Publications of the European Communities

2001 — 73 pp. — 16,2 x 22,9 cm

ISBN 92-95007-34-4



In order to encourage improvements, especially in the working environment, as regards the protection of the safety and health of workers as provided for in the Treaty and successive action programmes concerning health and safety at the workplace, the aim of the Agency shall be to provide the Community bodies, the Member States and those involved in the field with the technical, scientific and economic information of use in the field of safety and health at work.

European Agency for Safety and Health at Work
<http://osha.eu.int>



Gran Via 33, E-48009 Bilbao, Spain
 Tel. +34 944 794 360; Fax. +34 944 794 383
 Email: information@osha.eu.int



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