

Safety and Health at Work European Good Practice Awards

2008-09

HEALTHY WORKPLACES

A EUROPEAN CAMPAIGN ON RISK ASSESSMENT

Prevention of risk in practice: Good practice related to risk assessment



European Agency
for Safety and Health
at Work



Safety and Health at Work

European Good Practice Awards 2008-09

Prevention of risk in practice:
Good practice related to risk assessment

HEALTHY WORKPLACES

A EUROPEAN CAMPAIGN ON RISK ASSESSMENT







Contents

| | |
|---|----|
| Introduction | 4 |
| Overview of examples | 8 |
| | |
| Practical solutions – Award winners | 10 |
| 1. Programme for the involvement of associates in risk assessment. | 10 |
| 2. Risk analysis and prevention on a motor car assembly line | 11 |
| 3. Using ‘risk cards’ to assess and handle risks | 12 |
| 4. A knowledge-based software solution for risk management | 13 |
| 5. Risk assessment as the basis for continual improvements in the working environment | 14 |
| 6. Targeted workplace assessment using electronic forms..... | 15 |
| 7. Safety observation in daily use | 16 |
| 8. A partnership approach to creating a healthy and safe school | 17 |
| | |
| Practical solutions – Commended entries | 18 |
| 9. Assessing and tackling external violence at work | 18 |
| 10. Comprehensive risk analysis and prevention at Rio Tinto Minerals | 19 |
| 11. The global VAE-HSE-Guidebook & Software for systematic risk assessment. | 20 |
| 12. Quarrying sector – safe handling of raw materials contaminated with asbestos..... | 21 |
| 13. A comprehensive approach to risk assessment at Revoz car plant..... | 22 |
| 14. Health circles – an effective and enjoyable way to conduct risk assessment..... | 23 |
| 15. Computer software for carrying out risk assessment in the iron and steel industry | 24 |
| 16. Reorganising a painters’ workshop to promote worker health and safety | 25 |
| 17. Reducing the risk of slipping in a food processing plant | 26 |



Introduction

One of the most important new developments of the Framework Directive 89/391 was the introduction of risk assessment and the documentation of the results as a foundation for the establishment of a prevention programme of technical and/or organisational measures to combat the risks.

Risk assessment is the cornerstone of the European approach to prevent occupational accidents and ill health. There are good reasons for this. If the risk assessment process – the start of the health and safety management approach – is not done well or not done at all, appropriate preventive measures are unlikely to be identified or put in place.

Every year millions of people in the EU are injured at work, or have their health seriously harmed in the workplace. That is why risk assessment is so important, as the key to healthy workplaces. Risk assessment is a dynamic process that allows companies and organisations to put in place a proactive policy of managing workplace risks.

In 2004, a communication of the European Commission ⁽¹⁾ was issued on the practical implementation of the Framework directive and its five first individual directives. As far as the implementation of risk assessment is concerned, the communication stated that:

- The tasks in risk assessment, documentation and supervision are not universally spread, even in Member States with a tradition based on prevention. The data ⁽²⁾ gathered at Member State level show that risk assessment is not universally carried out. A significant number of companies, mainly small and medium enterprises (SMEs), still do not assess risks.
- Risk assessment is often considered a 'one-off' action and is not sustained.
- Risks are not analysed and evaluated collectively. As a result, separate measures are being set in place, but

(1) COM (2004) 62 final: COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF REGIONS on the practical implementation of the provisions of the Health and Safety at Work Directives 89/391 (Framework), 89/654 (Workplaces), 89/655 (Work Equipment), 89/656 (Personal Protective Equipment), 90/269 (Manual Handling of Loads) and 90/270 (Display Screen Equipment).

(2) Campaign Summary. *Healthy Workplaces. Good for you. Good for business.* A European campaign on risk assessment, <http://osha.europa.eu/en/campaigns/hw2008/campaign/campaignsummary>

there is no integrative approach for the analysis of the conditions in the workplace.

- In the course of conducting superficial risk assessments the focus is put on identifying obvious and immediate risks; long-term effects such as those caused by chemicals are being neglected.
- Psychosocial risks and work organisation factors are rarely considered in risk assessments.
- The efficiency of the measures taken is not sufficiently supervised by employers.

The document clearly underlined the need to improve the implementation and the quality of risk assessment.

Healthy Workplaces. A campaign on risk assessment

The European Agency for Safety and Health at Work (EU-OSHA) has developed a European-wide information campaign focusing on risk assessment. Healthy Workplaces is a two-year European campaign which aims to promote an integrated management approach to risk assessment.

The Agency is focusing on communicating the general principles of risk assessment, its importance for effective prevention, and that risk assessment is mandatory, necessary and feasible.

Risk assessment can be a challenge, especially for small and medium-sized businesses, but it need not be. The objectives of the risk assessment campaign are to:

- raise awareness of the legal responsibility and the importance and practical need to assess risks in the workplace. Risk assessment is not an objective in itself, but a powerful tool for identifying the need for preventive measures;
- demystify the process and show, especially to SMEs, that risk assessment is not necessarily complicated, bureaucratic, or a task only for experts;
- promote a stepwise approach to risk assessment;
- encourage enterprises to carry out their risk assessment in-house;
- highlight the fact that risk assessment is an ongoing process and not just a one-off obligation;
- underline the fact that quality counts (and that it is important to document, monitor and review the risk assessment);





- promote participatory risk assessment, so that everyone in the workplace is involved in assessing the risks; and
- promote good practices which are transferable and help make the process easier.

The ultimate aim, of course, is to help reduce the numbers of people who are being hurt or experiencing ill health as a result of their work, now and in the future.

Run by the European Agency for Safety and Health at Work, the Healthy Workplaces campaign involves employers, workers, workers' safety representatives, OSH professionals and practitioners, preventive services, policymakers and other stakeholders in improving risk assessment at the workplace level.

The campaign runs throughout 2008 and 2009, features two European Weeks of Safety and Health, in October 2008 and October 2009 and a Good Practice Awards ceremony in April 2009, and culminates in a major risk assessment summit in November 2009.

Healthy Workplaces is an opportunity to make Europe's workplaces safer and healthier.

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 make information available to support and promote risk prevention. The Agency achieves this by publishing its own material and by making available existing good practice from across Europe. As part of the European Campaign 2008/09 on risk assessment, a European Good Practice scheme was organised specifically to identify examples of good practice related to risk assessment. The Good Practice Awards competition is a method of promoting and encouraging practical solutions in workplaces, and a way of sharing this good practice.

This publication contains real examples of how companies and organisations from across the European Union have taken action to assess and manage occupational risks.

Some organisations developed their own solutions using in-house expertise. Others found it useful and cost-

Risk assessment and prevention principles

Before good practice information can be 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 a waste of resources.

The general principles of prevention are:

- Avoiding risks
- Evaluating the risks which cannot be avoided
- Combating the risks at source
- Adapting the work to the individual, especially as regards the design of workplaces, the choice of work equipment, and the choice of working and production methods
- Adapting to technical progress
- Replacing the dangerous by the non-dangerous or the less dangerous
- Developing a coherent overall prevention policy which covers technology, work organisation, working conditions, social relationships and the influence of factors related to the working environment;
- Giving collective protective measures priority over personal preventive measures, and
- Giving appropriate instructions to the workers.





effective to use consultants with expert knowledge and practical experience in preventing risks. All of them found that the involvement of employees and their representatives was invaluable in identifying problems and developing solutions. This is crucial to success, as workers have first-hand experience of the work situation.

Every workplace is different. Therefore work practices and solutions to problems must be matched to the particular situation by carrying out an assessment of the risks at the workplace concerned. However, concepts can be transferred across sectors, organisations size and type, and Member States.

The practical examples

The practical examples presented here were all entries in the 9th annual Good Practice competition run by the European Agency for Safety and Health at Work. The aim of this competition is to support the dissemination of good practice information about risk assessment and promote the application of 'practical solutions' in workplaces in the Member States across Europe.

Forty-seven entries from 24 Member States (including Turkey) were received, covering organisations of all sizes, from various employment sectors and subject to a wide variety of risk factors. This publication gives details of the eight winning entries and the nine entries commended by the European Jury Judging Panel.

The short summaries in this booklet present the best features, showing what works well in practice and how it was achieved. These summaries are available in all Community languages and link to full-length descriptions on the Agency website.

What the judges were looking for

In selecting the examples, the judging panel was looking for solutions that:

- tackled risks at source through good management, particularly the effective use of risk assessment and implementation of its findings;
- showed good consultation between management and the workforce or their representatives;
- showed active involvement by the workforce in identifying hazards, evaluating risks and deciding on the best preventive actions to be taken;

- showed that activities such as providing information and training, or increasing awareness about occupational risks, were part of a wider risk management approach;
- showed the complementary use of different methods, tools or approaches to assess the risks more effectively;
- showed innovative ways to: process or analyse the information gathered through the risk assessment; make the information accessible to managers and workers; document the outcomes of the assessments; regularly update the assessment, etc.;
- showed that the risk assessment process is linked to a broader occupational safety and health policy;
- showed that risk assessment is an active process resulting in measures that protect people in practice (and not just a formal exercise);
- showed successful implementation, achieving real improvements that were sustainable over time;
- went beyond simple compliance with all relevant legislative requirements;
- showed in a practical way how risks not systematically considered in risk assessment, such as violence at work, stress, musculoskeletal disorders and dangerous substances, can be properly assessed and prevented;
- showed that by using practical and easy-to-use tools (software programs, observation cards, electronic assessment forms, etc.) risks can be identified and managed successfully in-house;
- showed the development of risk assessment methods or approaches in 'new' fields such as experimental research, or schools;
- could be transferred to other workplaces, other Member States and small and medium-size enterprises (SMEs).

Good practice examples could not be developed solely for commercial profit. This related particularly to products, tools or services that are or could be marketed. Examples that were focused on the individual, such as training, had to show they were a part of a wider risk-management approach.

Further information

The Agency's website – <http://osha.europa.eu> – contains a wealth of information on workplace safety and health in all European Community languages.





Information on risk assessment can be found at: <http://osha.europa.eu/en/topics/riskassessment> and details of *Healthy Workplaces: A European campaign on risk assessment* at: <http://hw.osha.europa.eu>
All the Agency publications can be downloaded free of charge from the website.

Acknowledgements

The Agency would like to thank its network of focal points in Member States (competent authorities, or bodies nominated by them, responsible for occupational safety and health) for assessing and nominating examples for the Good Practice Awards. The competition would not have been possible without their assistance.

The Agency also thanks the experts who made up the judging panel for their input: Christa Sedlatschek, Daniela Kubíčková, François Engels, Victor Kempa and Jesús Álvarez Hidalgo.

The panel included representatives from the government, employers' and employees' organisations and an independent expert. Various Agency staff contributed to making the project a success, including Maria Lvova, Marta de Prado, Micaela Kristof, Zinta Podniece, Joanna Kosk-Bienko, Michaela Seifert and Lorenzo Munar.

We would also like to thank the organisations that feature in this publication.

European Agency for Safety and Health at Work
February 2009





Overview of examples

AWARD WINNERS

| Title | Country | Sector | Issue |
|---|-----------------|---|---|
| Programme for the involvement of associates in risk assessment | Lithuania | Manufacture of prepared pet foods | Promoting understanding and awareness of risks among all employees and their managers, and involving them in assessing risks in the workplace. |
| Risk analysis and prevention on a motor car assembly line | Czech Republic | Manufacture of motor vehicles, trailers and semi-trailers | Adoption of an active approach to identify and eliminate ergonomic and environmental risks on an assembly producing vehicle lights, with the participation of operators, team managers and expert employees. |
| Using 'risk cards' to assess and handle risks | The Netherlands | Metal industry | 'Risk cards' were produced and issued to every employee to help them assess and manage risks. |
| A knowledge-based software solution for risk management in a research environment | The Netherlands | Experimental research | Development of a safety tool that enables scientists to assess the risks associated with their experimental set-ups easily, and guarantees that assessment will be done by giving the line organisation a control function. |
| Risk assessment as the basis for continual improvements in the working environment | Slovenia | Other personal service activities (Health Spa) | Development of a systematic and proactive occupational safety and health management. |
| Targeted workplace assessment using electronic forms | Denmark | Health care sector (Hospital) | Development of a new workplace assessment method based on electronic assessment forms. |
| Safety observation in daily use | Finland | Construction sector | Development of a method that can be used to promote workers' safety awareness, corrective action, communications and learning whenever hazards or near-miss incidents are identified. |
| A partnership approach to creating a healthy and safe school | Romania | Education (secondary school) | Steps towards a systematic risk assessment approach in a Romanian secondary school. |





COMMENDED ENTRIES

| Title | Country | Sector | Issue |
|--|----------------|--|--|
| Assessing and tackling external violence at work | Spain | Public Railway Transport | Assessment of the psychosocial risks faced by the company's staff and development of an external violence prevention policy. |
| Comprehensive risk analysis and prevention of risks at Rio Tinto Minerals | Austria | Mining industry | Complementary use of different methods and tools to better assess the risks. |
| The global VAE-HSE-Guidebook & Software for systematic risk assessment | Austria | Manufacture of basic iron and steel and of ferro-alloys Manufacture of other electrical equipment | Production of a Guidebook for safety and health at work and environmental protection and development of a software tool to share good practice between the mother company and 38 subsidiaries. |
| Quarrying sector - safe handling of raw materials contaminated with asbestos | Germany | Aggregates industry | Development of an integrated management system 'Training – Model Risk Assessment – Model Documentation' for the handling of mineral raw materials contaminated with asbestos. |
| A comprehensive approach to risk assessment at Revoz car plant | Slovenia | Manufacture of motor vehicles | Comprehensive approach to assess and manage the workplace risks based on the so-called FSSE (a simplified sheet for safety and ergonomics assessment). |
| Health circles – an effective and enjoyable way to conduct risk assessment | Denmark | Health care sector (nursing home) | The use of a risk assessment method that involves employees to effectively improve the psychosocial and physical work environment. |
| Computer software for carrying out risk assessment in the iron and steel industry | Turkey | Manufacture of basic iron and steel and of ferro-alloys | Risk assessment is done online by software. This enables sorting and analysing risk assessment data easily. |
| Reorganising a painters' workshop to promote worker health and safety | France | Construction sector. Painting and glazing | Implementation of practical solutions as a result of the systematic assessment of industrial and chemicals risks |
| Reducing the risk of slipping in a food processing plant | United Kingdom | Food manufacturing | As a result of an investigation conducted by a designated team a new method of cleaning the floor was changed to incorporate the use of chemicals to clean up fat and grease. |





1 PROGRAMME FOR THE INVOLVEMENT OF ASSOCIATES IN RISK ASSESSMENT

LITHUANIA MANUFACTURE OF PREPARED PET FOODS

UAB 'Mars Lietuva'
Statybininkų g. 2, p.d. 14
LT-96002 Gargždai
www.mars.com/Lithuania

The issue under discussion

The company found that employees had insufficient understanding of risks in the workplace, and risk assessment was not always satisfactory. Employees would not notice, or would ignore or conceal, unacceptable risks in the workplace, and often measures could not be taken to prevent incidents and accidents at work.

The action taken

The firm's annual staff training programme now covers health and safety at work. Risk assessment training, including practical instruction, is provided annually for the managers of various departments and for staff in the production, technology and quality control departments, among others. A form for recording Possible Dangerous Events (PDEs) has been introduced and is being used by workers. All staff are encouraged to complete the form whenever they notice a risk in the workplace, and place it in a special postbox. Forms received each day are read and preventive measures planned to eliminate the risk concerned.

Since 2006, a regular audit of health and safety at work is carried out at the factory. The bi-weekly audit is attended by key managers, employees from the Safety Environment Systems department and staff representatives from the Health and Safety Committee. During the audit

discrepancies are noted, preventive measures planned, duties delegated and deadlines set for the elimination of these discrepancies.

Relevant information is displayed on the company notice board and updated regularly.

A computer database is maintained for analysis and control of all the identified discrepancies; listing the location, type and area of the identified risk factor, the time allocated to resolve the problem and the person in charge. A photograph is attached showing an image of the possible hazard.

The results achieved

The main results have been:

- Over a year without a single accident at work.
- More than 130 workplace improvements have been made, over 2,000 discrepancies eliminated, and possible accidents prevented.
- Increased participation by staff in health and safety activity (since 2007, over 300 PDEs have been written).
- Enhanced reputation of the company and improved working environment.



Safety at work display.



Special postbox for PDEs.





2 RISK ANALYSIS AND PREVENTION ON A MOTOR CAR ASSEMBLY LINE

CZECH REPUBLIC
MANUFACTURE OF MOTOR VEHICLES, TRAILERS AND SEMI-TRAILERS

Visteon Autopal, s.r.o.
 Lužická 984/14
 74 01 Nový Jičín
<http://www.autopal.cz/index.html>

The issue under discussion

The lighting equipment production lines at this car plant have a great deal of tools and equipment, which poses a high risk of injury. The assembly work involves increased strain on the forearms, due to high levels of repetitive movements in particular. Until now risk assessment did not include environmental and ergonomic issues. It is not enough to merely note the risks, however – they must be actively removed through teamwork.

The action taken

Proactive risk assessment and management took place with the workers’ participation and the use of both internal and external expertise. The main principle of this approach was ‘where we cannot eliminate a risk, we must get it under control’.

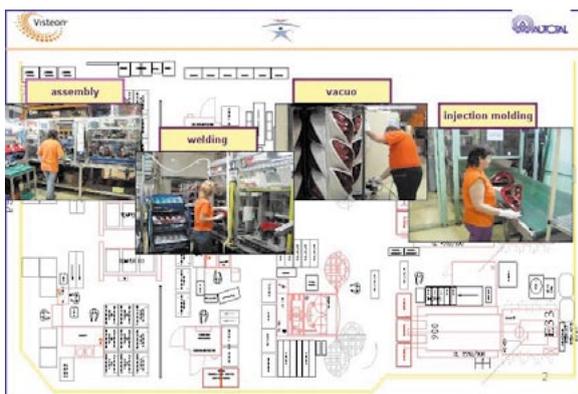
Risk identification workshops were organised, attended by the operator of the work station in question, e.g. an equipment technologist or industrial engineer. The workshops included a brainstorming session where participants came up with a list of measures to eliminate/reduce risks. Each measure was then described in an individual document. The process of document preparation and standardisation was important. As a result each device had its own risk assessment sheet stating all safety, environmental and ergonomic risks.

Day-to-day maintenance (prevention) regulations were been produced for each device, specifying all the tasks required and how often they should be carried out, e.g. every shift, once a day, twice a month, etc. For important activities a description of work processes has been produced, including visual aids. Special measurements, e.g. of muscle strain, were carried out by an accredited laboratory. All the risk assessment and control information has been made available on the company intranet.

The results achieved

The main results were:

- A system for identifying and eliminating/preventing risks has been put in place and standardised. This system allows even complex issues to be resolved.
- Improved working environment and increased comfort for workers.
- Reduced injury risk through, e.g., improved visualisation (marking of edges, etc.)
- Absence of work injuries and near-accidents.
- Staff involvement in health and safety has increased due to the improved environment and participation in problem solving.
- Improved maintenance, which cuts down not only injuries but also down time and losses in production.



Visual description of work processes.



Risk analysis process.





3 USING 'RISK CARDS' TO ASSESS AND HANDLE RISKS

THE NETHERLANDS METAL INDUSTRY

Corus Tubes BV, CFB
Ankerkade 71
6222 NL Maastricht

The issue under discussion

At Corus Tubes Maastricht, the processing of raw materials (large rolls of steel) and the production and storage of tubes involves many risks. Poor risk assessment can have very serious consequences. It was observed that although many 'toolbox talks' had been held on the subject, some employees were still not sure how they were supposed to assess risks. To make things clearer, so-called 'risk cards' were produced and issued to every employee.

The action taken

The two-sided printed cards help workers assess risks that might arise during the working day and to take the key actions required in response to those risks.

Example:

An employee notices that a hoisting belt he is using is worn.

RISK: The risk is that the hoisting belt may tear. If this occurs it could cause a serious injury = HIGH RISK

RISK SCALE: HIGH RISK = Immediate action required.

Ensure the risk is eliminated immediately.

Once the risks have been assessed, employees are invited to fill in a report card about the risk. Management uses the card as a basis for taking effective action, and within a given period it must tell the report writer what action it will take to prevent a repetition of the problem, and when. This has clearly improved working conditions at the plant. As an indication, in 2007 the company received over 200 report cards from its employees!

The results achieved

The employees understand and use the method. As a consequence the company has been free of accidents resulting in time off work for a considerable length of time (> 1 year). Employees know they are listened to, and can see that the organisation takes health and safety seriously. This is clear from an employee satisfaction survey and a sharp drop in sickness absenteeism of 3.8% over 2008.

The costs are negligible, and the benefits are difficult to express in figures; but in human and social terms the company has made a great leap forward: a low rate of sickness absenteeism, little turnover of staff, a high level of involvement and satisfied employees.

| RISK | First aid treatment | Substantial injury | Serious injury | Risk Assessment Table |
|----------------------|---------------------|--------------------|----------------|-----------------------|
| Virtually impossible | Low risk | Possible risk | Risk | |
| Is possible | Possible risk | Risk | High risk | |
| Can be expected | Risk | High risk | Very high risk | |

| Risk scale | Action required | Fill in Report Card |
|----------------|--|---------------------|
| Low RISK | Risk may be acceptable. | |
| Possible RISK | Risk requires attention. | |
| RISK present | Correction is required. Ensure that the risk is reduced. Report risk to manager immediately. | |
| High RISK | Immediate action required. Ensure that risk is eliminated immediately. | |
| VERY HIGH RISK | STOP work and ensure that the risk is eliminated immediately. | |



4 A KNOWLEDGE-BASED SOFTWARE SOLUTION FOR RISK MANAGEMENT IN A RESEARCH ENVIRONMENT

THE NETHERLANDS EXPERIMENTAL RESEARCH

*Delft University of Technology
Lorentzweg 1
2628 CJ Delft*

The issue under discussion

Experimental set-ups used in scientific research contain many safety hazards. However, because these set-ups change frequently, classic risk assessment soon becomes outdated. In addition, safety professionals are often not in a position to understand the implications of a set-up. The scientific researcher in turn knows these implications, but lacks expert safety knowledge. Safety management is not very effective under these conditions, and accidents and damage become more likely. To overcome these problems, Delft University has developed the so-called 'safety report system'.

The action taken

The safety report system is a software tool, enabling researchers to make their own safety assessment for the experimental set-ups under their control. The tool systematically provides checklists and it assists the researcher with a guidance side-kick. After completion,

the researcher submits his safety report to his supervisor, who can either approve or disapprove the report. Once approved, the safety report is stored into a database which has a search function, making expert knowledge available to all other safety report users; a growing pool of best practices to the research community involved. In addition, the database provides transparency into the decisions made, safeguarding the integrity of the safety system.

As a final safety check, the experimental set-ups are inspected on a regular base by professionals.

The results achieved

The safety report system has been in use at Delft University for three years now and has not only improved the safety level in the laboratories, but also strengthened the accountability of supervisors and boosted collegial discussions about safety in general. As such it contributed greatly to the overall safety performance.



Experimental set-ups used in scientific research contain many safety hazards.



5 RISK ASSESSMENT AS THE BASIS FOR CONTINUAL IMPROVEMENTS IN THE WORKING ENVIRONMENT

SLOVENIA OTHER PERSONAL SERVICE ACTIVITIES (HEALTH SPA)

Zdravilišče Radenci d.o.o.
Zdravilisko Naselje 12
9252 Radenci
<http://www.terme-radenci.si>

Sava medical in storitve d.o.o.
Škofjeloška c.6
4000 Kranj
<http://www.sava.si/eng/>

The issue under discussion

This company faced many challenges which could put the workers' health and safety at risk.

The action taken

The company management decided to deal with safety and health at work in a systematic, comprehensive and proactive way by using the OHSAS 18001 (1) standard. Occupational health and safety became an integral part of the general company management system and was included in all business processes:

- Umbrella process – management.
- Basic processes – wellness and health care, etc. (core activities of the company).
- Supporting processes – purchasing, etc.

Comprehensive risk assessment and management is carried out on a regular basis with the participation of the workers. Special attention is paid to older, young, pregnant and disabled workers through individualised risk assessment and management. Health and safety issues are also taken into account when planning work spaces, processes, equipment, installations and work organisation.

The results of these assessments and analysis are used to set health and safety goals for the company. In addition to prevention measures, the company also focuses on

workplace health promotion, including healthy nutrition, physical activities, cessation of addictions etc. In 2008 it held 16 health and safety-related programmes, including an awareness and information campaign on safety culture.

The results achieved

- Reduced number and seriousness of injuries.
- Sick leave due to injury represents 3.9% of all sick leave in the company, which is far below the average in Slovenia (9.0%).
- Reduced exposure to risk factors.



Zdravilišče Radenci.

(1) <http://www.ohsas-18001-occupational-health-and-safety.com/>



6 TARGETED WORKPLACE ASSESSMENT USING ELECTRONIC FORMS

DENMARK HEALTH CARE SECTOR (HOSPITAL)

*Sct. Hans Mental Health Centre
Boserupvej 2,
4000 Roskilde*

The issue under discussion

The Sct. Hans Mental Health Centre developed a new risk assessment method based on electronic forms.

The action taken

Workplace assessment forms (electronic questionnaires) were developed by the hospital's health and safety representatives in conjunction with a work environment consultant. The organisation has a well-developed IT infrastructure, which made it easy to distribute and fill in the questionnaires electronically.

The structure of the questionnaire encourages employees to think about their own work tasks: while they are filling in the questionnaire, they are also learning something. In the questionnaire the health and safety challenges related to the job are weighted, and employees can learn about appropriate preventative measures from pop-up information relevant to the job in question.

Once a workplace assessment survey has been completed and the report on the results is available, the health and safety group can immediately identify problem areas and determine which of the preventative measures suggested in the questionnaire can solve the problem. This allows the group to take appropriate preventative steps as quickly as possible.

Any workplace health and safety improvements that are based on the assessment results are documented in an electronic system (IPL) so that the workplace action plans – also called 'IPL cards' – are available to all employees, the Working Environment Authority, etc.

The results achieved

- High average response rate (75-80%), in some departments 100%.
- The system has contributed to a decline in work-related injuries (corresponding to savings of EUR 270,000).
- The system has given rise to an intervention concept for musculoskeletal problems, and this resulted in a drop in the number of staff sick days.
- The IT system makes it possible to spend only a minimum of resources on gathering information about work-related risks, by ensuring that everyone is asked their opinion.

The workplace assessment system is easily accessible to all staff members, and it is a tangible example of what the organisation is doing to improve the work environment.





7 SAFETY OBSERVATION IN DAILY USE

FINLAND CONSTRUCTION SECTOR

Skanska Finland
P.O. BOX 114 Helsinki
www.skanska.fi

The issue under discussion

The accident rate in the construction sector is higher than in any other sector in Finland. Experience has shown that it is difficult to identify all job hazards in task planning. Some hazards arise only after the work has started; perhaps because of deficiencies in planning, changing weather conditions, hazards caused by other groups of workers, etc. The use of safety observation cards has helped overcome this problem.

The action taken

Skanska Finland, as the main contractor, provides information on site safety rules, including the use of safety observation cards to every new worker entering the construction site. The worker also gets a 10-page-block of safety observation cards which fit in a pocket. The block also includes a short user manual.

The safety observation card is meant to be as easy as possible to use. There is a fixed list of the most common hazards on building and civil construction sites. The identified hazard can be selected with just a tick, and the user can also add other hazards if necessary.



After identifying the hazard the worker is advised to tick a suggestion for improvement. On the flipside of the card there is a free-text field for any notes the worker would like to make. The card is then to be passed to Skanska supervisor who will go through the observation and give immediate feedback to the worker. Then the observation is discussed in the site weekly meeting. Finally the supervisor will enter the observation in the intranet-based safety information system, determine the risk factor of the observation and report actions that were taken.

Safety information system generates automatic email-notification to site construction manager and Skanska safety personnel. Email can be easily forwarded to sub-contractor or other parties involved.

Every construction site has its own web-based scorecard which helps monitoring how many observations there have been and what sort of content they have had. Database offers also opportunities to analyse company-wide safety problems.

The results achieved

Safety observations have promoted accident prevention in various ways:

- They allow workers and supervisors to identify hazards and adopt preventive or corrective measures immediately.
- They promote personal and site-level communication and learning.
- They provide information for company-wide health and safety management.

Since 2004, when the company started collecting safety observations, the accident rate has decreased, with an indirect correlation between the number of safety observations and accident rate.





8 A PARTNERSHIP APPROACH TO CREATING A HEALTHY AND SAFE SCHOOL

ROMANIA EDUCATION (SECONDARY SCHOOL)

*Gheorghe Asachi Technical University Iasi
Occupational Safety & Health Department
Nr. 67, Bd. D. Mangeron
Iasi
www.tuiasi.ro*

*In cooperation with:
Mihail Sturdza Secondary school
Nr. 2, Str. M. Sturdza
Iasi*

The issue under discussion

Both students and teachers at this secondary school are exposed to a variety of risks and there is no standard tool that can be used for a comprehensive risk assessment. Additional problems are caused by lack of expertise in this field. As a result, until now risk assessments had not been carried out.

The action taken

A partnership was established between the Occupational Safety and Health Department of the Gh. Asachi Technical University in Iasi and the M. Sturdza school team to assess risks and create a safer and healthier school environment. A specialist team from the department has developed a guide for risk assessment for schools. The guide contains seven sections, including instructions on how to collect, centralise and quantify data using a software program provided. The program works with predefined forms that have to be filled in with relevant information.

The safety and risk level in the school is presented graphically, giving a clear overview of the risks. This helps in developing appropriate prevention measures. The guide also includes a set of recommendations on preventive measures to be adopted for specific risks.

A team consisting of the school manager, safety officer, occupational physician, representatives of the school administration and students was formed to identify and analyse risks. The team was trained by specialists in the correct use of the guide. Corrective actions were suggested based on levels of risk and priorities established.

Including the students in the process has proved to be very successful – they were very involved, they identified risks specific to them and their suggestions were innovative and

creative. They initiated an exchange of information with students from other schools. The risk assessment results and the prevention plan were presented during meetings between the teachers, students and parents.

The results achieved

Implementation of corrective measures recommended as a result of risk assessment has led to improved safety and health among students, teachers and administrative staff. Future revisions of the risk assessment are envisaged.

The activity has promoted the development of a risk-prevention culture among both pupils and teachers. Parents are appreciative of improved safety of their children.



Risk assessment team and software program.



Working area - school workshop.





9 ASSESSING AND TACKLING EXTERNAL VIOLENCE AT WORK

SPAIN PUBLIC RAILWAY TRANSPORT

Sociedad Pública Eusko Trenbideak – Ferrocarriles Vascos, S.A.
C/ Atxuri, 6
E-48006 Bilbao
www.euskotren.es

The issue under discussion

Employees from EuskoTren are in constant contact with passengers and frequently exposed to external violence (verbal abuse, insults, threats or intimidation). The company decided to properly assess the psychosocial risks faced by its staff and put in place an external violence prevention policy.

The action taken



The project to identify and subsequently assess the psychosocial risks faced by staff was carried out with the collaboration of a technical advisor. To obtain the required information, the following actions were taken:

- A coordination team was set up to carry out the project and to encourage staff participation.
- Individual interviews were held with people in positions of responsibility to gain information about the staff in their area.
- Focus groups were held among staff (with voluntary attendance) to find out more about the problem.
- An epidemiological analysis was conducted of absenteeism due to illness in recent years.
- A questionnaire was given to staff, with 165 questions on topics such as Stress, Psychological Health, Job Satisfaction, Vulnerability and Social Support.
- An analysis was carried out of corrective and preventive actions that might reduce the presence of risk factors and minimise their negative health effects.

Once the scope of the problem had been established, an Action Plan was put in place to counter external violence at work. The following actions were planned:

- Promotion of staff involvement in prevention activities through the setting up of two teams: the Multidisciplinary Improvement Team to coordinate the external violence action plan and the Zero Violence Team.
- Through these teams, EuskoTren tries to find solutions to the problems that are detected in all the company services: bus, train, tramway, funicular transport and customer service. The following are examples of solutions: installation of video surveillance in the bus service, coordination with the police in sensitive areas, training staff in how to react to these situations, etc.
- Preparation and implementation of an incident log and a guide to the prevention of external violence at work.

The results achieved

- Better knowledge of risk factors affecting each job category.
- Staff involvement in prevention activities.
- Reduction in the number of incidents recorded.
- Improved working environment.
- Collection of data on incidents of external violence.
- Improvement in communication and staff information and training.





10 COMPREHENSIVE RISK ANALYSIS AND PREVENTION AT RIO TINTO MINERALS

AUSTRIA MINING INDUSTRY

Rio Tinto Minerals Austria – Naintsch Mineralwerke GmbH
Andritzer Reichsstrasse 26
A-8045 Graz
www.riotintominerals.com

The issue under discussion

Mining includes a number of different activities, each involving hazards and risks of a specific kind. In this example of good practice, the risk assessment measures implemented by the company go beyond basic risk analysis procedures required by law to include non-routine activities and routine activities that are not classified as hazardous *per se*.

The action taken

The company's statutory risk prevention system has been expanded to include tools developed both within and outside the Rio Tinto Group which have then been tailored to the company's specific activities:

- **SAFER.** The *SAFER* method is used for all non-routine activities, since change poses a potential hazard risk. This method requires any changes to equipment, instructions, processes, the environment or personnel to be identified, analysed and assessed for risk. *SAFER* is a checklist in booklet form which provides a clear guide to conducting risk analyses. Employees are required to complete the working document before embarking on any non-routine activities.
- **Take 5.** *Take 5* is a five-step risk assessment method which requires employees to complete the following five steps before a task is performed: 1. Examine the task. 2. Identify risks. 3. Assess risks. 4. Take prevention measures. 5. Continue to work safely. The company

used Powerpoint presentations, brochures, posters and reminder cards as part of the *Take 5* campaign to raise awareness on safety issues among employees. The campaign stresses that no job is so urgent that we cannot take the time to perform it safely. The active implementation of *Take 5* is reviewed as part of a database-supported safety monitoring procedure performed by all employees several times a year with their colleagues.

- **SQRA** (Semi-Quantitative Risk Analysis). SQRA is used specifically for risks with potentially catastrophic effects, i.e. events that could end in a fatality or have critical consequences. The company uses the SQRA method in workshops which bring together employees familiar with the risks of a particular hazard.

The results achieved

Increasing risk awareness among employees using the right tools enables them to identify more personally with the 'zero accidents' target. Accident figures at Rio Tinto Minerals' Austrian Operations have fallen drastically. At the end of July 2008, the lost time injury rate (accident x 200,000/man hours) for the entire company had been zero for over four years, with Kleinfelstritz underground mine accident-free for seven years and the Weisskirchen Mill for nine years.





11 THE GLOBAL VAE-HSE-GUIDEBOOK & SOFTWARE FOR SYSTEMATIC RISK ASSESSMENT

AUSTRIA MANUFACTURE OF BASIC IRON AND STEEL AND OF FERRO-ALLOYS MANUFACTURE OF OTHER ELECTRICAL EQUIPMENT

VAE Eisenbahnsysteme GmbH
Alpinestraße 1
8740 Zeltweg
<http://www.voestalpine.com/vae/en.html>

The issue under discussion

The holding company VAE, based in Zeltweg, Austria, has a staff of about 80 people. It is responsible for coordinating and managing the VAE group, which comprises 38 production sites with some 4,200 employees on six continents (18 sites within the EU). One of the major challenges in taking a common approach was the differences in the levels of safety at work and health protection in the different countries in which the subsidiaries are based.

The action taken

The approach chosen was not simply to transfer the documents, checklists and methods developed and applied successfully in Austria to the subsidiaries, but to summarise the fundamental risk elements for the industry and solutions in form of a structured guidebook (VAE-HSE Guidebook). Moreover, a software tool was developed for the organisation and documentation of tasks and site managers (HSE experts) were appointed and trained.

The Guidebook contains information in text and pictures illustrating correct and incorrect technical or organisational procedures. It is intended to raise awareness among employees and managers and help them to identify potential risks and take preventive actions. The risks and possible solutions listed originate not only from Austria, but from various other sites including Germany, Brazil and South Africa.

Software was developed to help document and administer approximately 200 HSE minimum standards from the Guidebook where tasks, time frames and responsibilities have to be entered and monitored. HSE experts at all of the company's sites were appointed and trained in its use. Company representatives from all six continents took part in the first VAE-HSE-Expert meeting.

The results achieved

There was a clear reduction in risk and exposure in many cases – overall the measures led to a fall of approximately 60% in the accident rate from 1996 to 2007. This produced an annual saving of about EUR 400,000 at the Austrian site alone. In addition, maximum capacities and delivery deadlines could be reached more easily, risks of liability and penalties were reduced, insurance premiums fell and qualified personal could be attracted. The company's image was enhanced and the duplication of effort was eliminated by using group knowledge.



VAE - HSE Expert meeting.



Excerpt page of VAE - HSE Guidebook.





12 QUARRYING SECTOR – SAFE HANDLING OF RAW MATERIALS CONTAMINATED WITH ASBESTOS

GERMANY AGGREGATES INDUSTRY

*Harzer Pflastersteinbrüche Telge und Eppers,
NL der Kemna Bau Andreae GmbH & Co. KG and
Bundesverband Mineralische Rohstoffe e.V. – MIRO (German Aggregates Federation) and
Steinbruchs-Berufsgenossenschaft – StBG*

*Bundesverband Mineralische Rohstoffe e.V. – MIRO
Annastr. 67–71
D-50968 Köln
<http://www.bv-miro.org>*

The issue under discussion

Mechanical processing (extraction, transport, crushing, loading) of the mineral raw materials in the quarrying industry produces dust. If these materials include stone that contains asbestos this dust may contain critical levels of asbestos fibres. In the long term this may cause asbestosis – a hardening of the connective tissue in the lung. There is also an increased risk of bronchial carcinoma and mesothelioma of the pleura (cancer of the chest lining).

The action taken

Until now there has been no integrated management system for asbestos risk assessment in quarries. It has been left almost entirely to each enterprise to assess the risk situation and the protective measures to be taken. To remedy this situation MIRO, the German employers' organisation for this sector, and StBG, the statutory accident insurance body, developed an integrated management system 'Training – Model Risk Assessment – Model Documentation' to cover the handling of mineral raw materials contaminated with asbestos. The system is available free of charge to anyone involved in this field. It includes a training course that teaches employees about the problems of asbestos including asbestos-related health risks, provisions and regulations, identifying stone

deposits that potentially contain asbestos, risk assessment, organisational, technical and personal protective measures. The course qualifies participants to give their employers professional advice on performing a risk assessment, so there is no longer a need to call in external advisors.

A model risk assessment has been produced, which relates particularly to companies involved in the extraction and processing of mineral raw materials. It can be used step by step to produce a 'Catalogue of Obligations' which can also be used as comprehensive documentation of the situation within the company.

The results achieved

This system represents a practical solution designed specifically for quarries, which can be used to achieve a long-term improvement in health and safety at the workplaces in question.

The training courses and documentation are provided free of charge. This saves each company the cost of external (commercial) services. Nearly 60 companies have sent employees on the course so far. All companies have received the model risk assessment and can implement it in their businesses, thus producing individual documentation designed specifically for the business.





13 A COMPREHENSIVE APPROACH TO RISK ASSESSMENT AT REVOZ CAR PLANT

SLOVENIA MANUFACTURE OF MOTOR VEHICLES

Revoz d.d.
Belokranjska cesta 4,
8000 Novo mesto
<http://www.revoz.si/en/index.cp2>

The issue under discussion

Work at a car plant involves a number of hazards that can put workers' health and safety at risk. At Revoz, risk assessment has become a vital part of the constant effort to eliminate and control risks at work.

The action taken

The company has taken a comprehensive approach to assess and manage workplace risks. The starting point for performing risk assessment is the policy of safety, ergonomics and conditions at work. Risk assessment itself consists of three phases: (1) the situation analysis, (2) identification of risk reduction measures, and (3) implementation of these measures. Monitoring the results of interventions is a constant parallel process. Workers are involved in the whole risk assessment / management process.

The basis for defining risk is the so-called FSSE (a simplified sheet for safety and ergonomics assessment), which is used for assessment of each work station. This information is supported by:

- medical data,
- analysis of working environment, accidents and hazardous events, and
- assessment of chemical substances.

The Safety Audit involving all relevant players, e.g. workers, is performed when change has been introduced in the workplace. Based on the above information, the assessment is formulated. The risks are divided into three groups ranging from 'Insignificant' to 'Unacceptable – act immediately!' and are dealt with accordingly.

In addition, an external assessment of the safety and health at work system is performed once every three years.

Training of workers take place to improve their knowledge and behaviour. Workers attend a series of workshops and if they make satisfactory progress they are entitled to practical rewards.

The results achieved

- Since 2000, when risk assessment was first introduced, the number of accidents causing shutdowns has fallen by 60%.
- The number of days of sick leave brought about by accidents at work has decreased.



14 HEALTH CIRCLES – AN EFFECTIVE AND ENJOYABLE WAY TO CONDUCT RISK ASSESSMENT

DENMARK HEALTH CARE SECTOR (NURSING HOME)

*Solgarden Nursing Home
Lundbyesvej 36,
Bedsted,
6240 Logumkloster*

The issue under discussion

The use of a risk assessment method that involves employees to effectively improve the psychosocial and physical work environment.

The action taken

The aim of the project was to test the health circle method as a way of improving the existing risk assessment approach.

The health circle method can be used to implement comprehensive workplace changes. The method's simple structure provides a clear path from the process of identifying problems to actually implementing appropriate solutions. The method is based on the assumption that employees are experts on their own work environment and that this expertise should be used to develop improvement suggestions. Health circle meetings are guided by a specially trained facilitator, who oversees the process and leads the group through the problem-solving meetings.

The health circle at Solgarden consisted of nine participants: six employees, the health and safety representative, the shop steward and the nursing home manager.

The project started with a comprehensive questionnaire survey about the physical and psychosocial working conditions. The health circle facilitator presented the survey results at a staff meeting, where employees could comment on the results. The health circle group started with an overview of the problems under discussion. Each problem was analysed in detail and potential solutions discussed. After the six health circle meetings the task was to implement as many improvement suggestions as possible.

The results achieved

In the course of six months 24 problems were identified, the majority of them relating to the psychosocial work

environment. During this time the health circle group developed solutions to 14 of these problems, resulting in a total of 33 improvement suggestions.

Employees pointed out that the health circle method was more effective than existing risk assessment methods, because a more visible and detailed analysis of the problems helped with finding appropriate and manageable solutions and all problems were heard and dealt with.

Sickness absence fell from 1,514 sick days in 2006 to 1,017 sick days in 2007.

Employees said that the psychosocial work environment clearly improved as a result of the health circle project, and this in turn had a positive effect on motivation.



The health circle at work.



15 COMPUTER SOFTWARE FOR CARRYING OUT RISK ASSESSMENT IN THE IRON AND STEEL INDUSTRY

TURKEY MANUFACTURE OF BASIC IRON AND STEEL AND OF FERRO-ALLOYS

Ereğli Demir ve Çelik Fabrikaları T.A.Ş. (Ereğli Iron and Steel Works Co./ ERDEMİR)
Uzunkum Stree No:7 Kdz, Ereğli P.O. 67330
Zonguldak
www.erdemir.com.tr

The issue under discussion

Erdemir is an integrated steel mill which produces strip products. There are many hazards and risks in this workplace, and the aim is to reduce exposure to risk to an acceptable level in a cost-effective way. Erdemir has developed computer software to enable effective risk assessment to be done online.

The action taken

Erdemir Risk Assessment Program (ERDS) software was developed by the firm's own software team. The system enables data analysis and traceability and it is designed to enable continuous adaptations to different environment and conditions.

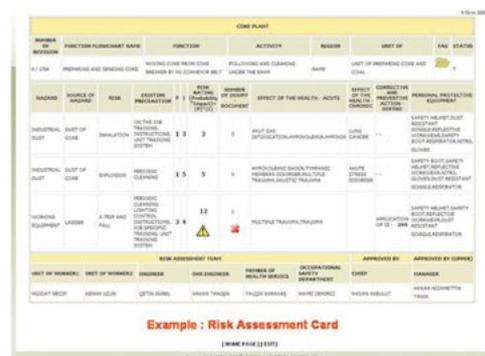
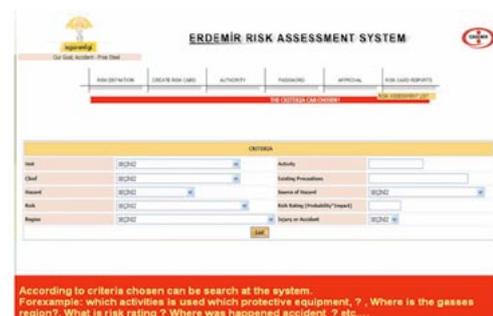
The system has several parameters which are hazards, sources of hazards, risks, working areas, risk level, health effects (acute, chronic), personal protective equipments, MSDS (material safety data sheet), teams of risk assessment etc. It can be adjusted according to those parameters and to new working conditions, technologies or/and equipment, and to take into account the requirements of new or trainee workers. Risk assessment is done by determination of risk levels, which are a multiple of the probability of occurrence of hazards and the intensity of hazards. Priority preventive actions are taken according to these evaluated risk levels.

Risk assessment is done with the help of risk assessment teams for every unit. Each team consists of five workers from the unit concerned.

The results achieved

Since the introduction of this risk assessment software, it has been much easier to determine risks and risk levels, and to take corrective actions. Moreover, in order to prevent occupational diseases, workers can be swapped between different units for specified periods. Parameters

of the program are determined by the experts so that the same definition and terminology is used for every unit. This system can be accessed by all workers at any time. It has also contributed to a reduction in costs incurred for accidents and occupational illnesses.



Screenshots of ERDS software.



16 REORGANISING A PAINTERS' WORKSHOP TO PROMOTE WORKER HEALTH AND SAFETY

FRANCE CONSTRUCTION SECTOR. PAINTING AND GLAZING

*Peintures Hubert Schmitt et Fils SARL
86, route de Bâle
68 127 Sainte-Croix-en-Plaine*

The issue under discussion

Peintures Hubert Schmitt et Fils SARL is a small company with five employees that specialises in house painting for private individuals. The company assesses its risks using practical and easy-to-use tools provided by OPPBTP, the French professional body for risk prevention in building and public works. By properly assessing risks and keeping the risk assessment updated, it has managed to eliminate risks at source and improve working conditions.

The action taken

The company uses two different tools to assess the risks. The first is a software program with a section for Painters, Glaziers and Floor fitters in which the assessment principles given are clear and each task performed is listed in order of priority (from priority situation to low risk task). A specific program intended to assess chemical risks was also used, and four products used by the company were found to be particularly hazardous. Based on the outcomes of the assessments, an action plan was established and the following measures developed:

- Introduction of a new washing station with a decantation tank to avoid any contact with paints when cleaning materials;
- Adaptation of the basement to ensure proper storage of products;
- Workshop redesign: a new room for waste and a new changing room for the staff were built;
- Acquisition of new equipment to improve health and safety outside the workshop: a mobile sanitary trailer, a new and safer scaffolding and a new portable air suction ventilator;
- Acquisition of appropriate personal protective equipment;
- Substitution of the four chemical substances considered dangerous with less hazardous paint strippers;

- Provision of training in various areas for the staff (first aid, general risks in painting work, safe use of scaffolding, trailer permit, electrical risks, etc.).

The results achieved

The results of these actions are difficult to measure from an economic point of view, as they are not directly linked to profitability, but they have all had an impact on the health and safety of the employees.

In the last few years the company has been free of industrial accidents or illnesses, which is largely due to its occupational safety and health policy.

Proper storage of products.



New washing station.



New room for waste.



17 REDUCING THE RISK OF SLIPPING IN A FOOD PROCESSING PLANT

UNITED KINGDOM FOOD MANUFACTURING

*Tulip Foods Ltd
Newtons Margate, Bodmin,
Cornwall PL31 1HF*

The issue under discussion

Tulip Foods Ltd manufactures, slices and packs cooked meat products for the major UK supermarkets. Production is organised over two eight-hour shifts between 6 am and 10 pm, and the night shift is responsible for cleaning.

The floor in the production hall is anti-slip but was laid eight years ago. High-traffic areas are more prone to become slippery as the day progresses. Even though there is a dedicated team that regularly clears debris from the production area and keeps the floors clean, there were a high number of slips – as many as nine per month, with an average of six per month in the previous six months. Most of the slip accidents were happening on the afternoon shift.

The action taken

As a result of an investigation conducted by a designated team, changes were proposed. The method of cleaning the floor was changed to incorporate the use of chemicals to clean up fat and grease. Use of watering cans and small, precise doses of chemicals helped to minimise the risk of food contamination from chemicals. The hygiene operatives used scrapers to remove major debris, as they had done before, then sprinkled chemicals onto the floor, scrubbed and scraped to a drain. This removed the residue of debris, fat and grease and the floor remained non-slip. Known 'high risk' areas were cleaned more frequently, and records kept of all cleaning carried out.

A training course based on the HSE's Slips and Trips guide was organised to inform all staff of the seriousness of slips, trips and falls, and tell them about the new cleaning protocol. Joint Consultative Committee representatives on both shifts are monitoring floor conditions and are reporting at fortnightly meetings.

The results achieved

As a result of the changed schedule and methods of cleaning, the rate of slip accidents has been reduced by half – to 2.75 per month. The condition of the floor remains the same through the working day.

The staff who have participated in the training better understand the importance of floor cleaning in reducing slips, trips and falls.

As the members of staff were involved in all stages of the project, they have a sense of ownership of it – they monitor the progress and observe the new rules, including maintaining records of cleaning.



Use of chemicals.



Use of scrapers to remove major debris.



Clean up fat and grease.



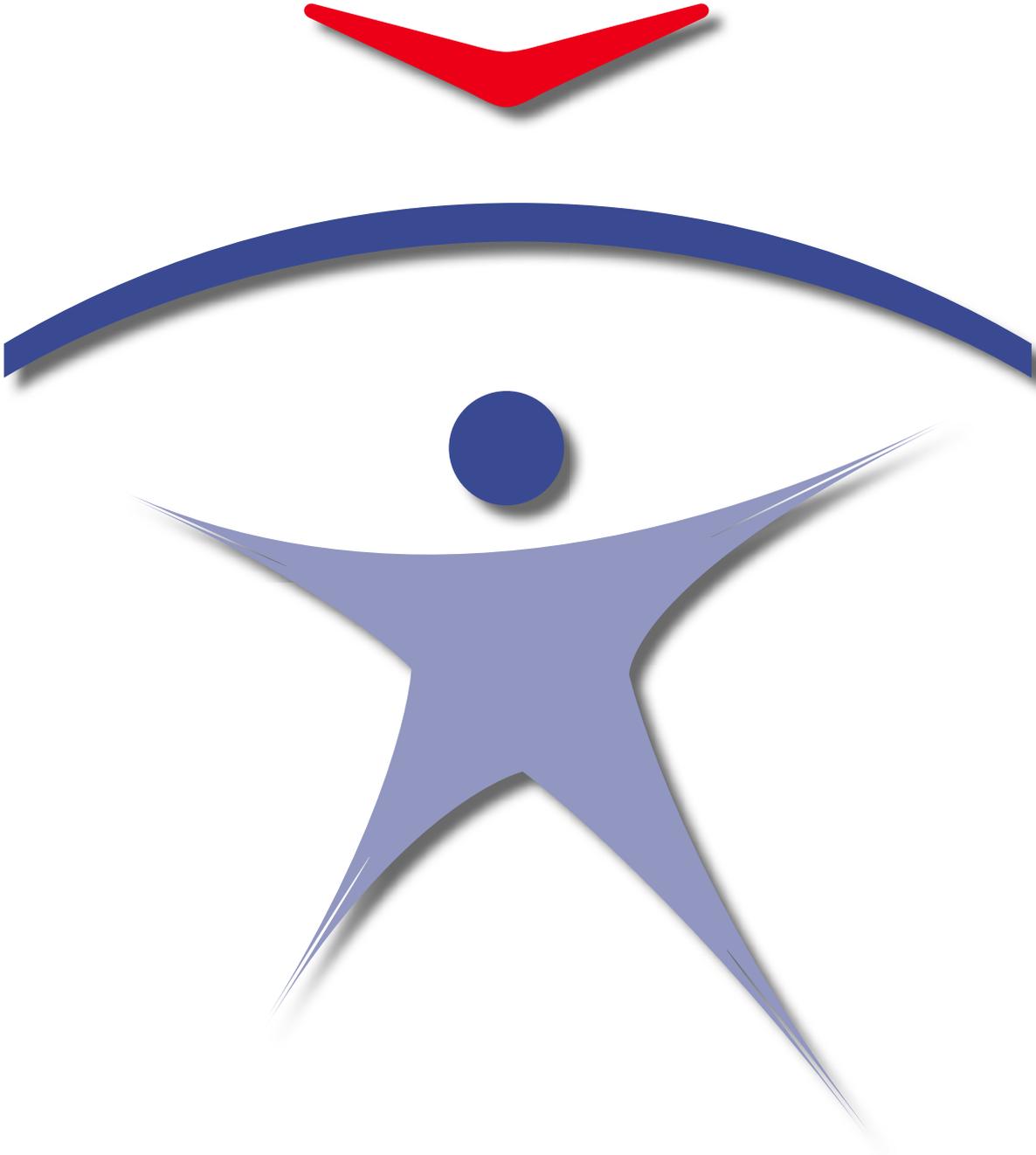
European Agency for Safety and Health at Work

Healthy Workplaces. A European campaign on risk assessment

Luxembourg: Office for Official Publications of the European Communities

2009 — 26 pp. — 21 x 29.7 cm

ISBN 978-92-9191-225-4





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

E u r o p e a n A g e n c y f o r S a f e t y a n d H e a l t h a t W o r k
<http://hw.osha.europa.eu>



European Agency
for Safety and Health
at Work

Gran Vía 33, E-48009 Bilbao
 Tel.: (+34) 94 479 43 60
 Fax: (+34) 94 479 43 83
 E-mail: information@osha.europa.eu



ISBN 978-92-9191-225-4



9 789291 912254