



## Mainstreaming OSH into business management





## Mainstreaming OSH into business management

### Task Leaders

Zofia Pawlowska, Centralny Instytut Ochrony Pracy — Państwowy Instytut Badawczy (CIOP-PIB), Poland.  
Lieven Eeckelaert — Institut pour la Prévention et le bien-être au travail (PREVENT), Belgium.

### Partners:

Lothar Lißner and Andreas Stautz, — KOOP (Kooperationsstelle) Hamburg, Germany.  
Carsten Brück, Wibke Leistner, Piotr Kopankiewicz, Stephan Gabriel and Manuela Warchhold — Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA), Germany.  
Zofia Pawlowska and Małgorzata Peçiłło, Centralny Instytut Ochrony Pracy — Państwowy Instytut Badawczy (CIOP-PIB), Poland.  
Maria Karanika-Murray, Anne Kouvonen and Tom Cox — Institute of Work, Health and Organisations (I-WHO), United Kingdom.  
Jarmo Vorne, Mika Liuhamo, Mia Nores-Korkeamäki and Outi Honka — Työterveyslaitos TTL — Finnish Institute of Occupational Health (FIOH), Finland.  
Lieven Eeckelaert and Rik Op De Beeck — Institut pour la Prevention et le bien-être au travail (PREVENT), Belgium.  
Diego De Merich — Istituto Superiore per la Prevenzione e la Sicurezza del Lavoro (ISPESL), Italy.  
Roxane L. Gervais — Health and Safety Laboratory (HSL), United Kingdom.

### Edited by:

Lorenzo Munar — European Agency for Safety and Health at Work (EU-OSHA), Spain.

### Supported by:

Terence N. Taylor – Head of the Working Environment Information Unit, European Agency for Safety and Health at Work (EU-OSHA), Spain.

### Photographs:

EU-OSHA photo competition 2009  
Dr Stefan Bayer (1)  
Luigi Lauria (3)  
© Andres Rodriguez/Fotolia (4)  
Screenshot from a good practice video (courtesy of Corus Tubes BV, The Netherlands) (2)

**Europe Direct is a service to help you find answers  
to your questions about the European Union**

**Freephone number (\*):  
00 800 6 7 8 9 10 11**

(\*) Certain mobile telephone operators do not allow access to 00 800 numbers, or these calls may be billed.

More information on the European Union is available on the Internet (<http://europa.eu>).

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

Luxembourg: Office for Official Publications of the European Communities, 2010

ISBN 978-92-9191-298-8

doi:10.2802/2138

© European Agency for Safety and Health at Work, 2010  
Reproduction is authorised provided the source is acknowledged.

*Printed in Luxembourg*

PRINTED ON WHITE CHLORINE-FREE PAPER

## TABLE OF CONTENTS

<b>Foreword</b> .....	<b>7</b>
<b>1. General introduction</b> .....	<b>9</b>
<b>2. Literature review</b> .....	<b>13</b>
2.1. Introduction .....	14
2.1.1. Methodology .....	16
2.2. Structure .....	16
2.2.1. Systematic OSH management and OSH management systems .....	17
2.2.2. OSH, quality and environmental management .....	23
2.3. Culture .....	36
2.3.1. OSH Governance .....	36
2.3.2. Organisational culture and OSH .....	39
2.3.3. Organisational learning and OSH .....	42
2.4. Conclusions .....	43
<b>3. Policy overview</b> .....	<b>45</b>
3.1. Introduction .....	46
3.2. International and European policies and practices related to integrating OSH into overall business management .....	47
3.2.1. ILO policies .....	47
3.2.2. International guidance for the chemical industry: Responsible Care Programme .....	50
3.2.3. European policies .....	52
3.2.4. Standardisation and certification of OSH management systems .....	57
3.3. Examples of national programmes promoting and supporting systematic OSH management in companies .....	58
3.3.1. Implementing Systematic Work Environment Management (Systematiskt arbetsmiljöarbete: SAM) in Sweden .....	58
3.3.2. Promoting ILO-OSH 2001 in France .....	59
3.3.3. Safety Management Implementation Programme (SMIP) in Poland .....	60
3.3.4. Promotion of integrated quality and OSH management by subsidised certification in the nursing and care sector in Germany .....	61
3.3.5. The SGM safety and health management system, Austria .....	62
3.3.6. Safe Enterprise Programme: an awareness-raising and motivation campaign for OSH management systems in Slovakia .....	64
3.3.7. Promoting and funding OSH management systems in Luxembourg .....	65
3.3.8. Promotion of an OSH management system by financial support, financial incentives and guidelines in Italy .....	66
3.4. Examples of programmes on developing and promoting tools supporting OSH management .....	68
3.4.1. 'Risk Prevention and Health Protection in Adult Education' EDFORSA in Austria, Czech Republic, Germany, Greece, France, Poland and Slovakia .....	68
3.4.2. Maîtrisk – software for safety and health management in Luxembourg companies .....	70
3.4.3. STER – a computer system supporting safety and health management in Poland .....	71
3.4.4. Guidance to promote occupational health and safety management systems – a manual for OSH personnel in Spain .....	72
3.4.5. The Metatechnical Evaluation System in Belgium .....	73
3.5. Examples of programmes directed at supporting SMEs in OSH management .....	75
3.5.1. SME Risk Management Toolkit (PK-RH) in Finland and UK .....	75
3.5.2. Promoting occupational safety and health in the SME sector, in Poland .....	76
3.5.3. The CASA-Bauen guide for construction SMEs in Germany .....	76



# TABLE OF CONTENTS

3.6. Examples of sector-specific programmes .....	78
3.6.1. Implementing the Responsible Care Programme in the Finnish chemical industry .....	78
3.6.2. A partnership for construction health (APaCHE) in the United Kingdom .....	79
3.7. Conclusions .....	80
<b>4. Case studies .....</b>	<b>83</b>
4.1. Introduction .....	84
4.2. Overview of cases and snapshots .....	86
4.3. Examples of cases and snapshots focused on improvement of OSH management .....	94
4.3.1. Implementation of OSH management system in the Teofilów textile works (Poland) .....	94
4.3.2. Practical implementation of a comprehensive OSH management system for windmills in a repair and maintenance company in Portugal .....	97
4.3.3. The safety management system in a waste management centre at SITA Sud (France) .....	102
4.3.4. Achieving zero accidents in a plasterboard wall factory (Germany) .....	107
4.3.5. The health and safety management system of Bayer CropScience Villefranche (France) .....	112
4.3.6. OSH as an integral part of the general management system at Grindeks pharmaceuticals (Latvia) .....	117
4.3.7. Improving safety management at Helsinki Water (Finland) .....	119
4.3.8. 'Because we are not as Strong as our products ... OSH is a priority' – an integrated approach to OSH management at ArcelorMittal Steel (Poland) .....	120
4.3.9. Sustainability and OSH Management, Global Reporting Initiative, Sandvik AB (Sweden) .....	122
4.3.10. SME introduces the SGM System of the Austria Social Accident Insurance (Austria) .....	123
4.4. Examples of cases and snapshots focused on integration of OSH, environmental and quality programmes .....	124
4.4.1. OSH management in a supermarket chain (Germany) .....	124
4.4.2. Establishment of an integrated Quality, Safety and Environment management system for industrial waste land reclamation at Apinor (France) .....	128
4.4.3. Implementation of an Integrated Management System (Quality, Environment, Safety and Health) in Vienna's Municipal Department (Austria) .....	132
4.4.4. Embedding safety in the company's core business: the 'Stuck Pipeline' case (Netherlands) .....	138
4.4.5. Corporate Social Responsibility and Total Quality Management in an SME (Finland) .....	144
4.5. Examples of cases and snapshots focused on integration of employees' health management into general management .....	147
4.5.1. Project AddHealth (Austria) .....	147
4.5.2. Workplace health promotion at Česká rafinérská oil refinery (Czech Republic) .....	151
4.6. Examples of cases focused on safety culture and human resources management .....	153
4.6.1. Partners in Safety at Corus Htd (the Netherlands) .....	153
4.6.2. A joint vision for Human Resources Management and Welfare at Work (Belgium) .....	157
4.6.3. 'OurTime' – a work-life balance project, Inland Revenue (UK) .....	161
4.7. Analysis and discussion of the cases .....	166
4.8. Conclusions .....	170
<b>5. General conclusions .....</b>	<b>171</b>
5.1. Literature Review Summary .....	172
5.2. Policy Overview Summary .....	173
5.3. Case Studies Report Summary .....	174
<b>6. References .....</b>	<b>177</b>
<b>7. List of acronyms .....</b>	<b>187</b>



## LIST OF FIGURES AND TABLES

Table 1: Traditional versus systematic OSH management .....	17
Table 2: Basic elements of an ideal OSH management system (EASHW, 2002) .....	18
Table 3: Correspondence of the Six Sigma approach with the focus and level of OSH management procedures (Williamson, 2006) .....	28
Table 4: The safety and health balanced scorecard (Mearns and Håvold, 2003) .....	30
Table 5: The benefits of an IMS (based on Smith, 2002, p. 3) .....	31
Table 6: Prerequisites and processes for an IMS (Adapted from EASHW, 2002, p. 23) .....	31
Table 7: Overlapping elements of OSH and environmental management: this overlap signifies the basis for integrating the management of these disciplines (Jacobsson, 2002) .....	32
Table 8: Overview of three levels of integrating management systems (Jørgensen et al., 2006) .....	33
Table 9: The main elements of a framework for an IMS (Smith, 2001; Jørgensen et al., 2006) .....	33
Table 10: Differences between environmental and OSH management (based on Kamp and Leblansh, 2000, p. 417) .....	35
Table 11: Seven best-practice principles for OSH governance (Boardman and Lyon, 2006, p. 39) .....	38
Table 12: Three main ways in which management and employees can communicate (HSE, 1997) .....	41
Table 13: Similarity of the MES with the quality requirements of ISO 9001 .....	74
Table 14: VESTAS Group – Introduction of management systems and OSH development .....	101
Table 15: Figures demonstrating the reduction of occupational accidents at Helsinki Water .....	120
Table 16: Statistics for 2005 and 2006 as regards the number of days lost to injuries .....	123
Table 17: Quality Management System vs. Integrated Management System .....	136
Table 18: Summary of semi-quantified company scores for the level of coupling of safety and core business (five-point scale) .....	141
Table 19: Improvement of the situation at Kiilto regarding lost days/working hours .....	146
Table 20: Accident frequency and severity rates, 2002-2006 .....	159
Table 21: Zilvermeer accident frequency and severity rate, 2005-2007 .....	160
Figure 1: The ASET model .....	14
Figure 2: The TNO Safety@corebusiness© model (adapted from Gort et al., 2006) .....	15
Figure 3: Basic elements of an ideal OSH management system (adapted from EASHW, 2002; Modification of IOHA report (ILO)) .....	19
Figure 4: Model of a Strategic Safety Management (SSM) approach (based on Rahimi, 1995) .....	26
Figure 5: The EFQM Excellence Model .....	27
Figure 6: The 4 perspectives of the BSC .....	29
Figure 7: The Business in the Community (BITC) Corporate Responsibility Index (Sowden and Sinha, 2005, p. 11) .....	37
Figure 8: Learning loops for OSH improvement (based on Shaw and Blewett, 2000 and Gort et al., 2006) .....	43
Figure 9: Model of OSH management system adopted in the ILO Guidelines .....	50
Figure 10: Responsible Care Programme – Management framework phases .....	52
Figure 11: The number of certificates for OSH management systems in 2004 in the EU countries (source: OHSAS group survey) .....	58
Figure 12: An example of a page for topic selection .....	69
Figure 13: Safety pyramid Saint Gobain Rigips GmbH (2007) (839 full-time workers) .....	109
Figure 14: Accidents at Saint Gobain Rigips in comparison to the entire quarry and stone sector in Germany (sectoral numbers taken from StGB, 2007) .....	111
Figure 15: REWE OSH management scheme .....	125
Figure 16: Municipal cleansing worker, Vienna .....	133
Figure 17: Process landscape .....	135
Figure 18: TNO Model Safety@core business© .....	140
Figure 19: The Balance model .....	155







## FOREWORD

Organisations deal with occupational safety and health (OSH) in different ways: some organisations have little expertise in OSH and basically react to related problems (such as occupational accidents, work-related diseases) as they arise in a reactive way. Others deal with OSH issues in a more systematic way by carrying out periodic risk assessments, putting in place action plans, monitoring preventive measures, etc. Some organisations go one step further and act in a more proactive way by integrating OSH management into other management systems (e.g. quality, environment).

The way OSH management is implemented is very important. The literature review included in this report reveals that sound OSH management, integrated into an organisation's overall management and business, is one of the main success factors to ensure improvements in workers' health and safety.

The Communication from the Commission on the practical implementation of the provisions of the Health and Safety at Work Directives 89/391 (Framework Directive) and its five individual directives identified some flaws in the implementation of the Community legislation. For instance, the report underlines that:

- The tasks of risk assessment, documentation and supervision are not universally spread within organisations. There are also concerns that these tasks are sometimes carried out in an incomplete and superficial manner.
- There is a deficit in the organisational structures for the improvement of health and safety in many enterprises. Increasingly complex work processes and changes in working conditions create new risks, coexisting with the traditional ones, or changing types of hazards that call for OSH to form part of the overall management of enterprises.

Without a systematic assessment of the risks and a genuine integration of OSH into the general management of the organisation it is not possible to develop a preventive approach – and prevention is the guiding principle for OSH legislation in the European Union.

This report provides evidence of the importance of systematic risk management and information on how OSH can be incorporated into general business management, thereby achieving safer and healthier working environments and better general organisational performance.



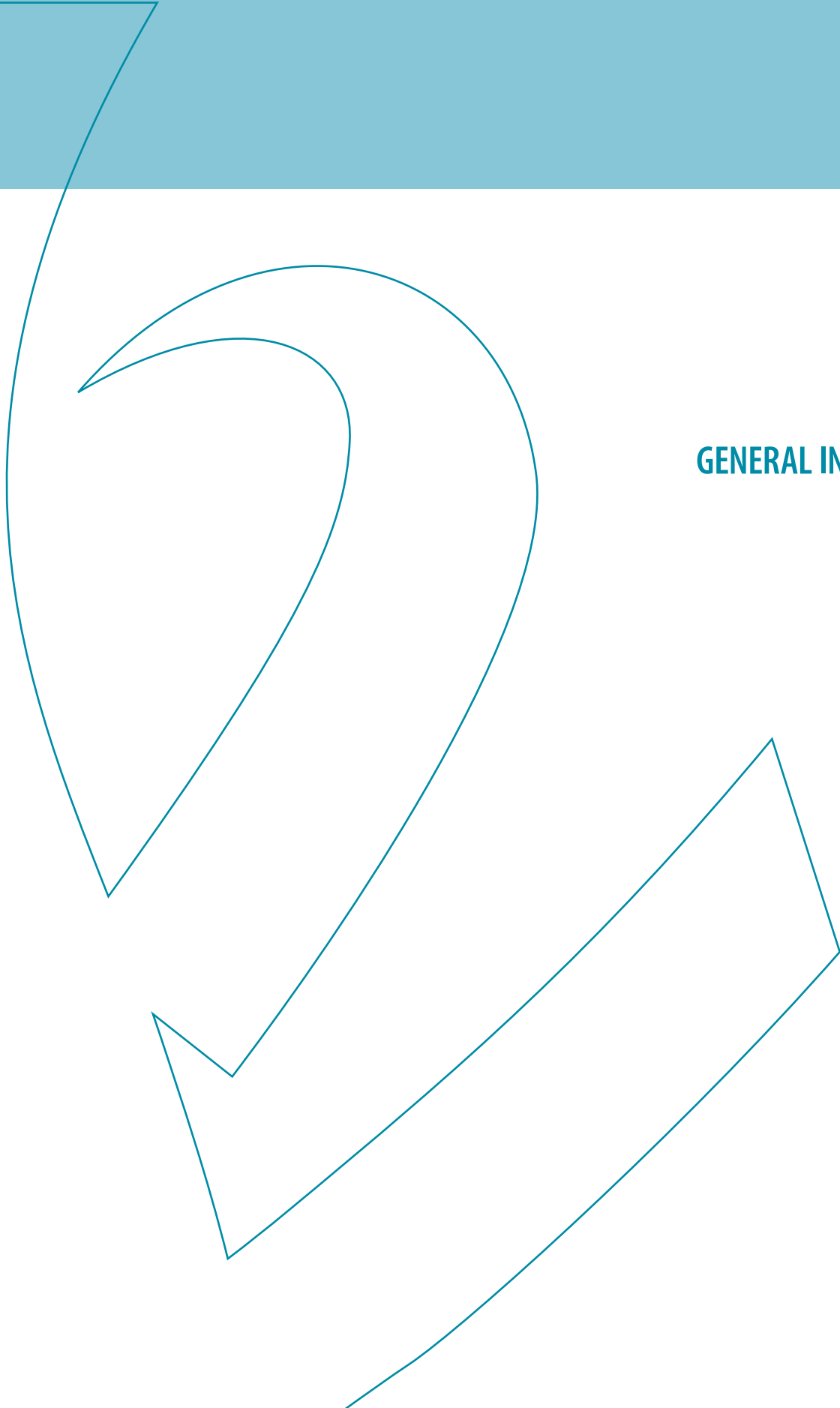
Jukka Takala  
Director  
European Agency for Safety and Health at Work





# 1.

## GENERAL INTRODUCTION



Regulatory reforms introduced in many industrialised countries in the final decades of the 20th century changed the traditional, prescriptive approach to occupational safety and health (OSH) issues and stimulated the development of OSH management. These changes were inspired by, among other things, the Robens Committee report prepared in the UK in 1972 (Smith T., Walters D.). According to the report, the promotion of health and safety should be an essential and normal management function, akin to production or marketing. Numerous research studies and practical experience confirms that integrating OSH into company management is one of the main success factors influencing improvements in the safety and health of workers.

The development, implementation and promotion of an integrated, proactive approach to OSH management in companies has long been supported by policies and practices established at international, European and national levels, including strategies, legal provisions, standards, guidelines, programmes and campaigns initiated and undertaken by different stakeholders such as international organisations, EU bodies, governments, trade unions and employer associations, labour inspectorates and insurance institutions.

At the international level, the ILO global strategy (ILO, 2003b) on OSH established in June 2003 emphasises the need for actions focused on promoting the concept of 'sound management of safety and health at work' in order to achieve a strong and sustained preventative safety and health culture at both the national and company level. Similarly, the ILO Promotional Framework Convention on Occupational Safety and Health adopted in June 2006 expresses, among other things, the need to promote the basic principles of risk management and to develop a national preventative safety and health culture (ILO, 2006a). In the Convention the cooperation between management, workers and their representatives is highlighted as one of the essential elements of workplace-related prevention measures at enterprise level. The importance of OSH management was also underlined in the Promotional Framework for Occupational Safety and Health Recommendation (ILO, 2006b).

The ILO global strategy on OSH as well as the Promotional Framework for Occupational Safety and Health Recommendation call for the promotion of a management systems approach to OSH, set out in the ILO Guidelines on Occupational Safety and Health Management Systems (ILO, 2001). These Guidelines reflect ILO values such as tripartism and relevant international standards including the Occupational Safety and Health Convention of 1981 (No. 155) (ILO, 1981) and the Occupational Health Services Convention of 1985 (No. 161) (ILO, 1985). They are intended to be used at national as well as company level and to encourage the integration of OSH into business management. At enterprise level, the ILO guidelines define a unique international model, which is compatible with other management system standards and guides. More information on the Guidelines and international policies related to OSH management can be found in Section 3.2 of this report.

At European level, the Directive 89/391/EEC – the Framework Directive (European Union, 1989) – is the basic and most important regulation influencing OSH management in all EU Member States. The Directive requires a systematic, integrated, proactive and participative approach towards OSH management. According to the Directive, the main aim of OSH management in enterprises is to ensure continuous improvement of the safety and health of workers. The preventive measures taken in enterprises must be integrated into all activities at all hierarchical levels. Risk assessment should be the main tool used in the OSH management process. Employers are obliged to evaluate the risks to the safety and health of workers and – following the evaluation – to take appropriate (technical and/or organisational) measures to



assure an improvement in the level of workers' health and safety protection. The effectiveness of the preventive measures should be monitored, and the measures should be adapted to changing conditions and technical progress. The introduction of the risk assessment obligation clearly indicates that the OSH management in enterprises should be proactive: all hazards to the safety and health of workers should be identified and risks arising from them eliminated or controlled in order to prevent occupational accidents and work-related diseases. To use this tool effectively, it is necessary to ensure consultation and participation of workers and their adequate health and safety training.

The Directive has been implemented in all EU countries. The principles of OSH management resulting from the Directive therefore apply to all types of enterprises in these countries. Taking into account the identified shortcomings in implementation, related particularly to risk management, the Community Strategy on Health and Safety at Work for the period 2007-2012 (European Commission, 2007) expresses the need to strengthen the implementation of EU legislation in the Member States.

The implementation of the Framework Directive is supported by national strategies and policies. National strategies and long-term programmes, adopted in many countries with the aim of improving workers' protection, apply many different instruments and see the integration of OSH issues into overall business management as one of the most important preventive measures at company level. There are many programmes focused on developing and promoting tools to support risk assessment and OSH management, especially in SMEs. More information on the European and national policies and practices supporting improvements in OSH management can be found in Section 3 of this report.

The other instruments used to promote and support the integration of OSH management into overall business management are international or national standards relating to OSH. Since the 1990s, more and more national standards have been issued on OSH management systems. It is commonly recognised that the first national standard on OSH management systems was the voluntary British standard BS 8800 (British Standards Institution, 1996), with guidelines on how to integrate OSH management into the general enterprise management system. Similar standards intended for voluntary application have also been worked out and established in other countries; many of them are adaptations of the ILO guidelines.

To create an international basis for certification of OSH management systems, a consortium of certification and standardisation institutions, both private and governmental, representing different countries and under the leadership of BSI, has worked out an international specification for OSH management system: OHSAS 18 000. These specifications, although not ISO standards, are being promoted in a number of countries, mainly for certification of OSH management systems. More information on the issues related to standardisation and voluntary certification of the OSH management can be found in Sections 2 and 3.

Many companies place such a high priority on OSH that they move beyond just obeying the regulations in force and try to create a safety culture that is an integral part of their corporate culture. These companies incorporate OSH issues into general business using various instruments and solutions. Most of them implement formalised OSH management systems based on national or sectoral requirements and recommendations. In some of these companies, OSH management is already integrated within the quality and/or environment management systems, while in others OSH management is treated as an element of quality management (e.g. Total Quality Management, lean management or Kaizen). In some companies, OSH



management becomes an integral part of Human Resources management and is no longer seen as a technical problem. These and other cases are presented in Section 4 of this report, including an analysis of the background, motives, and targets of the concerned groups as well as results, side effects, success factors, and problems faced.

There are many advantages resulting from systematic OSH management and the integration of OSH into the overall business activities. Some of these advantages (indicated in the ILO working document concerning Guidelines on Occupational Safety and Health Management Systems, ILO, 2001) include:

- alignment of OSH objectives with business objectives;
- integration of OSH into business systems;
- establishment of a logical framework on which to establish an OSH programme;
- establishment of a universal set of policies, procedures, programmes and goals that can be communicated more effectively;
- applicability to, and inclusiveness of cultural and country differences;
- establishment of a continuous improvement framework;
- providing an auditable baseline for performance measurement.

The improvements in the OSH management system can result in:

- decreased accident rates and a related increase in productivity;
- decreased workers' compensation premiums;
- better safety culture;
- improved employee perception of the physical and psychosocial working environment and increased hazard reporting by employees;
- increased worker participation in safety and health activities;
- more organisational actions taken on OSH issues.

The main factors contributing to the success of OSH management in companies are those supporting positive changes in OSH culture; they include management commitment and workers' involvement. More information is presented in Sections 2 and 4 of this report.

Examples of initiatives taken at international, European and national levels, and the company case studies presented in the report, are presented in the hope that they will contribute to the increasing awareness that OSH cannot be treated as a 'standalone' activity but must be seen as an integral part of business management.

The aim of this report is not only to give a clear overview on why and how OSH should be mainstreamed into business management, but also to provide information about what this means for prevention.

In this way, it is hoped that the report will give strong guidance to the professional community, policy makers, employers, workers and their representatives, on what is needed to mainstream OSH into general business and will serve as an important input to the realisation of the Community strategy.



# 2.

## LITERATURE REVIEW

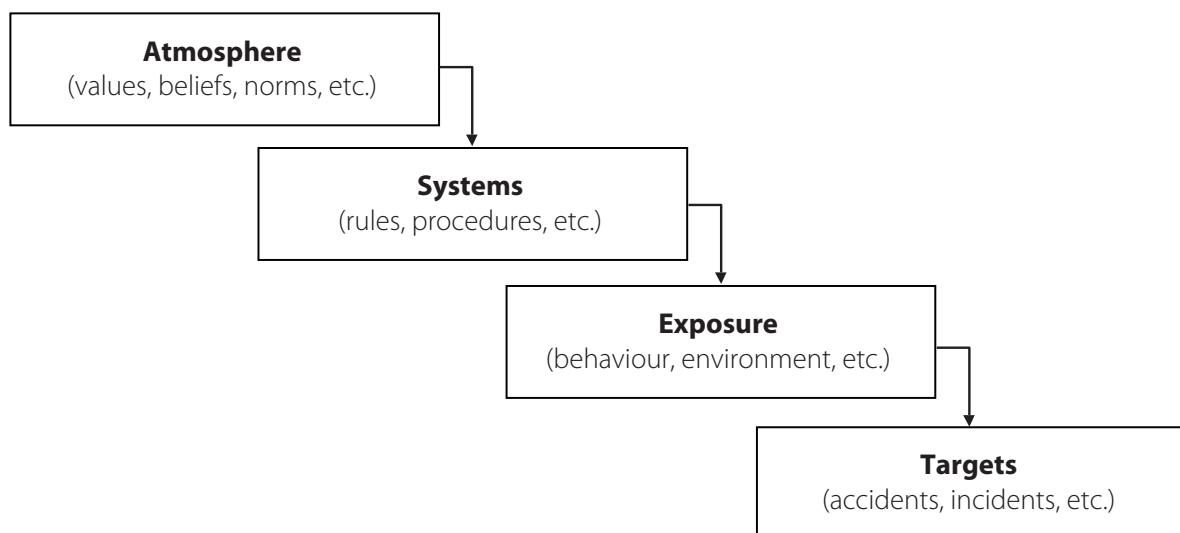


## 2.1. INTRODUCTION

The aim of this section is to give an overview of evidence from the literature on how OSH can be managed most effectively and efficiently in an organisation, and to what extent it therefore should be implemented/integrated into an organisation's overall business.

In order to analyse and/or describe the management of OSH in an organisation, the ASET model can be applied (Shaw and Blewett, 2000). ASET stands for Atmosphere-Systems-Exposure-Targets (see Figure 1). The model represents the link between the culture or atmosphere of an organisation, the systems that are implemented, the hazards to which people are exposed and the OSH targets that are measured i.e. incidents resulting in ill health or injury. The cause-effect relationship between culture, systems, exposures and injury emphasises the need to address cultural issues relating to OSH in an organisation in order to facilitate the systems and structures with regard to OSH, reduce the exposure to risk and control negative outcomes.

**Figure 1: The ASET model**



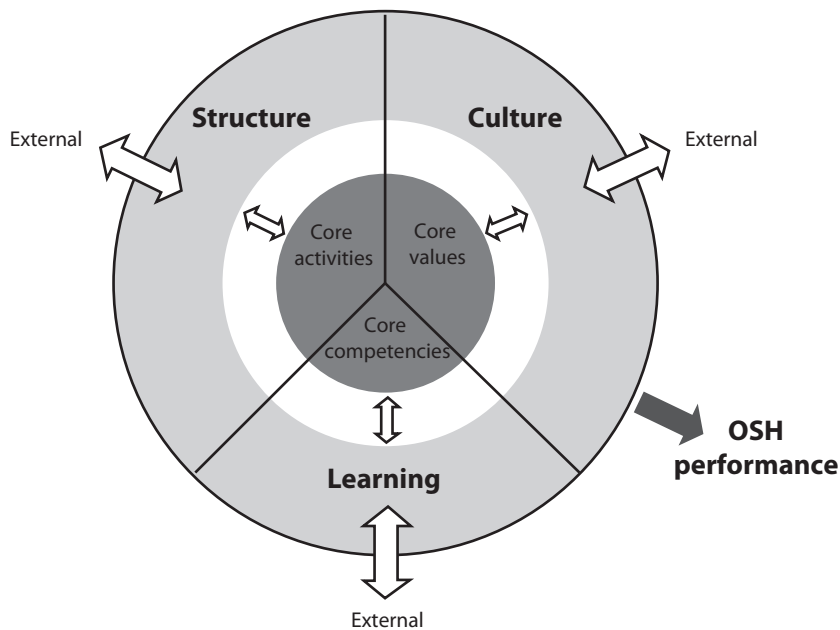
A similar approach towards OSH management is mentioned in the guidance 'Internal Control: Guidance for Directors on the Combined Code on Corporate Governance', also known as the Turnbull Report.<sup>1</sup> This report identified three key elements that need to be addressed for effective governance (British Standards Institution, 2003): (1) risks (2) the mitigation of those risks (by way of management systems) and (3) the culture to support the arrangements. As pointed out by the ASET model, the Turnbull Report also acknowledges that an organisation needs to do more than simply identify its risks and install systems to mitigate those risks. A positive organisational culture also needs to be enabled, with the purpose of supporting and promoting the structural aspects.

<sup>1</sup> Published by the Institute of Chartered Accountants in England & Wales in 1999 ([http://portal.surrey.ac.uk/portal/page?\\_pageid=823,181361&\\_dad=portal&\\_schema=PORTAL](http://portal.surrey.ac.uk/portal/page?_pageid=823,181361&_dad=portal&_schema=PORTAL))



Gort and associates (Gort et al., 2006) have in the context of the Dutch research project 'Safety as core business'<sup>2</sup> developed and tested a theoretical framework, the Safety@corebusiness© model (see Figure 2 and case study 4.4.4.), which tries to determine the positive and negative factors that organisations face when attempting to embed OSH into their core business.<sup>3</sup> Compared with the above-mentioned models, this model includes an extra perspective: besides 'structure' and 'culture', it recognises 'learning' as an important element in the implementation of OSH into core business. It highlights the fact that an organisation must be dealt with its own context, characterised by its specific internal structure, culture and learning capacities.

**Figure 2: The TNO Safety@corebusiness© model (adapted from Gort et al., 2006)**



The sections of this literature review discuss the main elements from the models mentioned above.

In the second section of this literature review (Section 2.2), systematic OSH management and OSH management systems, such as the ILO Guidelines, national standards for OSH management systems and private OSH management systems, are described in a 'generic' way. This chapter also focuses on the way OSH can be linked to quality management programmes, such as Total Quality Management, Lean Production, Business Excellence Models, Balanced Scorecard, and Six Sigma. As organisations may adopt multiple management systems and/or management system standards at the same time (with regard to quality, environment and OSH), there might be a need to integrate the management systems. Hence, the issue of 'integrated management systems' (IMS) is also covered by the second chapter.

In Section 2.3, the incorporation of OSH into an organisation's culture is examined. An OSH culture depends in turn on the overall governance of an organisation, including factors such as Corporate Social Responsibility, Social Accountability, and Corporate Sustainability. Finally, as the learning factor appears to be critical to integrating OSH into an organisation's overall management, organisational learning mechanisms with regard to OSH are also described in this chapter.

<sup>2</sup> The study described is carried out within the framework of a financing programme 'Arbeidsveiligheid' (Occupational Safety) of TNO Work & Employment in dialogue with the Dutch Ministry of Social Affairs and Employment.

<sup>3</sup> 'Core business' is defined here as all relevant processes and activities in the organisation (e.g. day-to-day decision-making, investments, purchasing, management of employees and work practices).



### 2.1.1. Methodology

The literature review was carried out by experts from the following institutes: Prevent (Institute for Occupational Safety and Health, Belgium), FIOH (Finnish Institute for Occupational Health, Finland), HSL (Health and Safety Laboratory, UK) and CIOP-PIB (Central Institute for Labour Protection – National Research Institute, Poland). In order to gather relevant literature on the integration of OSH into management, the subject was subdivided into several topics, namely OSH management systems and management system standards, the integration of OSH (management systems) into other systems and programmes, OSH culture and governance. In a second phase, these topics were in turn subdivided into other topics such as the integration of management systems (IMS), OSH and quality management programmes, organisational learning, leadership, Corporate Governance, Social Accountability, Corporate Social Responsibility, Corporate Sustainability, etc. For each of these subjects, up-to-date information was obtained by internet searches and searches of electronic databases of published literature. To attain the broadest coverage possible, these searches were carried out not only in English, but also in Dutch, Finnish and Polish. Publications by the European Agency for Safety and Health at Work were also checked, as well as information (articles, presentations, etc.) from recent conferences such as the Third International Conference 'Working On Safety' (2006),<sup>4</sup> the HESA seminar on OHSM(S) (2007),<sup>5</sup> the Joint ILO/IALI international symposium on 'Labour inspection and occupational safety and health management systems' (2001),<sup>6</sup> OECD Workshop on 'Integrated Management of Safety, Health, Environment and Quality' (2001).<sup>7</sup> A major source of information and inspiration was the book *Systematic Occupational Health and Safety Management – Perspectives on an International Development* by Frick and associates (2000). Due to limited resources, there was no real formal methodology to assess the quality of the findings (articles, papers, presentations). The relevance of the gathered information was discussed by experts from the institutes involved, in order to attain a solid consensus.

## 2.2. STRUCTURE

Organisations do not all manage their OSH in the same way; Zwetsloot (2000, pp. 392-393) distinguishes four stages of maturity in organisational OSH management:

- in the **ad hoc** stage (reactive stage) organisations have little OSH management expertise and react to problems (e.g. accidents, absenteeism) as they arise;
- in the **systematic** stage organisations carry out periodic risk assessment, action planning, prioritisation of problems and implementation of planned control measures – at this stage external OSH expertise may be sought as organisations are still developing internal OSH competency;
- in the **system** stage organisations implement and maintain an OSH management system by continuous structural attention to OSH which is organised before the start of new activities;

4 International Network on the Prevention of Accidents Trauma at Work, 12-15 September 2006, The Netherlands, <http://www.workingonsafety.net>

5 Health and Safety Department of the European Trade Union Institute – Research, Education, Health and Safety (ETUI-REHS), 25-26 March 2007, Italy.

6 Germany, May 2001, <http://www.ilo.org/public/english/protection/safework/labinsp/dussrep.pdf>

7 OECD Workshop on Integrated Management of Safety, Health, Environment and Quality. Seoul, Korea, 26-29 June 2001. Report available in English at: [http://www.oilis.oecd.org/olis/2002doc.nsf/LinkTo/NT00000E32/\\$FILE/JT03213466.PDF](http://www.oilis.oecd.org/olis/2002doc.nsf/LinkTo/NT00000E32/$FILE/JT03213466.PDF)



- in the **proactive** stage organisations integrate OSH management into other management systems (such as those for quality and environment) and/or into their business processes; the focus is on continuous improvement, more effort is expended at the design stage of products, processes, workplaces and work organisation, and collective learning is promoted.

### 2.2.1. Systematic OSH management and OSH management systems

#### *Systematic versus traditional OSH management*

A systematic approach towards OSH management became popular in the 1970s and 1980s, following regulatory reforms in many industrialised countries. On the basis of experience, OSH regulations have changed from a prescriptive style to a more 'self regulatory' and 'goal setting' model (Frick and Wren, 2000; Bluff, 2003) and have established a general framework for systematic OSH management. At the same time the new regulations have influenced the development of OSH management systems.

Whereas traditional OSH programmes are mostly reactive ('ad hoc'; see Section 2.2) and implemented on the basis of accident investigations or as a result of enforcement, systematic OSH management is regarded as more proactive, participative and better integrated with companies' activities. The basic characteristics of traditional and systematic OSH management are presented in Table 1.

**Table 1: Traditional versus systematic OSH management**

	Motivation	Responsibility	Evaluation	Typical goals	Outputs
Traditional OSH management	Avoiding punishment	OSH specialists	External inspection	Avoiding punishment	Limited control of occupational risks
					Legal requirements not fully implemented
Systematic OSH management	Benefits resulting from better performance	All employees	Monitoring and auditing	Continuous improvement	Effective control of occupational risks
					Often going beyond legal requirements

#### *Defining OSH management systems*

Over the past few years the implementation of OSH management systems has been recognised as an effective strategy to improve safety and health at work. This is expressed in, among other things, policies established at international and European level (see Section 3). Supported by these policies, OSH management systems have been developed and implemented by many companies around the world (for examples of organisational implementation, see Section 4).

Although OSH management systems are currently implemented by companies worldwide, there is still no commonly agreed consensus on the scope of OSH management. This was emphasised by Nielsen (2000)



who states: ‘OSH management systems are not, of course, a well-defined set of management systems. Indeed there are no clear boundaries between OSH activities, OSH management, and OSH management systems.’

A ‘system’ consists of a number of interconnected parts or components that interact in an organised way. According to the ILO definition an OSH management system is ‘a set of interrelated or interacting elements to establish OSH policy and objectives, and to achieve those objectives’ (ILO, 2001). These elements may include OSH policy, planning, organisational structure and accountability, communication and training, risk management, monitoring, and corrective and preventive actions (the OSH management system model proposed by the ILO-OSH 2001 Guidelines is presented in Section 3.2 of this report). Continuous improvement is one of the most important elements for successful functioning of the system and is closely related to the evaluation of performance and based on the well-known ‘Plan-Do-Check-Act’ model (PDCA), also known as Deming’s cycle (Deming, 1982).

In the internationally popular standard OHSAS 18000, an OSH management system has been defined as a part of an organisation’s management system used to develop and implement its OSH policy and manage its OSH risks. The standard notes that the system is a set of interrelated elements used to establish a policy and objectives; to achieve those objectives it includes organisational structure, planning activities (including e.g. risk assessment and the setting of objectives), responsibilities, practices, procedures, processes and resources.

A system can be distinguished from a systematic procedure or process, which is a set of logically ordered steps for doing something. The deliberate linking and sequencing of the different structures and processes of OSH management creates an organised system for managing OSH (Bluff, 2003). Some authors stress the difference between OSH systematic management which is ‘a limited number of mandated principles for a systematic management of OSH, applicable to all types of employers including the small ones’ and ‘the more complex and highly specified OSH management systems’ (Frick, 2003).

In some sources the term ‘mandatory OSH management systems’ is used for systems that arise from governmental legislation and ‘voluntary OSH management systems’ for systems developed according to the guidelines provided by different organisations, e.g. private enterprises, employer groups, government and its agencies, insurance carriers, professional organisations and standards associations, and not directly linked to regulatory requirements (Robson et al., 2005).

To facilitate understanding of OSH management systems, in 2002 the European Agency for Safety and Health at Work published the report ‘The Use of Occupational Safety and Health Management Systems in the Member States of the European Union: Experiences at company level’ (EASHW, 2002). This report presents ‘the ideal OSH management system’, consisting of a number of processes and content variables (see Table 2 and Figure 3).

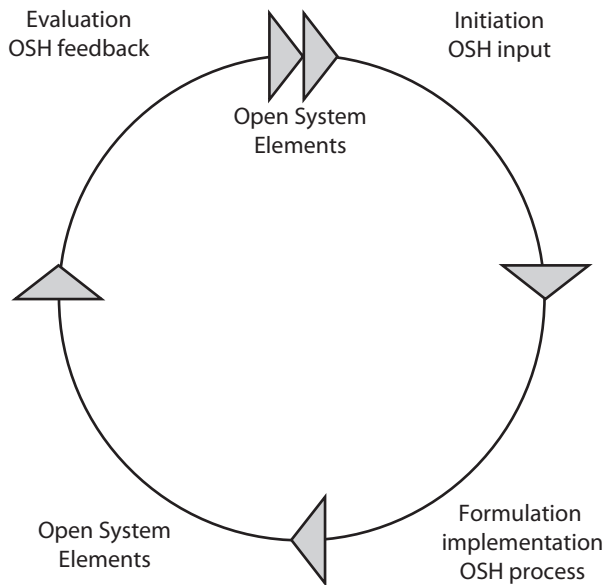
**Table 2: Basic elements of an ideal OSH management system (EASHW, 2002)**

<b>Initiation – OSH input:</b>	Management commitment and resources	Regulatory compliance and system conformance	Accountability, responsibility and authority	Employee participation				
<b>Formulation – OSH process:</b>	Occupational safety and health policy	OSH goals and objectives	Performance measures	System planning and development	Baseline evaluation and hazard/risk assessment	OSH management system manual and procedures		
<b>Implementation – OSH process:</b>	Training system	Technical expertise and personnel qualifications	Hazard control system	Process design	Emergency preparedness and response system	Hazardous agent management system	Preventive and corrective action system	Procurement and contracting
<b>Effects – OSH output:</b>	Goals and objectives	Illness and injury rates	Workforce health	Changes in efficiency	Overall organisation performance			



<b>Evaluation – OSH feedback:</b>	Communi- cation system	Document and record management system	Evaluation system	Auditing and self- inspection	Incident investigation and root- cause analysis	Health/ medical programme and surveillance
<b>Improve- ment/ integration – open system elements:</b>	Continual improvement    Integration Management review					

Figure 3: Basic elements of an ideal OSH management system (adapted from EASHW, 2002; Modification of IOHA report (ILO))



*OSH management systems and system standards*

**Lost Control, ISRS and Five Star**

The earliest and best known management systems for OSH management include ‘Lost Control’, which was developed into the ‘International Safety Rating System’ (ISRS), and the ‘Five Star’ programme, which is similar to the ISRS (Frick, 2007). The basis of the ISRS was laid in the late 1960s and early 1970s and further improved after 1987 in the US, within one of the largest American insurance companies (INA) under the leadership of Frank E. Bird. The ISRS involves 20 elements as part of the ‘core’ safety/loss control audit system. The 20 elements include about 120 ‘sub-elements’ which are further detailed into more than 600 criteria in the form of questions. The questions are provided with value factors through which it is possible to provide a percentage rating for safety activity in comparison with the relevant element in the ISRS. Although the ISRS as a whole is a comprehensive programme, in fact it consists of 10 audit systems which are all integrated and vary from a questionnaire containing less than 90 questions in the most simple form to about 620 in the most comprehensive version. The ISRS can therefore be used within smaller companies as well as large ones, within organisations with a basic safety programme as well as in those with a more evolved programme. Finally the ISRS can be used as an external reference to build the management system of an organisation over a period of time (Top, 1991).



## National standards

Since the 1990s, more and more national standards on OSH management systems have been issued. It is commonly recognised that the first national standard regarding OSH management systems was the voluntary British standard BS 8800 (BSI, 1996). BS 8800 contains guidelines on the development and implementation of OSH management systems in such a way that they can be integrated into the general enterprise management system. The OSH management system proposed in this standard is based on the continual improvement cycle PDCA (Deming, 1982). This model is compliant with the management system model applied in the ISO 14001 standard<sup>8</sup> as well as with the model adopted within the ISO 9001 standard regarding quality management.<sup>9</sup>

Similar standards intended for voluntary application have been developed in other countries: the Dutch standard NPR 5001 (Nederlands Normalisatie Instituut, 1996), the Australian guide SAA HB53 (Standards Australia, 1994) intended for use in the construction industry, and the joint standard AS/NZS 4804 (Standards Australia/Standards New Zealand, 1997). These documents constitute guidelines and may not serve as the basis for management system certification, as in the case of ISO 9001 and ISO 14001 standards. The AS/NZS 4804 standard, however, created grounds for the elaboration and introduction of the AS/NZS 4801 standard (Standards Australia/Standards New Zealand, 2001) containing specifications which may be used for the conformity assessment processes regarding such systems, performed by a third party. Standards for systematic OSH management have also been prepared and published in Spain where they appeared in the form of six documents (Abad, Mondelo and Llimona, 2002). The two most important standards within this series are UNE 81900 (AENOR, 1996a) and UNE 81901 (AENOR, 1996b).

In the US, the system of so called Voluntary Protection Programs (VPP) has been in force since 1982 under the supervision of the Occupational Safety and Health Administration (OSHA). Under this system, companies implement OSH management programmes on the basis of rules published and periodically updated by OSHA. Companies which participate in the VPP no longer have to undergo routine, scheduled OSHA inspections, which are replaced by periodic audits. Experience generated by the early years of VPP functioning has been used to draw up guidelines for OSH management system implementation in organisations. Additionally, in 1996 the American Industrial Hygiene Association (AIHA) elaborated and published guidelines for OSH management systems on the basis of the quality management systems philosophy contained in the ISO 9000 standards.

## OHSAS 18000

In view of the growing interest in elaborating and establishing OSH management standards in various countries worldwide, in 1996 the International Standardisation Organisation (ISO) analysed the need to initiate an OSH management system standardisation process on an international scale (Zwetsloot, 2000). However, such a standard has not yet been elaborated. The lack of standards which might create a basis for OSH management system certification has encouraged action by some private consulting companies and certification organisations that operate internationally and specialise in the certification of quality management systems and environmental management. Such organisations, searching for new areas of development of their business, worked out their own documents containing OSH management system specifications, and after publishing them they began to offer training services and certification of conformity to OSH management systems implemented by businesses. Seeing a need to assure a uniform character of the approach to OSH management systems on an international scale, a dozen or so certification and standardisation institutions, both private and governmental, representing various countries and international certification systems, created a consortium whose objective was to generate a series of documents containing specifications and guidelines

8 ISO 14001 is the international specification for an environmental management system by the International Organisation for Standardisation (ISO). It specifies requirements for establishing an environmental policy, determining environmental aspects and impacts of products/activities/services, planning environmental objectives and measurable targets, implementation and operation of programmes to meet objectives and targets, checking and corrective action, and management review. For more information see <http://www.14000.org>.

9 ISO 9000 is a family of standards for quality management systems. ISO 9000 is maintained by ISO and is administered by accreditation and certification bodies. The requirements for a quality management system are set out in the ISO 9001 standard.



for OSH management systems. These activities, carried out under the leadership of BSI, resulted in publication of the OHSAS 18001 (BSI, 1999) and OHSAS 18002 (BSI, 2000) documents. OSH management system models adopted within these documents, as well as other provisions, are compatible with ISO 9001 and ISO 14001 standards, ensuring that it is possible to integrate the OSH management system with quality management systems and environmental management (see also Section 2.2.2.3). When OHSAS 18001 was prepared, it was assumed that the document would be adopted by some of the institutions participating in the consortium as the basis for their OSH management system certification activities and would replace other documents hitherto applied by these institutions (Podgórski, 2004).

### **ILO-OSH 2001**

In 2001, the ILO Guidelines on occupational safety and health management systems (ILO-OSH 2001) were adopted at a tripartite meeting of experts. These guidelines are an internationally recognised tool to support the implementation of OSH management systems and have been translated into numerous languages. ILO-OSH 2001 provides a unique international model of an OSH management system, compatible with other management system standards and guides. It is not legally binding and not intended to replace national laws, regulations and accepted standards. It does, however, reflect ILO values such as tripartism and relevant international standards including the Occupational Safety and Health Convention, 1981 (No. 155) (ILO, 1981) and the Occupational Health Services Convention, 1985 (No. 161) (ILO, 1985). Its application does not require certification, but it does not exclude certification as a means of recognising good practice if this is the wish of the country implementing the Guidelines (ILO, 2003a) (see also Section 3.2.1.).

### **Behavioural Safety**

Finally, it is worth mentioning Behavioural Safety (BS) (also known as Behavioural-Based Safety, BBS), which is in many ways the opposite of ILO-OSH 2001 (Frick, 2007). Although BS is not formally considered to be a management system and doesn't claim to be one, it is in practice often adopted as a management system for OSH. The main features of the BS methodology are the focus on employee behaviour and on involving employees in OSH issues (Salem et al., 2007). One of the most widespread behavioural-based safety programmes is the STOPTM (Safety Training Observation Program) of the multinational corporation DuPont.<sup>10</sup> The main criticism of BS is that human behaviour contributes to accidents, but that it is the work environment (the organisational and technical design) which determines whether human behaviour (a human error) will lead to an accident. Human behaviour can thus be regarded as a last effect of a long causal chain (see also the ASET model, Figure 1) (Frick, 2007).

### ***OSH management systems and legal regulations***

The legal framework of systematic OSH management and the implementation of OSH management systems was established in the European Union by the Framework Directive 89/391/EEC of 12 June 1989 on the introduction of measures for improvement of employees' safety and health at work (European Union, 1989). The directive emphasises the duty of each employer to ensure the safety and health of workers in all aspects of work. The employer is obliged to provide the necessary organisation and means to achieve this and to develop a prevention policy covering technology, organisation of work, working conditions, social relationships and the influence of factors related to the working environment. The preventive measures should include, among others, risk assessment and management, participation, consultation and informing employees, training, health surveillance, and should be integrated into all company activities. Frick (2004) states: 'The Framework Directive is ambitious in scope and aim, yet simple in form. It boils down to the mentioned limited number of principles for a systematic, integrated and participative management of OSH.'

<sup>10</sup> DuPont. STOPTM. [http://www2.dupont.com/Safety\\_Products/en\\_US/products/index.html](http://www2.dupont.com/Safety_Products/en_US/products/index.html).





Some researchers indicate that the voluntary systems (especially the International Safety Rating System (ISRS) and Five Star system, for example) can sometimes differ significantly from the Directive's approach (Frick, 2003). Some of the differences include:

- the level of formalisation, number of elements and documentation required;
- the scope of activities, which in the case of the Directive includes all kind of risks whereas the market-based OSH management systems focus mainly on technical accident risks, less on technical disease risks and even less on organisational risks and psychological health effects;
- the approach to worker participation;
- the goals of implementation: in the case of the Directive the goal is to prevent any risks to the health and safety of workers, while achieving appropriate performance indicators is the major goal of most market-based OSH management systems.

The content of national standards for OSH management systems (such as BS 8800, AS/NZS 4801 and ILO-OSH 2001; see sections 3.2. and 3.3.) is closer to the broad scope of the Framework Directive. In many countries the national standards are promoted as tools which can support implementation of existing legal requirements.

Frick (2007) states, however, that although the general goal of voluntary OSH management systems (based on OHSAS 18001 or BS 8800, for example) is to create a good overall work environment, they do in practice tend to focus more on accident risks than on the assessment and handling of work-related (long-term) health risks. This contrasts with the Framework Directive which explicitly includes the management of organisational health risks and psychosocial health effects.

### *Effectiveness of OSH management systems*

An important advantage of an OSH management systems approach, indicated in the ILO working document concerning Guidelines on Occupational Safety and Health Management Systems (ILO, 2001) is the integration of OSH (which in many companies is a standalone area) into business activities. Additional values realised through the use of OSH management systems include (ILO, 2003a):

- alignment of OSH objectives with business objectives;
- establishment of a logical framework upon which to establish an OSH programme;
- establishment of a universal set of more effectively communicated policies, procedures, programmes and goals;
- applicability to, and inclusive of, cultural and country differences;
- establishment of a continuous improvement framework;
- provision of an auditable baseline for performance measurement.

There is a great deal of evidence for the effectiveness of applying OSH management systems. Studies involving voluntary as well as mandatory systems report positive results from their implementation (Robson et al., 2005), including:

- decreased accident rates and a related increase in productivity;
- decreased workers' compensation premiums;
- better climate of safety and health;
- improved employee perception of the physical and psychosocial working environment and increased hazard reporting by employees;
- increased worker participation in safety and health activities;
- more organisational actions taken on OSH issues.

Companies' experiences of implementing systematic OSH management and OSH management systems are presented in Section 4.

However, not all enterprises that implement OSH management systems achieve encouraging results. Often no differences in the effective performance are reported between traditional OSH management and





an approach meeting the requirements of standards. In addition, the effectiveness of systems certified by external organisations is reported to be no higher than that of non-certified systems (Frick and Wren, 2000). In papers considering the (in)effectiveness of OSH management systems, it is pointed out that in some companies thoroughly designed, complex OSH management systems have not led to improvements in the OSH level (Frick et al., 2000).

A lack of effectiveness of an OSH management system in a company is usually due to excessive focus on its formal structure, which may lead to the overlooking of about 75% of factors in the management process that are crucial to the system's effectiveness. Formal systems and structures may play a major role in the case of low performance level, but cease to do so if the performance level is at least medium (Hale and Hovden, 1998). Another reason why OSH management systems may be less effective is that they are integrated into the overall business without the benefit of OSH expertise gained over time, which would ensure the ability to systematically identify OSH problems and develop action plans, establishing clear procedures and accountabilities, including periodic auditing and management review. If an OSH management system is installed without these processes, it is likely that OSH will be treated as less important than production or services (Bluff, 2003).

Therefore, when trying to apply an effective OSH management system one has to pay special attention to achieving appropriate stages of maturity in organisational OSH management before integrating the system into overall business, and developing those system elements that play a major role in shaping employee attitudes and behaviours toward OSH. These include management commitment, establishing OSH objectives, responsibilities and training, motivation, communication, and monitoring.

Explicitly demonstrated commitment by management, properly organised seminars, a proper flow of information and mutual trust between employees and senior executives, as well as employees' broad commitment to measures involved in monitoring the work environment, are conducive to a good safety and health culture which has much greater impact on the effectiveness of the OSH management system than even the most perfect formal structures that are not familiar to or accepted by people. A management system which does not motivate all employees and change the OSH culture will have little impact on improving the standard of OSH in the enterprise, and its effectiveness and improvement potential will be questionable (more topics related to OSH culture are discussed in Section 3).

## 2.2.2. OSH, quality and environmental management

### *Occupational health management and promotion*

#### **Workplace Health Promotion**

Traditional approaches to creating healthy workplaces have focused mainly on the safety of the physical environment and injury prevention for workers. However, health and work should be seen from a broader perspective recognising the key characteristics of work and the work environment that have a direct or indirect impact on health, such as leadership and management, organisation of work, communication and information, ways of working, lifelong learning and a social and physical work environment that permits a balance between work and family (Lamberg, Partinen and Leppo, 2006).

Within this context Workplace Health Promotion (WHP) relies on the combined efforts of employers, employees and society to improve the health and well-being of people at work. This can be achieved through a combination of improving work organisation and the working environment, promoting the active participation of employees in health activities and encouraging the individual's personal development (ENWHP, 1997).<sup>11</sup> The areas of activity for WHP include lifestyles, ageing, corporate culture including staff

<sup>11</sup> This definition is adapted from the Luxembourg Declaration on Workplace Health Promotion in the European Union. This declaration was adopted by all members of the European Network for Workplace Health Promotion at the network meeting held in Luxembourg on 27-28 November 1997. It was updated in June 2005.



leadership, staff development, work-life balance, mental health and stress, wellness, Corporate Social Responsibility (CSR), nutrition and health. The WHP approach suggests enhanced collaboration between different stakeholders, such as public health and primary health care services, HR management and regional and national institutes (Hämäläinen, 2006; Hämäläinen, 2007).

Sorensen and Barbeau (2004) have investigated the rationale for integrating OSH (aiming to eliminate or reduce work-related risks) and workplace health promotion (aiming to promote healthy behaviours). They stress that OSH and WHP provide two parallel pathways for protecting and promoting worker health within healthy workplaces; these parallel efforts are strengthened when they are coordinated and integrated, rather than separate and independent (Sorensen and Barbeau, 2004, p. 5). Four arguments for such an integrated approach are: (1) workers' risk of disease is increased by exposures to both occupational hazards and risk-related behaviours, (2) workers at highest risk for exposure to hazardous working conditions are also those most likely to engage in risky health behaviours, (3) integrating OSH and WHP may increase programme participation and effectiveness for high-risk workers, and (4) integrated OSH/WHP efforts may also benefit the broader work organisation and environment.

### Integral Health Management

When analysing OSH management/health management, Zwetsloot and van Scheppingen (2007, p. 6) observe that these approaches are mainly limited to problem-solving activities (i.e. focusing on the correction of undesirable situations identified through risk assessments, or dealing with people who have health issues by, for example, adapting their work and the work environment), and therefore remain a side issue for management.

In order to make OSH/health strategically more important to organisations, and thus to approach and manage these issues in a more integrated way, TNO (The Netherlands)<sup>12</sup> developed the Integral Health Management (IHM) concept (see e.g. Zwetsloot et al., 2003; Zwetsloot and Pot, 2004; Zwetsloot and van Scheppingen, 2007). This approach is aimed at reducing the costs of sick leave and worker disability and at the same time increasing the productivity and resilience of the company and its employees. In the IHM approach, the value of health is seen as a key element of corporate policy. There are seven major areas of IHM development, the inter-relationships between them are essential for the success of the process (Zwetsloot and Pot, 2004):

- 1) health as a strategic company interest;
- 2) the realisation of a healthy primary process;
- 3) a safe and sound physical (work) environment;
- 4) an inspiring social (work) environment;
- 5) vital and healthy people;
- 6) a sound relationship with the direct organisational environment and local community;
- 7) healthy products and/or services.

This IHM approach suggests that health management not only needs to focus on the worker's health, but that it is also relevant for the business, and is also an example of the organisation acting responsibly (i.e. a vital aspect of Corporate Social Responsibility (CSR)). The seven areas of IHM can also be linked to the European Foundation for Quality Management (EFQM) Excellence Model (see Figure 5) (see also Zwetsloot, 2004).

<sup>12</sup> TNO, [http://www.tno.nl/groep.cfm?&context=markten&content=producten&laag1=52&item\\_id=111&Taal=2](http://www.tno.nl/groep.cfm?&context=markten&content=producten&laag1=52&item_id=111&Taal=2).



## Integration of OSH into quality programmes

### Introduction

Increasing pressure from customers and business competitors forces companies and organisations to constantly improve quality and reduce costs. There are several strategies and methods that can be applied to comply with this need for change; examples of these are Total Quality Management, Lean Production, Business Excellence Models (such as the European Foundation for Quality Management Excellence Model and the American Malcolm Baldrige Criteria for Performance Excellence), Six Sigma and Balanced Scorecard. This section aims to explore how OSH can be taken into account when deploying such quality management/improvement programmes. Some case studies on the integration of the OSH dimension into quality management/improvement programmes are described in Section 4.

### Total Quality Management (TQM)

Total Quality Management (TQM) can be defined as 'a process of management that enables a business to continuously improve its ability to meet and surpass the needs and expectations of its stakeholders by focusing its business processes on clearly defined goals, policies and strategies and controlling them by systematic measurement and review within an organisation and culture that provides positive leadership towards fulfilling the business mission by involving, supporting, empowering and recognising the achievements of its people in their endeavours' (Osborne and Zairi, 1997, p. 7). The TQM concept is, like Lean Production, based on Japanese experience in the motor and electronics industries and may be seen as an American version of the Japanese Toyota Production System (TPS). TQM is not only a management philosophy with core values that include 'customer focus', 'continuous improvement', 'focus on processes', 'focus on facts', 'participation of everybody', and 'committed leadership', but has to some extent become an umbrella concept which includes several related methodologies and tools such as self-assessment,<sup>13</sup> benchmarking, Balanced Scorecard, Six Sigma, 5S, quality circles, etc. (Harnesk, 2004; Isaksson, 2004).

A study (Osborne and Zairi, 1997) by the European Centre for Total Quality Management (Bradford University, UK) for the Health and Safety Executive in the UK, tried to determine to what degree the core principles of TQM were applied to OSH management. This was done through data collection from 24 organisations. The study concluded that TQM principles were applied less in OSH management than in the core business. The following aspects were found to be crucial for businesses in deciding whether to use TQM in the management of OSH:

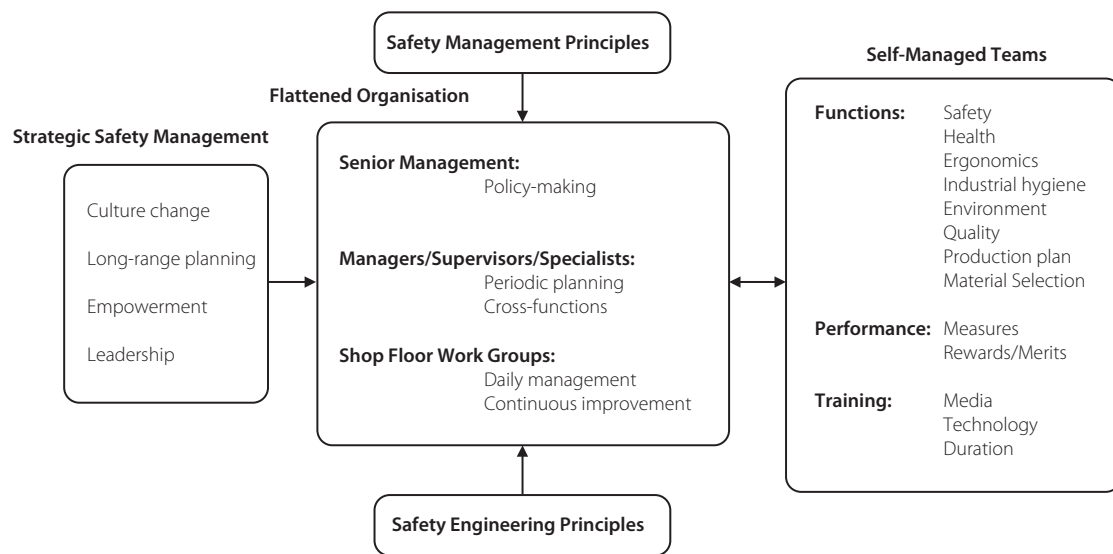
- the level of executive identity with and understanding of the subject of OSH;
- the level of intrinsic value for safety and welfare of stakeholders;
- the demand from customers to adopt similar values, standards and practices as themselves;
- the setting of strategic goals of 'business excellence', requiring a consistent management approach to be adopted throughout the business;
- the perceived importance of OSH to the business as a whole.

An OSH approach that is suggested to be complementary to TQM is Strategic Safety Management (SSM; Rahimi, 1995). Figure 4 shows the SSM model. SSM advocates a simultaneous and continuous allocation of resources to top-down management and bottom-up engineering improvements through well organised, self-managed teams and parallel training systems. As engineering deals with technological improvements and management deals with leading people towards injury-free performance, the proposed model demonstrates that one cannot exist without the other. The ingredient that moulds these two components is knowledge about the process.

<sup>13</sup> The self-assessment process based on criteria in Business Excellence Models, like the European Foundation for Quality Management (EFQM) Excellence Model and the American Malcolm Baldrige National Quality Award (MBNQA), specify criteria based on TQM core values.



Figure 4: Model of a Strategic Safety Management (SSM) approach (based on Rahimi, 1995)



A 'total' safety approach requires both line management and top-down influences in addition to bottom-up engineering approaches within a continuous improvement culture affecting every element of the work organisation. This is a particularly effective approach since it can easily incorporate both current safety programmes within an evolutionary framework and innovative efforts which bring deeper changes into the system. This is above all important in the management of technological systems, where the failure of the system can be caused by the failure of the hardware, the software, the organisation or human beings (Haimes, 1991).

### Lean production

Lean production (Lean Manufacturing) is, like TQM, a production concept that aims to improve productivity by reducing waste, costs and the complexity of manufacturing processes (AMT, 2007 in Main et al., 2008, p. 38). There exist several tools and methods that can be applied within lean production, such as 5S,<sup>14</sup> 'Kaizen' (for continuous improvement), 'kanban' (for Just-In-Time production, JIT), Total Productive Maintenance (TPM) and Value Stream Mapping (VSM). The concept of 'lean' was initiated by the Toyota Motor Company, which has its own lean production system, the Toyota Production System (TPS).

A central principle in lean production is to minimise or eliminate waste.<sup>15</sup> Seven forms of waste can be distinguished: (1) correction, (2) overproduction, (3) motion, (4) material movement, (5) waiting, (6) inventory, and (7) process. As lean concepts have gained attention in manufacturing, there have also been reports of these concepts being misapplied and creating significant problems, particularly concerning OSH (Main et al., 2008). Surveys and case studies of Japanese-owned auto assembly plants in the United States and Canada have for example suggested high levels of perceived stress, fatigue and tension. This has been attributed to fast work pace, long working hours, highly repetitive work and few rest breaks. In several studies among Canadian auto parts supplier workers, increases in job tension and fatigue over the previous two years were significantly greater in lean production than in traditional companies (Lewchuk and Robertson, 1996). Main and associates describe the problem regarding the lean concept and OSH in the following way (2008, p. 39): 'Lean focuses on minimising waste in a system. Safety focuses on minimising risk in a system. Optimising for

<sup>14</sup> 5S refers to the first letters of five phrases that describe processes to identify and eliminate all forms of waste; some 5S programmes add 'safety' as a separate S and make it 6S, others consider safety to be an integral part of the 5S process.

<sup>15</sup> The term 'lean' refers to cutting the 'fat' out of production processes (Main et al., 2008, p. 38).



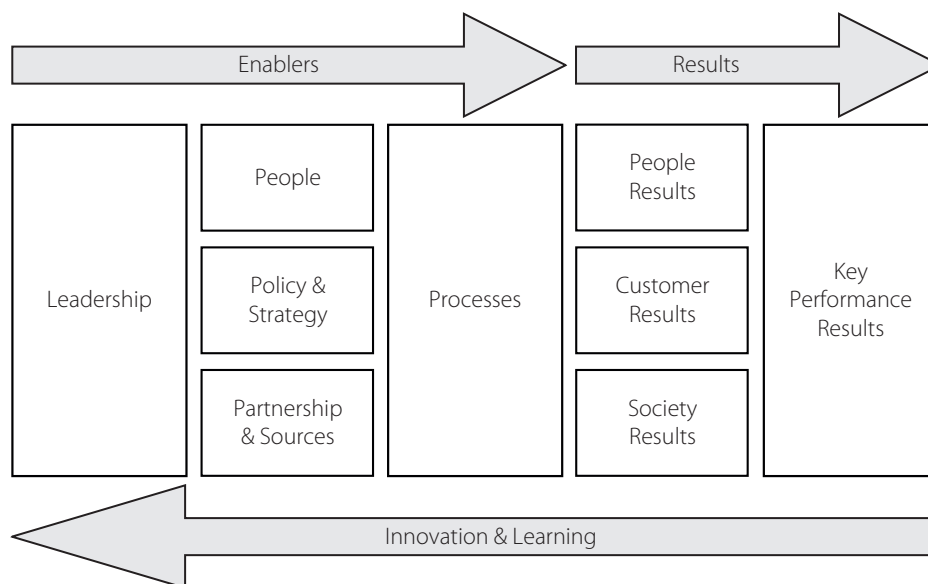
one or the other can lead to a suboptimal solution for the overall system – lowest waste but with increased risk, or lowest risk with increased waste.’

OSH and lean production should not be regarded as having conflicting goals, however. In fact, they share the common goal of maximising manufacturing output with the least possible risk and waste. From this perspective, accidents can be considered as extreme forms of inefficiency (waste) that are to be avoided at all costs (Wokutch and VanSandt, 2000). Both production (lean) management and OSH management are about dealing with similar challenges, such as variability, limited slack, resources and capacity to adjust to fit unforeseen demands (Williams, 2005; Hollnagel, 2004, 2006). Lean and OSH must thus be considered concurrently rather than separately (Main et al., 2007). In order to help do this, the Association for Manufacturing Technology (AMT; McLean, Virginia, US) has released the ‘ANSI B11 Technical Report 7 (Designing for Safety and Lean Manufacturing)’ as a guide on integrating safety and lean manufacturing principles in the use of machinery (2007). The focus of TR7 is to obtain an overall system optimum of lowest waste at lowest risk. The technical report presents a process flowchart on how OSH and lean manufacturing concepts can be addressed concurrently.

### Business Excellence Models

Business excellence is the systematic improvement of business performance, based on a set of principles. For example, the European Foundation for Quality Management (EFQM) has created the EFQM Excellence Model, built on a set of fundamental concepts of excellence: results orientation, customer focus, leadership and constancy of purpose, management by processes and facts, people development and involvement, continuous learning, innovation and improvement, partnership development, and public responsibility (see Figure 5). The model was introduced in 1992 as the framework for assessing organisations for the European Quality Award. It is now the most widely used organisational framework in Europe, and it has become the basis for the majority of national and regional quality awards (EFQM, 2007).

Figure 5: The EFQM Excellence Model



In the US, the Malcolm Baldrige National Quality Award program (Malcolm Baldrige Criteria for Performance Excellence) is used as a business excellence model. The seven Baldrige categories are (1) leadership, (2) strategic planning, (3) customer and market focus, (4) measurement, analysis and knowledge management, (5) human resources, (6) process management, and (7) business results. OSH aspects are covered within the human resources subcategory of ‘employee well-being and satisfaction’. In addition to meeting these specific



OSH performance criteria, it is expected that OSH issues are integrated into other categories, particularly strategic planning, process management, and business results. The Baldrige framework can thus be used to assess OSH processes and integration, and can help to identify the OSH processes and activities most critical to overall business excellence. According to Rancour (2005), the credibility of an assessment based on Baldrige’s criteria can lead to meaningful discussions with senior management on how to continuously improve critical processes and overall business integration of OSH.

Ketola and associates (2002) applied criteria for performance excellence in order to develop and test criteria for the self-assessment of OSH performance. The criteria appeared to be suitable for reviewing the initial safety status of a company and suggested categories in which improvements might be made. This was true even in categories that were not familiar to the project team members or traditionally associated with OSH management. The scoring system proved to be simple and fast to execute. However, most strengths and areas for improvement were found in the categories ‘leadership’ and ‘human resources’ development, which are typical areas for improvement and commonly associated with OSH management. The method gives a fairly accurate picture of the level of a company’s OSH performance and what its strong points are. It also indicates the areas where a company has the most potential to improve its performance. If these procedures are documented, it provides a good basis for an OSH management system.

### Six Sigma

Six Sigma is a statistically based methodology for improving product quality. The term ‘six sigma’ was originally used by Motorola engineers in the 1980s to promote the concept of striving towards statistically perfect products or processes.<sup>16</sup> Six Sigma organisations aim not only to produce excellent products but also to maintain highly efficient production and administration systems that work effectively with the company’s entire set of processes, including support, purchasing, human resources and customer service (O’Rourke).

**Table 3: Correspondence of the Six Sigma approach with the focus and level of OSH management procedures (Williamsen, 2006)**

Level of control	Focus on OSH
One-Sigma Control	Establishes the foundation for a safe workplace. The focus is on engineering for safety, education for safety, and enforcement of safety rules
Two-Sigma Control	Focuses on observation programmes, job safety analyses, and near-hit reporting
Three-Sigma Control	Aims for predictable results on a regular basis through well-designed responsibilities and accountabilities for individuals
Four-Sigma Control	Focuses on employee buy-in and perceptions about safety. The article describes a comprehensive safety perception survey that diagnoses 20 categories
Five- and Six-Sigma Control	Focuses on creating ‘a sustainable safety culture where heightened safety decisions occur without thought’. Requires statistical process control tools, a dedicated continuous improvement team, and active participation from all levels of employees. This latter component emphasises the importance of effective meetings.

In companies driven by a Six Sigma culture, OSH can be approached using the Six Sigma methodology. The same desire to eliminate product mistakes can be applied to the reduction of injury rates. This parallel approach has six levels. Each level builds on the previous one until the ‘sixth sigma’ – a zero injury culture

<sup>16</sup> Six sigma ( $6\sigma$ ) represents six standard deviations between the mean and the nearest specification limit in any process. To achieve Six Sigma, a process must not produce more than 3.4 defects per million opportunities, or be 99.9997% perfect.



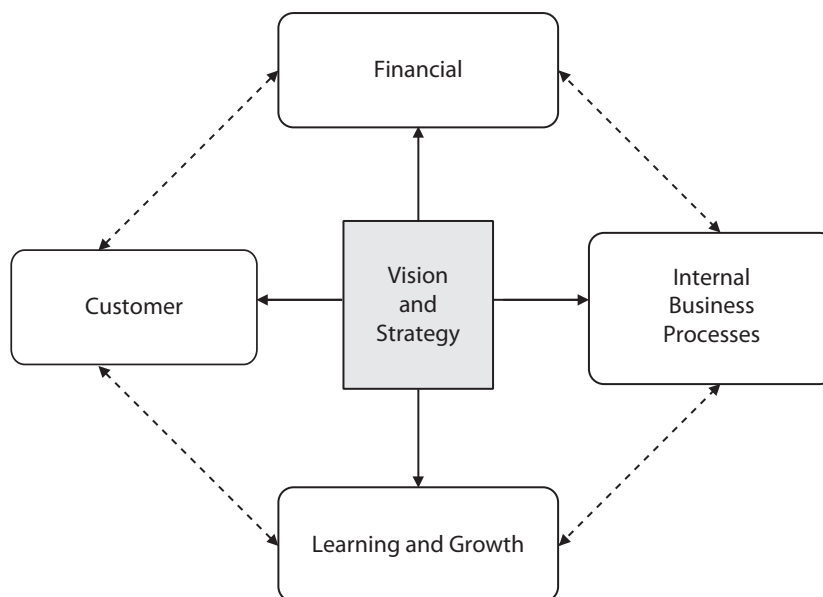
– is attained (Williamsen, 2006). Table 3 gives an overview of the six levels of Sigma control and how they correspond with OSH management.

### Balanced Scorecard (BSC)

A Balanced Scorecard (BSC) is an organisational performance measurement system, that can be applied directly to OSH. It was developed in the early 1990s by Harvard Professor Robert S. Kaplan and management consultant David P. Norton to help companies better manage intangible assets such as 'intellectual and organisational capital', which are value drivers for future organisational success. It aims at integrating those intangible assets in a more efficient way, especially as most traditional management tools focus on financial results. However, for business to successfully manage its future performance, a system is needed based on leading indicators of business success. The BSC analyses the expected future contribution to financial performance of such intangible assets (e.g. a firm's knowledge base, its ability to enthuse customers, or excellent control of process quality) (Bieker and Waxenberger, 2002).

A balanced scorecard is often built on four major categories of key process indicators (see Figure 6): (1) management indicators, (2) operational indicators, (3) customer satisfaction indicators, and (4) indicators on learning and growth of the personnel and the organisation. OSH management can be included in indicators of process quality, efficiency, organisational culture, knowledge capital and other indicators of personnel policy, such as induction and organisational processes, security culture, potential risks and hazards. In safety-critical branches, there might for example be specific quality criteria or certain procedures that must be followed in order to certify that all the crucial issues and details have been addressed.

Figure 6: The 4 perspectives of the BSC



As BSC is a management tool, managers should find it more applicable for their needs in incorporating safety and health into management systems. Mearns and Håvold (2003, p. 415) put forward the following safety and health balanced scorecard as one way to improve safety and health within organisations (see Table 4). The BSC is not static; it changes with the organisation and should be viewed as a long-term process rather than one that will produce viable results over the short term. Their research showed that the BSC contributed to an improvement in OSH measures.





**Table 4: The safety and health balanced scorecard (Mearns and Håvold, 2003)**

<b>1. Financial</b>	Accident costs reduced
	Investment in safety, e.g. safety training budget
<b>2. Customer</b>	Levels of communication about health and safety issues
	Workforce involvement and 'ownership' of safety and health
<b>3. Internal business</b>	OSH policies
	Organising for safety:
	Control
	Communication
	Cooperation
	Competence
	Demonstration of management commitment and workforce involvement in OSH
	OSH auditing
	Health surveillance and promotion
	Testing of employees' knowledge of safety and health policies
<b>4. Learning and growth (best practice)</b>	Visits by managing director, business unit manager/director to the installation, including face-to-face discussions with members of the workforce
	High percentage of staff attending safety committee meetings once a month
	Occupational health plan in place, high percentage of plan achieved and health promotion activities carried out
	High percentage of corrective actions formally closed out against an agreed time scale over the past year

### *Integration of management systems*

Section 2.2.1 revealed that there are a wide range of management system standards that can be applied by organisations to manage and improve their quality, environmental and OSH issues in a more structured and formal way. Companies usually tend to implement their systems in the order of (1) quality, (2) environment and (3) OSH. This can be due to customer pressures (quality), cost savings (environmental) and a requirement to conform (OSH) (Whitfield, 2005). Companies may thus adopt multiple management systems (based on management system standards) at the same time, which can entail complications: where management systems have been implemented separately, this may give rise to more complex administration, separate and even conflicting procedures and instructions, and additional costs.

To avoid these problems, and hence to save costs and pursue organisational efficiency and effectiveness, it may be best to develop a single 'integrated management system' (IMS) that covers the various management systems adopted (see e.g. Hansen, 1994, 2006; Zwetsloot, 1995; Smith, 2001; Wilkinson & Dale, 2002; Jørgensen, 2006). The aim of adopting an IMS must be to deliver the organisation's needs in the simplest and most effective manner. A single, integrated system has the added value that change in one area does not go ahead without reference to quality, environmental and OSH issues. The system is thus a proactive one, rather than correcting problems after the event (Smith, 2001, p. 5). Table 5 gives an overview of the potential benefits of an IMS.





**Table 5: The benefits of an IMS (based on Smith, 2002, p. 3)**

Benefits	Explanation
Tangible costs	Avoidance of duplication in systems for audit, document control, etc.
Operational benefits	Helps ensure that all the consequences of any action are taken into account
Management benefits	Separate 'empires' for quality, OSH, environment are avoided: all are seen as part of the overall management system of the organisation
	The involvement of employees in the various stages of the process can lead to them developing a team attitude and identifying positively with the aims of the organisation, in a way that cannot easily be achieved by other means
Strategic benefits	The adoption of future management system standards will be easier, and therefore cheaper, so an organisation will not be deterred from adopting a standard that would be beneficial
	All systems are seen as part of a single management system contributing to the continual improvement of the results of the organisation
	Stakeholders (including insurers) may increasingly seek the reassurance that an integrated system provides
	The unity of purpose of all employees rather than their functional duties is emphasised, contributing to a team approach

When fusing the quality, environmental and OSH system of an enterprise together, the term 'SHEQ' (Safety, Health, Environment(al) and Quality) management system is sometimes used (e.g. Hansen, 1994).

### Levels of integration

An IMS cannot be implemented by taking the different management systems already in place and including them in a single set of manuals; integration must be carefully planned and implemented in a balanced way (Smith, 2001). A well-planned IMS can significantly improve process measurement and performance while reducing risk and the liabilities associated with nonconformance over time. Planning is the foundation for designing and implementing an umbrella system for quality, environment and OSH (Hansen, 2006).

A list of what an organisation should already have done (prerequisites) and decisions it must make (process) in order to introduce an IMS, is given in Table 6 (EASHW, 2002 based on IOSH, 1998).

**Table 6: Prerequisites and processes for an IMS (Adapted from EASHW, 2002, p. 23)**

Prerequisites	Processes
The organisation should have:	The organisation should decide:
reviewed the overall business case for an IMS	on the choice of an overall IMS model. Many organisations may have developed quality systems that follow too slavishly the sequences of topics given in that standard
reviewed the adequacy of existing arrangements and the future needs of each management system	how to retain the integrity of existing systems while the new system is developed
identified the key elements of each system that must be retained and the appropriate level of detail applicable to each	whether it is necessary to pilot parts of the IMS
decided on the phasing and extent of integration	on a phased plan showing the milestones to an IMS, and the individual responsibilities



consulted widely throughout the organisation	on appropriate arrangements for training needs analysis and training
obtained the enthusiastic support of top management for the IMS	on the introduction of a continuing programme to retain the commitment of members of staff
studied the recommendations of any industry-specific standards, and considered the need to take external advice as appropriate	
decided on the measurable criteria that will be used to monitor and assess effectiveness	

**Table 7: Overlapping elements of OSH and environmental management: this overlap signifies the basis for integrating the management of these disciplines (Jacobsson, 2002)**

Integration of Safety/Health/Environment					
Health		Safety		Environment	
Individual health needs	Work-related illnesses	Work accidents	Risk of major accidents	Acute environmental impact	Long-term environmental impact

Renzi and Cappelli (2000) examined ISO 9001 and ISO 14001 and concluded that the potential degree of integration depends on the organisational level: a maximal integration at top management level (integrated strategy), low at middle management (specific technical requirements lead to differentiation) and maximal at operational level.

According to Wilkinson and Dale (2002) the integration of management systems can be done in two ways:

1. The 'aligned approach': an integration based on the similarities of the standards, this approach can lead to a reduction of administration and audit costs and may in particular be adopted with a view to certification requirements.
2. The 'Total Quality Management approach': a more holistic approach aiming at fully integrating all relevant procedures and instructions, with the focus on employees, customers and continuous improvements.

Jørgensen and associates (2006) go even further and distinguish three levels of integration (see Table 8):

1. 'Integration as correspondence' between different standards (e.g. ISO 9001, ISO 14001, OHSAS 18001, SA 8000) with cross-references and possibly a common handbook.<sup>17</sup>
2. 'Integration as coordination' which is based on a common understanding of the generic<sup>18</sup> aspects of management (policy, planning, implementation, corrective action and management review – the so-called

<sup>17</sup> With the revisions and new editions of the different standards, the management systems have a greater number of similarities. Some examples are:  
 ISO 9001:2000 has a process focusing on continuous improvements, which is one of the foundations of the environmental as well as the health and safety management systems;  
 The new edition of ISO 14001:2004 has been developed to improve the coherence with ISO 9001:2000, and the connection to the EMAS II – Regulation (EC) No. 761/2001 of the European Union is clarified;  
 A common standard ISO 19011:2002 for quality and/or environmental management system auditing has been developed.  
 In this regard, 'ISO Guide 72' (2001) was created to improve the interface between the standards developing committees and the markets they serve.

<sup>18</sup> ISO considers ISO 9001 and ISO 14001 as generic standards in the sense that these standards can be applied to any organisation in any sector.



PDCA cycle) and generic processes (top management, commitment, definition of a policy, planning of objectives and targets, procedures, audits, documentation and records control, control of non-compliance, corrective and preventive actions, management review).

3. 'Integration as a strategic and inherent approach' including an organisational culture of learning, continuous improvements of performance, and stakeholder involvement related to internal and external challenges.

**Table 8: Overview of three levels of integrating management systems (Jørgensen et al., 2006)**

Integration as	Focus on	Brings a solution to problems related to	Complementary solutions/ aspects
1. Correspondence	System aspects	Bureaucracy, duplication of work tasks and confusion between different standards	Active employment participation
2. Coordination	Processes of coordination	Managing tasks and projects across different functional units and departments	Matrix organisations, project groups, etc.
3. A strategic and inherent approach	Organisational embeddedness and stakeholder relations	Achieving real continuous improvement and contributing to sustainable development	Management commitment, employee motivation and participation, changes in routines and traditions, etc.

As mentioned above, the 'integration as coordination approach' is based on generic aspects of management and processes. The generic aspects of management can form the main elements of a framework for an IMS (Smith, 2001). The generic elements of the framework are shown in Table 9, together with the four stages of the PDCA cycle (Deming, 1982) – indicating the continual improvement implicit in this approach. The elements in Table 9 relate to elements which can also be found in ISO 9001:2000, ISO 14001 and OHSAS 18001.

**Table 9: The main elements of a framework for an IMS (Smith, 2001; Jørgensen et al., 2006)**

Generic Management	PDCA stages
1. Policy	Plan
2. Planning	
3. Implementation and operation	Do
4. Performance assessment	Check
5. Improvement	
6. Management review	Act

Hansen (2006) distinguishes seven basic elements of an effective IMS that are slightly different from the elements mentioned above. They are (1) policy, leadership and accountability, (2) organisational infrastructure, (3) strategic planning, (4) management, (5) customers, contractors and suppliers, (6) performance monitoring and (7) continuous improvement. Hansen gives a series of questions which can be used to perform a gap analysis, in order to determine the status of implementation of current systems in the spectrum of full implementation of a SHEQ IMS. This analysis is categorised in four progressively improving stages (developmental, intermediate, mature and advanced).

Competitive advantages can be achieved if the organisation combines the new focus on customers in the quality system with a focus on the products in the environmental management system. This can create a



synergy between quality and environment (and health and safety and social aspects) as well as greater focus on continuous improvements and product innovations – compared to the traditional focus on the production process. Furthermore, this also involves the challenge of expanding the focus of the systems to include the whole product chain, which also corresponds to a similar focus in Corporate Social Responsibility (Jørgensen et al., 2006).

### **Towards a single IMS standard**

In 2001, Smith considered the drafting of a single comprehensive management system standard impractical. Constant changes and new standards would make it continually out of date, and not all the contents would necessarily be relevant to a particular organisation. Jørgensen and associates (2006) stated on the other hand that an IMS standard including the different areas of responsibility in organisations and their stakeholder relations, could be the next step for ISO<sup>19</sup> to develop. Considering companies' interest in integration and the existence of several national initiatives to publish standards for IMS, they believed that the ground was fertile for such an ISO standard.

It was however not ISO, but the BSI that issued PAS 99:2006, a 'Publicly Available Specification' of common requirements for management systems that can be used as a framework for an integrated management system. PAS 99 takes account of the six common requirements for management systems standards outlined in ISO Guide 72 guidance document (policy, planning, implementation and operation, performance assessment, improvement and management review); and also follows the PDCA approach of all the major management system requirements standards. According to BSI, the adoption of this PAS should considerably simplify the process of assessment by both internal and external parties and allow organisations to reap huge internal benefits. It is primarily intended for use by organisations that are implementing the requirements of two or more management system standards such as ISO 9001, ISO 14001, OHSAS 18001, ISO/IEC 27001 (Information Security Management), ISO 22000 (Food Safety Management) and ISO/IEC 20000 (IT Service Management).<sup>20</sup>

### ***Disadvantages of integrating OSH management***

Although the benefits appear to be very convincing, some experts are reluctant to link OSH management with other management areas.

According to Nielsen (2000), the integration of OSH and quality management is likely to dilute the focus on OSH, as matters of 'production' are always much more pressing. He refers in this regard to the metaphor of 'driving a motorcycle with sidecar': OSH does usually not exert any influence over the direction a company is driving; the position of OSH activities is in the sidecar and it might be more successful to shout from the sidecar than trying to get in the driver's seat.

Kamp and Leblansh (2000) contest the effectiveness of coupling management disciplines: it could provide opportunities to raise questions in a new way, to create new alliances and relations inside and outside the organisation, but it might on the other hand imply that one field might encroach and dominate the other system(s). They distinguish two lines of argument for a combined environmental and OSH approach, namely a technical and a strategic discourse:

<sup>19</sup> The ISO (International Organisation for Standardisation) is an international, non-governmental, standard-setting organisation set up in 1947 and regrouping national standard bodies from more than 140 countries. Its mission is to promote the development of standardisation and related activities in the world with a view to facilitating the international exchange of goods and services, and to develop scientific, intellectual, technological and economic cooperation. ISO standards are international and provide voluntary baseline rules that can be adopted by private companies or public authorities. The ISO standards-setting process is a rules-based system in which participants (representing consumer, business, and other interests, from developed and developing countries) reach decisions on the basis of consensus. Draft standards are then subject to wider consultation. The assessment of conformity with the requirements of a standard is not done by the ISO itself but it is a matter for suppliers and their clients in the private sector, and for regulatory bodies when ISO standards have been incorporated into public legislation. The process of conformity assessment is performed by certification or registration bodies. Certification bodies need to be accredited (approved) by national accreditation bodies which give formal recognition that they are competent to carry out certification (<http://www.iso.org>).

<sup>20</sup> Adapted from: <http://www.bsi-uk.com/IntegratedManagement/Overview/WhatIsPAS99.xalter>.



- the 'technical discourse': problems in the field of both environment and OSH originate from the same technological developments (e.g. choice of materials, equipment, work organisation); in addition, many cases seem to illustrate how a solution of an environmental problem creates an OSH problem and vice versa;
- the 'strategic discourse': integration could give opportunities to improve employee participation in both fields, as well as management's priority and involvement.

Despite these arguments, Kamp and Leblansh stress some contradictions and discontinuities between the two fields, which differ in historical context, in stakeholders as well as in orientation (see Table 10).

**Table 10: Differences between environmental and OSH management (based on Kamp and Leblansh, 2000, p. 417)**

	Environmental management	OSH management
<b>Prime actors (from a historical point of view)</b>	Public authorities and management	Industrial relations actors
<b>Governance</b>	Logic of accountability and state control	Logic of co-production and co-determination
<b>Orientation</b>	External	Internal

Based on analyses of Dutch and Danish case studies, Kamp and Leblansh conclude that linking environmental and OSH management does not mean that the two fields obtain equal priority. OSH management appears to be mainly embedded in middle management, while environmental management is a top management topic; as a consequence fewer resources in terms of money, expertise and management attention seem to be spent on OSH. The analyses also demonstrated that, although problems in OSH and environment are closely related, joint preventive actions are seldom taken.

Probably the biggest hurdle to overcome when attempting to integrate different management domains is the unwillingness of people to give up the hegemony of their own discipline and accept intrusion into their territory (Jacobsson, 2002).

Wilkinson and Dale (1999, 2001) mention three fundamental problems with regard to the integration of quality, environmental and OSH management systems (resp. ISO 9001, ISO 14001 and OHSAS 18001): compatibility, scope and organisational culture. They make a distinction between the situation before (ISO 9001:1994) and after the ISO 9001:2000 standard. Although the new ISO 9001 standard was created to facilitate integration with other management systems,<sup>21</sup> some compatibility problems remain. There are, for instance, differences in approach, definitions and terminology between ISO 9001:2000 and the ISO 14001 and OHSAS 18001 standards. There are also differences in terms of scope: with ISO 9001 the management standards apply to distinct functions, activities, needs and resources, which could lead to different subcultures hindering the creation and implementation of an IMS.

<sup>21</sup> ISO 9001:2000 has for example, in comparison to ISO 9001:1994, a process focusing on continuous improvements, which is one of the foundations of the environmental and OSH management systems (resp. ISO 14001 and OHSAS 18001).



## 2.3. CULTURE

OSH can be viewed as a concept within an organisation that is implemented and managed to a certain extent, or it can be accepted as a functioning underpinning of the organisation's goals and values. One of the ways in which the second definition can be realised is by the incorporation of OSH into the culture of the organisation, which in turn depends on the overall governance, including factors such as corporate social responsibility (CSR), social accountability (SA) and corporate sustainability (CS).<sup>22</sup> While there are differences between these concepts they are interlinked, and once a business engages in one, it can quickly impact on the others. The section that follows examines the impact of OSH on the processes of governance and culture within organisations, especially in the context of its integration into the management systems of organisations.

### 2.3.1. OSH Governance

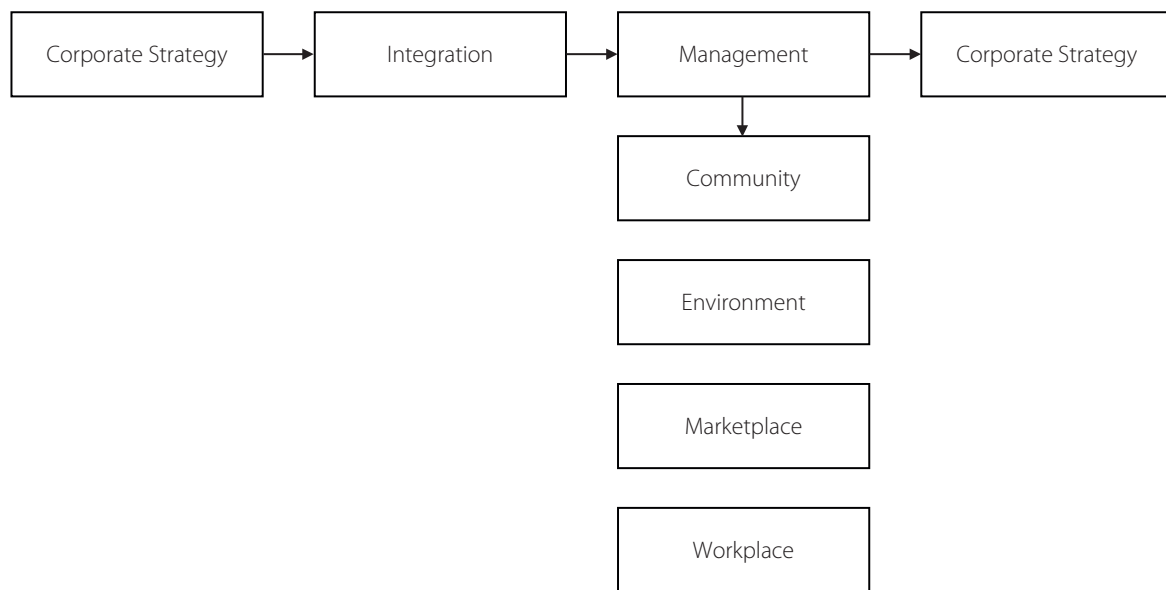
Governance within organisations has risen in profile over the past decade due to certain unethical business practices that have arisen, including financial mismanagement, the use of child labour and the environmental impact of shoddy waste removal practices. Most organisations are now eager to show that they are socially responsible and accountable for their actions. It is especially important for organisations to ensure transparency of their actions (EASHW, 2004). One of the main components of governance is CSR; it is also the one that is most highlighted, above social accountability or corporate sustainability. The practice of CSR is not simply a public relations exercise to show that the company is doing good, but rather a way for both companies and society to prosper. This is especially true when CSR is conceived of as a long-range plan of action (Falck and Heblich, 2007).

It is accepted that OSH is an essential component of CSR (see Sowden and Sinha, 2005), but on its own OSH can be a contentious factor in that some businesses may not view it as an essential business requirement, but rather one that may have legal implications if not in place. Despite this, if it is included within the overall governance of an organisation, it needs to be within a culture of responsible risk taking (Waring, 2000). However, safety and health as a process is becoming more visible in organisations, as it is included to a greater extent in annual reports, and safety and health performance data are being used to a greater extent within CSR reporting initiatives (Marsden, 2004).

Overall, good governance is linked to long-term prosperity and creates value within an organisation while bad governance can lead to financial losses, such as through work-related ill health and sickness absences (Boardman and Lyon, 2006). However, the development and implementation of CSR should be carried out using a structured approach, and one that is relevant to the specific organisation (EASHW, 2004). A comparative case study of 18 companies in the Netherlands found that the process of CSR was guided and coordinated by change agents who were specifically appointed to explore the implementation of CSR in their respective companies. The end result was that, due to the dynamic nature of organisations, an inherent strategy that took into account trial and error, personal preferences and the use of language were needed for CSR to be realised successfully (Cramer, van der Heijden and Jonker, 2006). Effective communication with stakeholders, especially employees, also helps in the successful implementation of CSR (EASHW, 2004). Figure 7 provides an overview of the linkages between governance, culture and OSH, as it illustrates that governance (corporate strategy) directly affects the way in which management operates, which in turn impacts on performance.

<sup>22</sup> CSR is the decision of companies to contribute voluntarily to a better society and a cleaner environment (EC, 2001); SA involves organisations taking responsibility for the wider impact of their business activities (e.g. child labour, working hours, wage levels), inclusive of suppliers and outsourced elements (EASHW, 2004); CS is the aim of businesses to focus on social and environmental concerns that centre on the three 'Ps': people (social), planet (environmental) and profit (economic) (EASHW, 2004).



**Figure 7: The Business in the Community (BITC) Corporate Responsibility Index (Sowden and Sinha, 2005, p. 11)**

The linkages shown in Figure 7 are illustrated in the literature. One study found that a management practice of a quality standard, ISO 9000, could lead to better traffic safety performance. The authors concluded that management practices could mediate between financial performance and social performance. Hence, organisations with better financial results have a higher tendency to implement management practices that lead to better social performance. The same management practices have an effect on financial performance, which suggests that organisations can doubly benefit from implementing management practices such as ISO 9000 (Naveh and Marcus, 2007).

The integration of OSH into corporate governance has been promoted at the national level. The Health and Safety Executive (UK; HSE, 2001) proposed five key points that directors should pay attention to in order to improve OSH within their organisations:

- acceptance by the board of its role in safety & health leadership;
- acceptance by individual board members of their role;
- the health and safety implications of all board decisions;
- engaging the workforce in safety & health matters;
- appointing a board health and safety 'champion' – a nominated safety & health director who will take the lead in ensuring that the board's safety & health responsibilities are properly discharged.

The HSE has also made available to companies a Corporate Health and Safety Performance Index.<sup>23</sup> The steps outlined in this index should help management to develop a more focused approach to safety and health. Other information on CSR can be obtained from the BITC's website<sup>24</sup> and the European Commission.<sup>25</sup>

23 Corporate Health and Safety Performance Index, <http://www.chaspi.info-exchange.com/>

24 <http://www.bitc.org.uk>

25 [http://www.bsdglobal.com/issues/eu\\_green\\_paper.asp](http://www.bsdglobal.com/issues/eu_green_paper.asp)



**Table 11: Seven best-practice principles for OSH governance (Boardman and Lyon, 2006, p. 39)****1 Director competence**

Directors should have a clear understanding of the key OSH issues for their business and continuously develop their skills and knowledge.

**2 Director roles and responsibilities**

Directors should understand their legal responsibilities and their role in governing OSH matters for their business. Their roles should be supported by formal individual terms of reference, covering as a minimum setting OSH policy and strategy development, setting standards, performance monitoring and internal control.

At least one nominated director (who could be the Chairman or preferably one of the independent non-executive directors, where they exist) should have the additional role of overseeing and challenging the OSH governance process.

**3 Culture, standards & values**

The board of directors should take ownership of key OSH issues and be ambassadors for good OSH performance within the business, upholding core values and standards. They should set the right tone at the top and establish an open culture across the organisation with a high level of communication both internally and externally on OSH issues.

**4 Strategic implications**

The board should be responsible for driving the OSH agenda, understanding the risks and opportunities associated with OSH matters and any market pressures that might compromise values and standards, and ultimately establish a strategy to respond.

**5 Performance management (see also Section 2.2.2)**

The board should set out the key objectives and targets for OSH management and create an incentive structure for senior executives which drives good OSH performance, balancing both leading and lagging indicators and capturing both tangible and intangible factors. Non-executives (through the Remuneration Committee, where one exists) should be involved in establishing the appropriate incentive schemes.

**6 Internal controls**

The board should ensure that OSH risks are managed and controlled adequately and that a framework is established to ensure compliance with the core standards. It is important that the governance structures enable management systems, actions and levels of performance to be challenged. This process should utilise, where possible, existing internal control and audit structures and be reviewed by the audit committee.

**7 Organisational structures**

The board should integrate the OSH governance process into the main corporate governance structures within the business, together with the activities of the main board and its subcommittees, including risk, remuneration and audit. In some cases, the creation of an additional board sub-committee to consider OSH (and/or risk/Corporate Responsibility) may be relevant.





The usefulness of the principles listed in Table 11 is applicable also to small and medium sized enterprises (SMEs; Boardman and Lyon, 2006). This is relevant as the concept of CSR transcends size of organisation (EASHW, 2004; EC, 2001).

However, CSR has not been without its critics. For example, the usefulness of CSR in the business sector has been questioned as the corporate performance in this area has tended not to match the corporate rhetoric in that businesses have not been seen to benefit either business-wise or performance-wise when engaging in such activities (Byron and Byron, 1982; Walton, 2002).

### 2.3.2. Organisational culture and OSH

Culture, whether at the societal, organisational or individual levels, is essential in advancing or hindering change. A good culture without a management system is better than a superbly documented system that no one uses (BSI, 2003). However, unless the influence of culture is acknowledged as a contributing factor to change, then the linkages with other factors will not be realised. For example, there needs to be a link between organisational culture and safety culture (de Boer and van Drunen, 2003; Glendon and Stanton, 2000). However, the problems associated with linking corporate culture, which in turn determines organisational culture, and safety culture within an organisation have been highlighted (Höpfl, 1994). Höpfl concluded that unless the underlying concerns of both cultures are addressed then the two cultures would remain disparate. To further compound the issue, at present safety tends to be seen as an organisational priority rather than a value (Earnest, 2000). Earnest proposes that safety can be converted to a value through leadership, education, performance measurement and approach validation. These steps are more achievable if individuals are cognisant of the culture of the organisation.

This cultural awareness is particularly crucial as efficiency depends on the company's sense of corporate responsibility, which in turn is affected by its culture. For example, goods or services produced in a hasty manner are often of low quality, especially in service-based organisations. It is up to the management to define the level of quality that is acceptable. In some other sectors haste is a direct result of a poor safety culture; again, it is the job of management to ensure that there are enough resources to comply fully with safety (and quality) regulations. Unfortunately, this type of careless culture is often perpetuated over time and can pose a long-term risk. On the other hand, major accidents are often found to be caused by minor events or circumstances that cumulatively result in hazards that can affect even the most cautious and experienced employees. The risks associated with the construction industry, particularly in the case of temporary employees, e.g. unfamiliar places, unfamiliar equipment, irregular logistics of other suppliers, loose wires crossing pathways, are well-known examples. But in knowledge-intensive sectors such as health care or the aviation industry, rapid change and high turnover of staff can also bring about risks related to inadequate information transfer.

The following processes and factors should assist with integrating OSH into the culture of organisations. These suggestions may need to be adjusted to fit the ways in which change is implemented within particular organisations.

#### *Leadership and OSH*

The human element is key to creating a work environment that has an inherent focus on OSH. While researchers have acknowledged that effective safety leadership from senior management is essential to an organisation, as it indirectly supports the use of resources and reduces conflict with other organisational priorities (Wright et al., 2003), the type of leadership is more important in generating further benefits. For example, research has shown that more positive and proactive styles of leadership such as transformational or constructive leadership are able to influence safety and health behaviour within organisations (see Zohar, 2002). Additionally, management commitment to OSH can influence behaviours positively (Kincaid, 2002; Michael et al., 2005; O'Toole, 2002), especially when a participatory approach is in place (Simard and Marchand, 1997). Leadership on the whole can assist the safety process (Beaumont, 2000; Dawson, 1995; Topf, 2000), especially when demonstrable aspects of a commitment to OSH are displayed (Yates et al., 2005).



Other elements include the link between trust and workplace culture, as trust is the foundation on which culture develops, and so without trust the safety and health process could be undermined (Dawson, 2002). Other researchers have acknowledged the link between trust and maintaining an effective safety culture (see Rao, 2007).

### *OSH professionals*

According to Quinlan and Mayhew (2001), effective OSH management requires a control or command structure in the organisation that enables a clear-cut allocation of responsibilities to various levels of management and sections of the workforce/workplace and also enables management to fully govern its work processes.

Researchers have acknowledged that the mindset of senior management needs to change so that OSH is given equal strategic importance to other organisational issues. Toffel and Birkner (2002), for example, proposed that safety and health risk decisions should be made using the probabilistic processes employed in financial decision-making, which would be familiar and recognisable to business managers (see also Section 2.2.2.2, for example Business Excellence Models, Six Sigma (Safety) and Balanced Scorecard).

One way for senior management to gain such a perspective is for OSH professionals (safety advisers/managers) to lead the change (Swuste and Arnoldy, 2003). In this respect, there is a need for OSH professionals to understand a company's vision, strategy and value chain in order to develop an integrated OSH structure (Birkner and Birkner, 1999). They need to think and present information in the language of managers, adopting the financial tools and terminology used by managers to enhance effective communication and assimilate safety and health objectives into mainstream business plans (Deacon, 1998). Gregory et al. (2002) note, for example, that occupational health nurses should be part of the management team within organisations, and should use their positions to transfer information on the value of occupational health services to the wider team, through participating in the budget, linking occupational health goals with the broader strategic organisational goals and using cost-benefit analyses to communicate value.

Deacon (1998) suggested that to gain the attention of safety management OSH professionals should:

- work out the economic cost to the company of ignoring safety and health problems;
- cultivate a strong working relationship with individual senior managers;
- think strategically;
- present clear, concise and succinct business cases.

### *Communication on OSH*

The Health and Safety Executive (HSE, 1997) has documented steps that will help organisations manage their safety and health more successfully and provide information on:

- developing effective OSH policies;
- how to organise OSH management within the enterprise;
- implementing policy, setting strategy and setting objectives and targets;
- measuring OSH performance;
- auditing and reviewing performance.

More specifically, the HSE report (HSE, 1997) suggests that managers can communicate to employees in three main ways, listed in Table 12.



**Table 12: Three main ways in which management and employees can communicate (HSE, 1997)**

<b>1 Through visible behaviour</b>
Managers can easily highlight the importance of OSH;
Employees can recognise those issues that senior managers regard as important and will adapt their own behaviour accordingly;
The negative behaviour of managers can undermine the OSH culture of the organisation;
Visible behaviours of managers to show their commitment to OSH can include: <ul style="list-style-type: none"> <li>taking regular health and safety tours;</li> <li>regular attendance of health and safety committees;</li> <li>active involvement in investigations of accidents, incidents and ill health.</li> </ul>
<b>2 By using written communication</b>
OSH policy statements;
Statements concerning OSH roles and responsibilities;
Performance standards;
Disseminating findings from risk assessments;
Risk control information and practice.
<b>3 Face-to-face discussions</b>
These, when held between employees and managers enable the employees to make a personal contribution and feel involved in the health and safety of the organisation.
Safety tours provide an opportunity for employees to talk to managers.
Other discussion opportunities can include: <ul style="list-style-type: none"> <li>during planned meetings or briefings from which information is cascaded through the workforce;</li> <li>the inclusion of OSH issues on the agenda of management meetings;</li> <li>discussing OSH issues as the first item also helps to show managers' commitment to safety;</li> <li>through regular 'toolbox talks' where team leaders/supervisors can discuss OSH issues, remind workers of safe ways of working, and provide opportunities for employees to raise safety issues and suggest ways of improving OSH.</li> </ul>

### **Budgets for OSH**

OSH as a process tends to be viewed more in legal terms than in financial terms. In view of this, very few organisations have a separate budget for safety and health (Mearns and Håvold, 2003; Smallman and John, 2001), which may work to reduce its visibility and ability to function within an organisation.

Organisations may appreciate the need for an individual budget if they understand the direct and indirect costs associated with OSH, and this could be accomplished through a cost-benefit analysis. Research has shown that once organisations accept the need for a cost-benefit analysis the information gained from this type of assessment is useful in implementing different methods of improving productivity (Rydlewska-Liszkowska, 1998). Other research has highlighted that businesses with separate budgets, rather than those with inclusive ones, were more likely to agree that they experienced benefits to the organisation in respect of a reduction in labour turnover, staff stress and sickness absence, and an increase in productivity, improved staff morale and fewer compensation claims (Gervais et al., 2007).



### Other factors

The use of both high-profile events, such as a Company Day, and lower-profile events such as giving acknowledgements for safe work practices may assist in incorporating safety into the corporate culture (Toomey, 2003). Rasmussen (1997) mentioned however that safety culture campaigns need to be held frequently, as they mostly lead to temporary improvements rather than lasting results. It is also important to note that incorporating OSH into management may not necessarily improve the safety process and mindset within an organisation. The attitude of the employees is also of vital importance. Employees who have control over their job and work within a learning environment are able to function better, resulting in improved occupational health (Mikkelsen and Saksvik, 1999). Another process that can benefit the organisation is through organisational learning that can be obtained from the analysis of safety incidents (Blanco et al., 1996). Additionally, Behm and associates (2004) proposed that OSH can be integrated into the culture of an organisation through linkages between business and accounting and OSH.

### 2.3.3. Organisational learning and OSH

The ASET model (Atmosphere-Systems-Exposure-Targets) was presented in the introduction to this literature review (see Figure 1). This link between culture, systems, exposures and injury supports the idea that OSH issues need to be resolved 'upstream' (by cultural efforts and technical and organisational design) rather than 'downstream' (through, e.g., Behavioural Safety) (Shaw and Blewett, 2000). Effort needs to be put into examining the atmosphere or culture of the organisation and the systems which arise from it. Upstream factors are predictive of downstream events and can help control them.

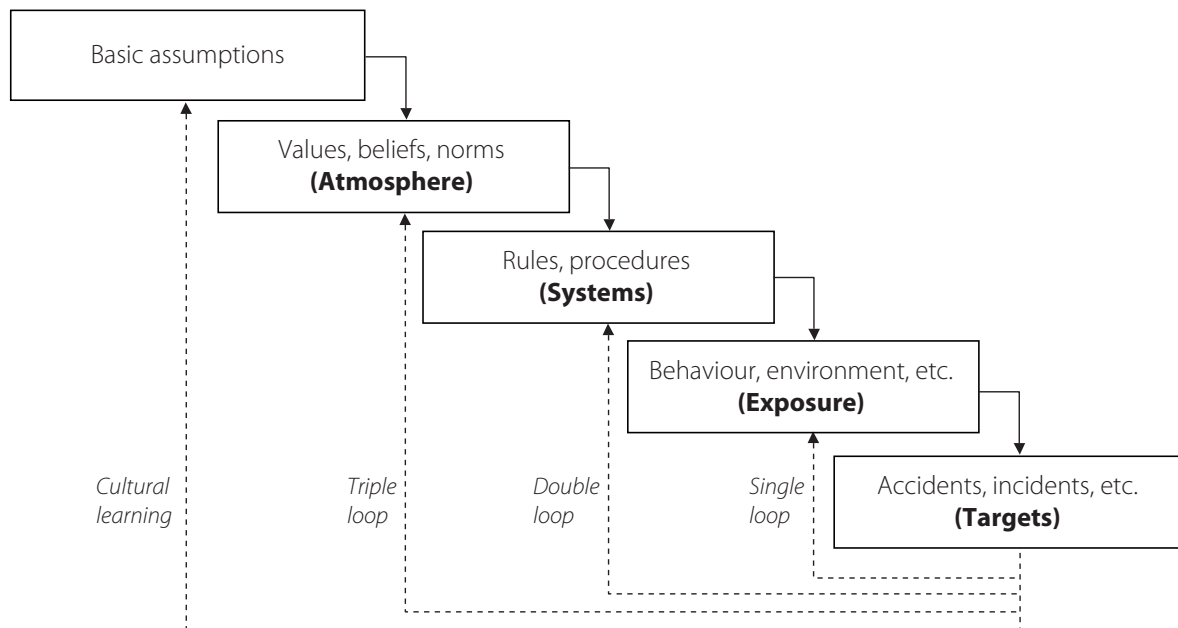
According to Zwetsloot and associates (2006), traditional safety strategies (i.e. those aimed at controlling technological hazards and protecting people from these hazards) seem to be less and less effective within the complex and continuously changing world of work. Demographic changes as well as changes in work organisation and production methods lead to new types of occupational risks (see for example also EASHW, 2002, 2005). As new and emerging OSH-related risks arise, the need for a new OSH paradigm becomes more pressing. Zwetsloot and associates believe that responding and anticipating to complex changes entails a 'collective learning process' of the people most involved – the 'key agents'.<sup>26</sup>

Based on their investigation of incorporating OSH into core business, Gort and associates (2006) suggest that the way 'organisational learning'<sup>27</sup> regarding OSH is organised in companies, is often the critical factor in achieving adequate OSH performance; the impact of learning thus seemed to be greater than the impact of 'structure' and 'culture' (see also case study 4.4.4. and Figure 2). They conclude that the three aspects (structure, culture and learning) should in any case be addressed in a balanced and explicit way. Figure 8 represents a model which is a blending of the ASET model and learning model by Gort et al. (2006).

<sup>26</sup> Key agents are described as individuals or groups that are likely to be part of the problem or of the potential solution (employer and/or employees) (Zwetsloot et al., 2006).

<sup>27</sup> Organisational learning can be defined as the process by which an organisation acquires the knowledge necessary to survive and compete in its environment. This includes the development of knowledge and understanding, shared among organisational employees, that leads to effective action (Source: <http://www.mountainquestinstitute.com/definitions.htm>).



**Figure 8: Learning loops for OSH improvement (based on Shaw and Blewett, 2000 and Gort et al., 2006)**

The model distinguishes four ‘feedback loops’ (‘learning loops’) with regard to OSH: ‘single loop learning’, ‘double loop learning’, ‘triple loop learning’ and ‘cultural learning’. The model can assess the degree to which the learning process is established in an organisation. An organisation can improve its OSH performances by trying to rise as high as possible in this learning model. These four loops correspond to some extent with the four stages of maturity in organisational OSH management (ad hoc, systematic, system and proactive stage (see Section 2.2); Zwetsloot, 2000). Gort and associates are convinced that triple loop and cultural learning should become part of the OSH management approach in order to bring about cultural change and ensure proactive safety and health behaviour in an organisation.

## 2.4. CONCLUSIONS

Organisations approach OSH in different ways – modes of organisational management of OSH can range from the reactive to the over-systematic to proactive and even generative. Whereas in more traditional OSH programmes problems are dealt with in an ad hoc way, systematic OSH management and the use and implementation of OSH management systems makes organisations able to approach OSH in a more structured, less reactive manner.

The application of OSH management systems (and OSH management system standards) does not, however, guarantee that OSH-related issues are actually being incorporated into the decision-making processes that determine the major aspects of working conditions (Frick et al., 2000, p. 9). Gort et al. (2006) believe that the more closely OSH management becomes linked to the core activities of an organisation, the better OSH performance will be in times of organisational change – OSH is usually not the major concern of management during changes due to e.g. economic problems, mergers, downsizing or rapid technological innovation.



Although there is an overall consensus in research that management of OSH should be seen as part of the overall management structure and not as a separate business process (Cummings, 2006), Nielsen (2000) casts doubt on whether striving for an OSH management system, fully integrated in the organisation's business processes, will always be as effective as believed. The problem is that OSH tends to receive lower priority than other issues: in many cases, matters perceived as urgent are dealt with first and production issues are usually much more pressing. Nielsen stresses in this regard that political games are played in every organisation and that OSH should be considered as a political agenda that has to be promoted, as it sometimes competes against other agendas (such as production). Promoting OSH as a political agenda means discussing and attempting to resolve conflicts, and striving for compromises.

As a consequence, in order to achieve positive results in the field of OSH, much more is required than installing and focusing on a well thought-out *structure*, i.e. an OSH management system possibly integrated in the other existing management programmes and systems (quality, environmental, etc.). Organisations also need to address cultural and political aspects of the workplace (Hale and Hovden, 1998). Fostering a *culture* of continuous improvement and aiming for the involvement of all employees, is believed to have effect on OSH performance.

The implementation of a management system will not create such a culture, but it can help strengthen the culture, if it is already in existence (Jacobsson, 2002). The embedding of OSH into the organisational culture depends on overall governance, including factors such as corporate social responsibility, social accountability and corporate sustainability.

Cultural change can be forced on an organisation, in which case it may not necessarily work, or it can be allowed to develop within the organisation. An awareness of 'best practice' will encourage the culture to change naturally and adapt so it changes as the organisation changes. An explicitly demonstrated commitment by the management, properly organised seminars, a proper flow of information and mutual trust between employees and senior executives as well as employees' commitment to monitoring the work environment are conducive to an effective safety and health culture that will have a much greater impact than even the most perfect formal structures that are not familiar to or accepted by people. A management system which does not motivate all employees and change the OSH culture will have little impact on improving the OSH standard in the enterprise, and its effectiveness and improvement potential will be questionable.

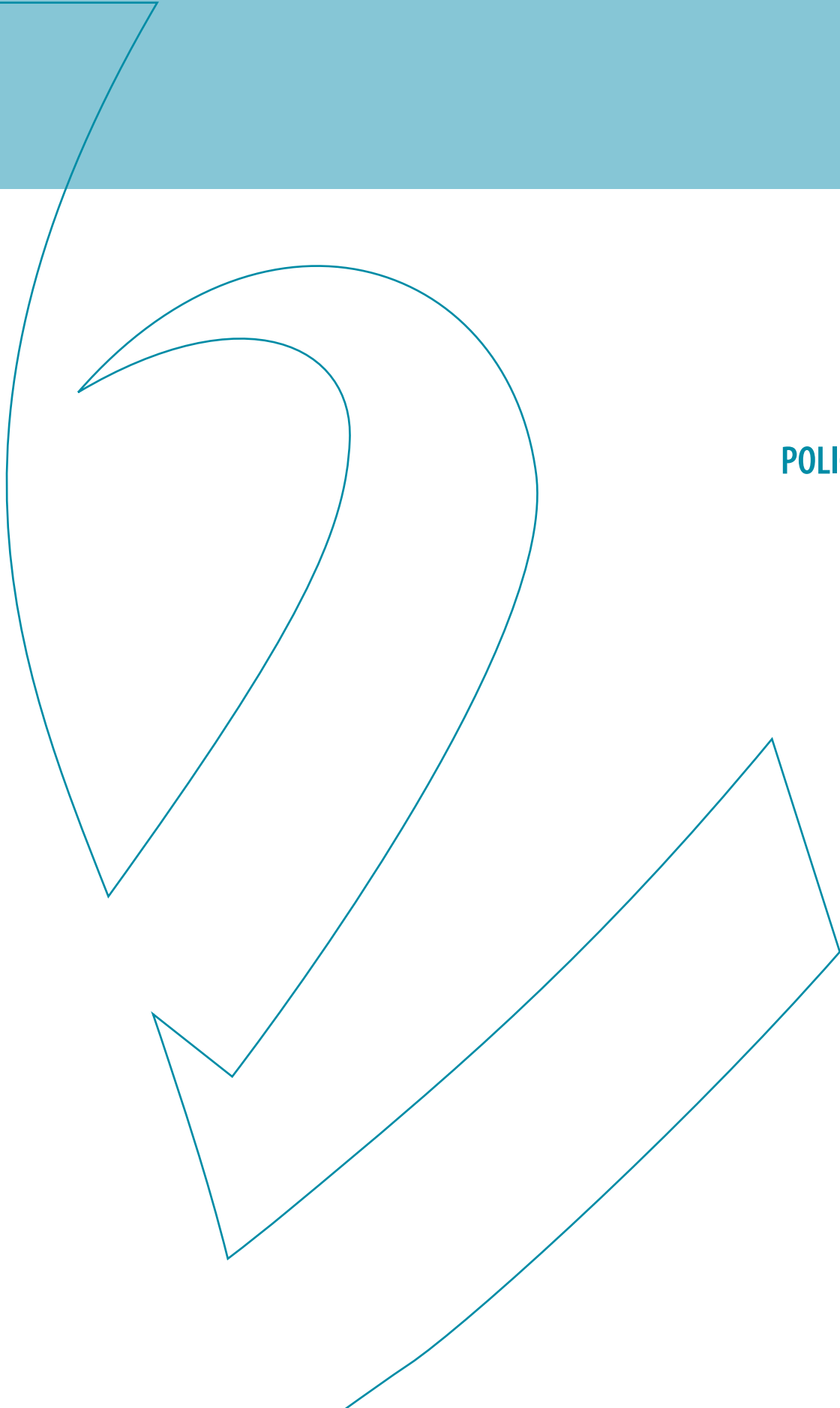
Hence, the structural as well as cultural aspects are important when incorporating OSH into the management procedures and processes of an organisation. OSH management systems should be viewed as not only as 'functional systems' but also as 'social systems', where people can play an effective role (Zwetsloot, 2000). Here, organisational learning processes are a critical factor. They should become part of the OSH management approach in order to bring about cultural change and encourage a proactive attitude to safety and health in an organisation.

The results from this literature review confirm that there is a great deal of interest in, and research on, the topics of managing OSH, and the incorporation of OSH into the overall business. However, descriptions and examples of – especially voluntary – OSH management systems show that the focus of these systems is mainly on safety (the prevention of accidents) and not on the prevention of work-related negative health effects, despite the fact that they officially claim to manage both (safety and health) (Frick, 2007). In particular, there appear to be few OSH management system practices focusing on organisational risks and psychosocial health effects (e.g. violence and conflict at the workplace, problems of shiftwork or long working hours, etc.). Precarious employment (temporary and part-time employment, telework, etc.) and employment in small and medium sized enterprises can be regarded as two important fields which present major challenges to the management of OSH (see e.g. Bluff, 2003). Another challenge for research is to further investigate the effectiveness and quality of OSH management strategies/processes and how these match with the requirements of the Framework Directive. Research into the effectiveness of OSH management is still in its infancy and has to deal with several methodological difficulties (Bluff, 2003, p. 46). With regard to OSH management and its learning aspect, there is a challenge to better understand the dynamics and processes of collectively creating and learning OSH (Zwetsloot, 2006).



# 3.

## POLICY OVERVIEW



# 3.1. INTRODUCTION

Sound OSH management, integrated into the overall management of the organisation, is one of the main success factors influencing improvements in workers' safety and health. This has been confirmed by numerous research studies and by the experience of companies which are aiming to improve their OSH performance. Examples are provided in the sections 2 and 4 of this report. The formulation, implementation and promotion of an integrated, proactive approach to OSH management in organisations is supported by policies and practices established at international, European and national levels including strategies, legal provisions, standards, guidelines, programmes and campaigns initiated and undertaken by various stakeholders such as international organisations, EU bodies, governments, employer and employee associations, labour inspectorates, insurance institutions, etc.

The aim of this section is to present the policies and practices related to promoting and supporting the integration of OSH issues (including OSH risk assessment) into the overall management and business processes.

Section 3.2 presents policies and practices established at the international and EU level. In the international policies, such as the ILO Global Strategy, the Promotional Framework for Occupational Safety and Health Convention and Recommendation, and also in the EU OSH strategies, the topics related to the integration of OSH issues into the overall management have been placed in a broader context. The information included in this report focuses on the elements of these strategies that relate to integrated OSH management. As the most important European policy for OSH management in companies of all the EU countries, the Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (the Framework Directive) is presented.

The implementation of these policies is supported by the practices presented in this section, including:

- *the ILO-OSH 2001 Guidelines on OSH Management Systems* – an important instrument implemented worldwide to support the implementation of an integrated, systematic approach to OSH management at national as well as at company level;
- *the Guidance on risk assessment at work*, developed by the European Commission with the aim of providing information on practical aspects of implementing the risk assessment requirements according to the Framework Directive;
- the European Network for Workplace Health Promotion, as an example of networking that aims to promote the integration of health management into the overall management of companies;
- the Responsible Care Programme and guide, as an important example of a sectoral approach in the chemical industry, which is also implemented in EU countries.

The other instruments used to promote and support the integration of OSH management into overall business management are standards with requirements or guidelines for OSH management systems set up at international and national levels. Information on the issues related to standardisation and voluntary certification of OSH management can also be found in Section 3.2.

Section 3.3 includes examples of programmes focused on promoting and supporting the implementation of systematic OSH management. Programmes that focused on developing and promoting tools supporting the implementation of OSH management are presented in Section 3.4. Some examples of national programmes directed at the implementation of systematic OSH management in SMEs are provided in Section 3.5. These cases emphasise the importance of supporting SMEs in OSH management. More information on effective assistance for SMEs can be found at on the Agency's website ([http://sme.osha.europa.eu/effective\\_assistance](http://sme.osha.europa.eu/effective_assistance)). Information on sector-specific programmes is provided in Section 3.6.





# 3.2. INTERNATIONAL AND EUROPEAN POLICIES AND PRACTICES RELATED TO INTEGRATING OSH INTO OVERALL BUSINESS MANAGEMENT

## 3.2.1. ILO policies

### *C187 Promotional Framework for Occupational Safety and Health Convention*

### *R197 Promotional Framework for Occupational Safety and Health Recommendation*

In June 2006 the 95th annual Conference of the ILO adopted a new Promotional Framework Convention on Occupational Safety and Health and its accompanying Recommendation. The Convention promotes the continuous improvement of OSH to prevent occupational injuries, diseases and deaths, by the development, in consultation with the most representative organisations of employers and workers, of a national policy, national system and national programme. The conventions express, among other things, the need to promote basic principles of risk management and to develop a national preventative safety and health culture. Cooperation between management, workers and their representatives has been shown to be one of the essential elements of workplace-related prevention measures at the enterprise level. To achieve this cooperation, improvements in OSH management should be promoted and implemented.

The importance of OSH management has been underlined in the Promotional Framework for Occupational Safety and Health Recommendation. According to the Recommendation it is necessary to promote a management systems approach to OSH, such as the approach set out in the *Guidelines on occupational safety and health management systems* (ILO, 2001).

*The full text of the Convention and Recommendation is available at:*

<http://www.oit.org/public/english/protection/safework/promoframe.htm>

### *ILO Global Strategy on Occupational Safety and Health*

The ILO Global Strategy on Occupational Health and Safety was established in June 2003. The strategy express the need for integrated action to better connect ILO standards with other means of action such as advocacy, awareness-raising, knowledge development, management, information dissemination and technical cooperation in order to maximise the impact of ILO instruments. The fundamental pillars of the strategy include:

- The building and maintenance of a national preventative safety and health culture in which the right to a safe and healthy working environment is respected at all levels, where governments, employers and workers actively participate in securing a safe and healthy working environment through a system of defined rights, responsibilities and duties, and where the principle of prevention is accorded the highest priority.
- The introduction of a systems approach to OSH management at national as well as at enterprise level.

Building and maintaining a preventative safety and health culture is a fundamental basis for improving OSH performance in the long term. It is connected with the necessity to increase general awareness, knowledge and understanding of the concepts of hazards and risks and how they may be prevented or controlled. The



strategy indicates that the most effective measures for achieving strong and sustained preventative safety and health culture at both the national and enterprise levels are actions focused on promoting the concept of 'sound management of safety and health at work'.

The ILO global OSH strategy advocates the application of a systems approach to:

- the management of national OSH systems, and
- OSH management at the enterprise level.

The strategy regards the *ILO Guidelines on OSH Management Systems* (ILO, 2001) as the guiding document, establishing basic concepts and a methodology for OSH management.

*The full text of the strategy is available at:*

[http://www.ilo.org/public/english/protection/safework/globstrat\\_e.pdf](http://www.ilo.org/public/english/protection/safework/globstrat_e.pdf)

### ***ILO Guidelines on OSH Management Systems (ILO-OSH 2001)***

In 1998 the Occupational Safety and Health Branch of the ILO (now SafeWork), in cooperation with the International Occupational Hygiene Association (IOHA), began developing international OSH Management Systems guidelines. In December 2001 the *ILO Guidelines on OSH Management Systems* (ILO, 2001) were published. These guidelines reflect ILO values such as tripartism and relevant international standards including the Occupational Safety and Health Convention, 1981 (No. 155) (ILO, 1981) and the Occupational Health Services Convention, 1985 (No. 161) (ILO, 1985).

The Guidelines are intended to be used at national as well as enterprise level by all those who have responsibility for OSH management. They are not legally binding and are not intended to replace national laws, regulations or accepted standards. Their application in enterprises does not require certification but it does not exclude certification as a means of recognition of good practice if this is the wish of the country implementing the Guidelines.

At national level the Guidelines support:

- the establishment of a national framework for OSH management systems, preferably supported by national laws and regulations;
- the development of voluntary arrangements to strengthen compliance with regulations and standards leading to continual improvement in OSH performance; and
- the development of both national and tailored guidelines on OSH management systems to respond appropriately to the real needs of an enterprise, taking into account its size and the nature of its activities.

According to the Guidelines national policy for the establishment and promotion of OSH management systems in enterprises should be established by a competent national institution, in consultation with the most representative organisations of employers and workers, and with other bodies. The national policy should consider, among other things:

- promoting the implementation and integration of OSH management systems as part of overall management;
- facilitating and improve voluntary arrangements for the systematic identification, planning, implementation and improvement of OSH activities;
- promoting the participation of workers and their representatives;
- implementing continual improvement while avoiding unnecessary bureaucracy, administration and costs;
- supporting arrangements for OSH management systems by labour inspectorates, OSH services and other services;



- evaluating the effectiveness of the national policy and the effectiveness of OSH management systems and practice;
- ensuring that the same level of safety and health requirements applies to contractors and their workers as to the workers employed directly by the enterprise, including temporary workers.

The national policy should establish general principles and procedures to promote the implementation and integration of OSH management systems as part of the overall management of an enterprise.

On the basis of the model and the principles of OSH management provided in the Guidelines, it is recommended that countries develop:

- national guidelines on the voluntary application and systematic implementation of OSH management systems; and
- tailored guidelines, containing the generic elements of the national guidelines and reflecting the specific conditions and needs of enterprises, taking into account particularly their size and the types of hazards and degree of risks.

The ILO Guidelines encourage the integration of OSH management systems with other management systems and state that OSH should be an integral part of business management. At the enterprise level the ILO Guidelines define the model OSH management system (Figure 9), which includes the following main elements:

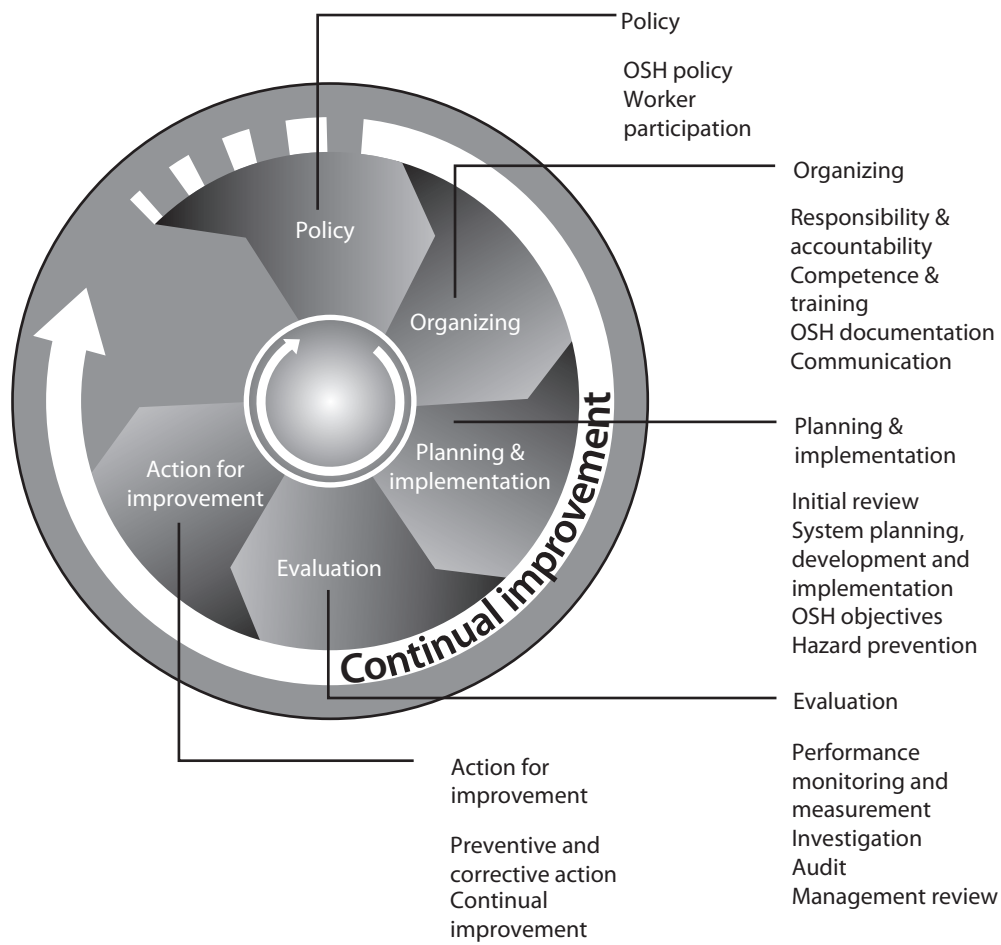
- Policy, including OSH policy and workers' participation;
- Organising, which consists of responsibility and accountability to implement OSH management, necessary competence and training, documentation of OSH management system and effective communication;
- Planning and implementation, which includes initial review, system planning, development and implementation, OSH objectives setting, hazard prevention (prevention and control measures, management of change, emergency prevention, preparedness and response), procurement and contracting;
- Evaluation, including performance monitoring and measurement, investigation of work-related injuries, ill health, diseases and incidents and their impact on safety and health performance, audit and management review;
- Action for improvement consisting of preventive and corrective action and continual improvement.

The unique, international model presented in the Guidelines is compatible with other management system standards and guides.

The Guidelines have been translated into several languages including: Arabic, Bulgarian, English, French, Georgian, German, Malay, Polish, Russian and Spanish. They have been adopted in Brazil, Israel, Argentina, France (AFNOR's resolution to promote the Guidelines) and Ireland. In some countries, for example Germany or Poland, national guidelines on OSH management in enterprises have been developed on the basis of the Guidelines. The tailored OSH management system guidelines have been developed on this basis for the construction and manufacturing sectors in Japan.



**Figure 9: Model of OSH management system adopted in the ILO Guidelines**



The full text of ILO Guidelines on OSH Management Systems (ILO-OSH 2001) is available at:

<http://www.ilo.org/public/english/protection/safework/managmnt/guide.htm>

### 3.2.2. International guidance for the chemical industry: Responsible Care Programme

Responsible Care (RC) is the chemical industry's global initiative to continuously improve the health and safety and environmental performance of chemical companies. Launched in Canada in 1985, the RC programme is coordinated by the International Council of Chemical Associations (ICCA) and currently implemented in 52 countries. The European Chemical Industry Council (Cefic) coordinates and promotes the RC programme of 27 European associations of the chemical industry.

More information about the global and regional RC programmes can be found at: [www.responsiblecare.org](http://www.responsiblecare.org).



The Global RC core principles commit companies and national associations to work together to:

- Continuously improve the environmental, health and safety knowledge and performance of the chemical industry technologies, processes and products over their life cycles so as to avoid harm to people and the environment.
- Use resources efficiently and minimise waste.
- Report openly on performance, achievements and shortcomings.
- Listen, engage and work with people to understand and address their concerns and expectations.
- Cooperate with governments and organisations in the development and implementation of effective regulations and standards, and to meet or go beyond them.
- Provide help and advice to foster the responsible management of chemicals by all those who manage and use them along the product chain.

Each RC company must:

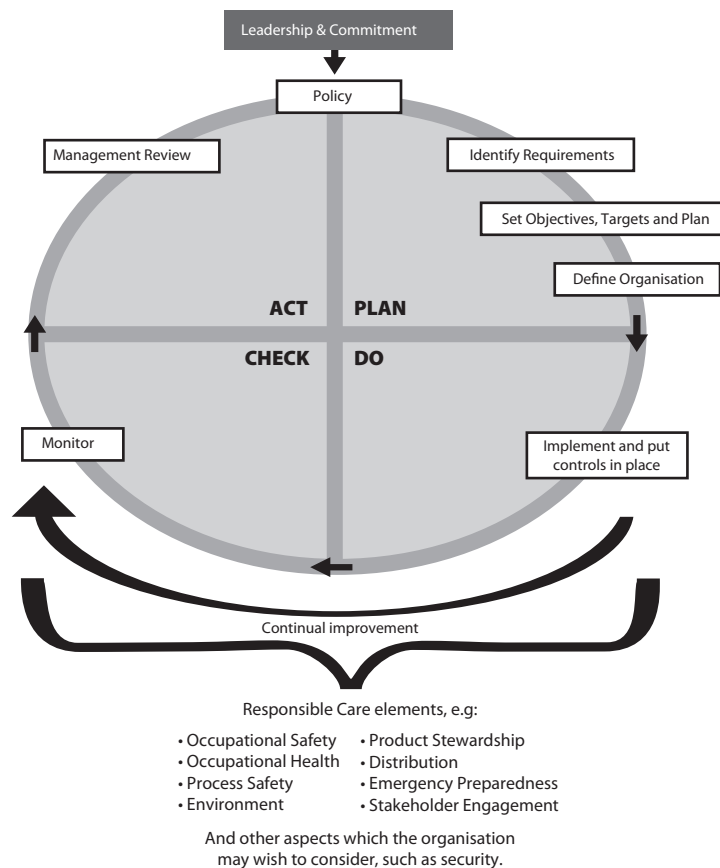
- Demonstrate top-level commitment through the CEO, or equivalent, signing the Responsible Care Guiding Principles of the national association in that country.
- Follow codes and guidance relevant to the national Responsible Care programme.
- Provide indicators of performance as required by the national association.
- Verify that its Management System is consistent with the RC Management System Framework.

As part of the European RC programme, European Associations are required to meet the requirements of the Pan-European RC management framework developed by a working group set up by the Responsible Care Core Group under the direction of the Cefic Board. This framework is based on the Deming Cycle of 'Plan, Do, Check and Act' and takes into account the requirements of existing recognised management systems standards such as ISO 14001, OHSAS 18001, EMAS and ISO 9001 which are used throughout the industry. It defines the minimum requirements for RC that should be considered by the company or site; it is related to a management process and does not state specific performance criteria. This approach provides flexibility to allow national or regional differences to be taken into account.

The framework is intended to be applied to current, and any future, key elements of the RC initiative, e.g. occupational health, occupational and process safety, environment, product stewardship, emergency preparedness, distribution, stakeholder engagement. A schematic of the key framework phases which RC organisations shall address through their management system is shown in Figure 10.



Figure 10: Responsible Care Programme – Management framework phases



The full text of the RC management framework and guidance on its use is available at:

<http://www.cefic.be/files/Publications/RC-Management%20Framework%20and%20Guidance%20on%20Use.pdf>

### 3.2.3. European policies

#### *Improving quality and productivity at work: Community Strategy 2007–2012 on health and safety at work*

The main objective of the Community Strategy 2007–2012 on health and safety at work (European Commission, 2007) is to reduce the total incidence rate of accidents at work by 25%. It sets out a series of actions at European and national levels in the following main areas:

- improving and simplifying existing legislation and enhancing its implementation in practice through non-binding instruments such as exchange of good practice, awareness-raising campaigns and better information and training;
- defining and implementing national strategies adapted to the specific context of each Member State. These strategies should target the sectors and companies most affected and set national targets for reducing occupational accidents and illness;
- mainstreaming of health and safety at work in other national and European policy areas (education, public health, research) and finding new synergies;
- better identifying and assessing potential new risks through more research, exchange of knowledge and practical application of results.



The strategy underlines the need for better implementation of existing legislation. Improving OSH management in companies is necessary to achieve their aims.

At the same time the Strategy calls for increased efforts to promote OSH management and raise awareness of their importance. According to the Strategy:

- *Special attention should also be paid to the training of young entrepreneurs in occupational health and safety management and to training for workers to make them aware of the risks in the company and how to prevent and combat them.*
- *The European Agency will be called upon to develop sectoral awareness-raising campaigns targeted in particular at SMEs, and to promote the management of health and safety at work in enterprises through the exchange of experience and good practices aimed at specific sectors. The social partners are invited to draw up initiatives in the context of the sectoral social dialogue and to ensure that workers' representatives are given a greater coordinating role in the systematic management of occupational risks.*

The Strategy also indicates the need to provide economic incentives which, among others, support implementation of OSH management:

- *The development of awareness may also be reinforced, particularly in SMEs, by providing direct or indirect economic incentives for prevention measures. Such incentives could include a possible reduction in social contributions or insurance premiums depending on the investment made in improving the working environment and/or reducing accidents; economic aid for the introduction of health and safety management schemes; introduction of health and safety requirements into procedures for the award of public contracts.*

The full text of the Community Strategy 2007–2012 on health and safety at work is available at:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007DC0062:EN:NOT>

### ***Adapting to change in work and society: a new Community Strategy on health and safety at work 2002–2006***

The Community Strategy on health and safety at work 2002–2006 established in March 2002:

- *adopts a global approach to well-being at work, taking account of changes in the world of work and the emergence of new risks;*
- *regards a safe and healthy working environment as one of the essential components of the quality of work;*
- *is based on consolidating a culture of risk prevention, on combining a variety of political instruments – legislation, the social dialogue, progressive measures and best practices, corporate social responsibility, economic incentives and on building partnership; and*
- *points up the fact that an ambitious social policy has a positive influence on competitiveness.*

The strategy considers OSH as an integral part of a company's quality management:

- *At company level, 'non-quality' gives the firm a poor public image, vis-à-vis its workforce, clients, consumers and the public at large, which is becoming more and more sensitive to safety issues. In other words, having a healthy working environment adds to a firm's quality image, and steps taken to improve that environment form part of a general approach to 'quality management' and social responsibility, both of which have a beneficial effect on performance and competitiveness.*

The full text of the Community Strategy 2002–2006 on health and safety at work is available at:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2002:0118:FIN:EN:PDF>



***Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work***

The Directive 89/391/EEC – the Framework Directive – is the basic and the most important regulation influencing OSH management in all EU countries. According to the Directive the main aim of OSH management in enterprises is to ensure continuous improvement of the safety and health of workers. In order to achieve this aim the employer should manage health and safety taking into account general principles concerning prevention laid down in the directive. These principles include:

- *avoiding risks, evaluating the risks which cannot be avoided and combating the risks at source;*
- *adapting the work to the individual;*
- *adapting to technical progress;*
- *replacing the dangerous by the non-dangerous or less dangerous;*
- *developing a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors related to working conditions;*
- *giving collective protective measures priority over individual protective measures;*
- *giving appropriate instructions to the workers.*

In order to implement the basic principles of prevention effectively, a holistic and systematic approach to OSH management in enterprises is necessary.

Risk assessment should be the main tool used in the OSH management process. Employers are obliged to evaluate risks to the safety and health of workers and – following the evaluation – to take appropriate (technical and/or organisational) measures to assure an improvement in the level of workers' health and safety protection. The effectiveness of the measures should be monitored and the measures adapted to the changing conditions and technical progress. The introduction of the risk assessment obligation clearly indicates that the OSH management in enterprises should be proactive: all the hazards to workers' safety and health should be identified and risks arising from them eliminated or controlled in order to prevent occupational accidents and work-related diseases.

To use this tool effectively it is necessary to ensure consultation and participation of workers and their adequate health and safety training.

According to the Directive's provisions the preventive measures taken in enterprises must be integrated into all the activities of the undertaking and/or establishment, at all hierarchical levels (Article 6, point 3).

The Directive requires a systematic, integrated, proactive and participative approach to OSH management.

The Directive has been implemented in all EU countries. This means that the principles of OSH management resulting from the Directive apply to all types of enterprises and/or establishments in these countries. To support their implementation national policies (e.g. programmes, guidelines, etc.) have been developed in each country. Examples of these policies are presented in the following sections.

*The full text of the Directive is available at:*

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0391:EN:HTML>

In 2004 the report on the practical implementation of the provisions of the Health and Safety at Work Directives 89/391 (Framework) and its five individual directives was adopted by the European Commission. This report identified shortcomings in the application of Community legislation, noting in particular that:

- The tasks of risk assessment, documentation and supervision are not universally spread. At the same time, there are concerns about the incomplete and superficial nature of the execution of these tasks.





- In many companies there is a deficit in the organisational structures for the improvement of health and safety. Increasingly complex work processes and changes in working conditions create new risks, coexisting with the traditional ones, or changing types of hazards that call for OSH to form part of the overall management of enterprises.

*The full text of the Report is available at:*

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52004DC0062:EN:NOT>

Strengthening the implementation of EU legislation depends on the integration of OSH risk assessment into overall OSH management in enterprises.

### **Guidance on risk assessment at work**

In 1996 the Public Health and Safety at Work Directorate in Luxembourg published guidance on practical aspects of implementing risk assessment requirements according to the Framework Directive.

The guidance provides information on how to organise risk assessment and indicates that effective risk management should be integrated into the overall management of the enterprise. It is intended to be used by Member States in order to provide advice to employers, workers and other interested parties when they deal with the practical aspects of implementing the risk assessment requirements of the Framework Directive.

The guidance includes:

- Basic definitions related to risk assessment
- Key elements of risk assessment
- Methodology of risk assessment
- Actions resulting from risk assessment
- Organisation for risk assessment
- Selection of persons to make assessments
- Information needed for assessment
- Principles of recording, review and revisions of assessment.

Specific considerations are related to risk assessment at work in small and medium-sized enterprises and selection, involvement and use of external services as consultant health and safety specialists to make risk assessments.

The document describes strategies for identification of hazards and control of risks which are based on the consultation and participation of workers. According to the guidance risk assessment should be planned carefully in order to fulfil legal requirements. The action plan related to risk assessment should include provisions for:

- commissioning, organising and coordinating the assessment;
- appointing competent people to make the assessment;
- consulting workers' representatives on the appointment of those who will carry out the assessments;
- providing the necessary information, training, resources and support to assessors who are the employer's own employees;
- ensuring – if necessary – adequate coordination between people who carry out the assessments;
- involving management and encouraging participation of the workers;
- determining the arrangements to be made for reviewing and revising the risk assessment;
- ensuring that the preventive and protective measures are taken on the basis of risk assessment;
- monitoring the preventive and protective measures to ensure that their effectiveness is maintained; and
- informing workers and/or their representatives on the results of the assessment and on the measures introduced.



Source: *Guidance on risk assessment at work, European Commission, Directorate General V Employment, Industrial Relations and Social Affairs, Luxembourg 1996*

The full text of the Luxembourg guidance is available at:

<http://osha.europa.eu/topics/riskassessment/guidance.pdf>

### ***Developing networking on workplace health promotion in the EU***

The European Network for Workplace Health Promotion (WHP) is an informal network of national OSH institutes, public health, health promotion and statutory social insurance institutions. In a joint effort, all the members and partners aim to improve workplace health and well-being and to reduce the impact of work-related ill health on the European workforce.

ENWHP is a platform for all stakeholders interested in the improvement of workplace health and committed to working towards the vision and mission of the ENWHP: 'healthy employees in healthy organisations'. This vision is based on a broad and comprehensive perspective on health and includes a number of convictions, values and judgements which ENWHP members share with each other:

*'We are a network of national occupational health and safety institutes and public health institutions committed to developing and promoting good workplace health practice, which in turn contributes to sustainable economic and social development in Europe.'*

WHP involves:

- Having an organisational commitment to improving the health of the workforce
- Providing employees with appropriate information and establishing comprehensive communication strategies
- Involving employees in decision making processes
- Developing a working culture that is based on partnership
- Organising work tasks and processes so that they contribute to, rather than damage, health
- Implementing policies and practices which enhance employee health by making the healthy choices the easy choices
- Recognising that organisations have an impact on people and that this is not always conducive to their health and well-being.

The areas of activity for WHP include life-styles, ageing, corporate culture including staff leadership, staff development, work-life balance, mental health and stress, wellness, Corporate Social Responsibility (CSR), nutrition and health.

*Further information:*

ENWHP info kit containing the Luxembourg Declaration, fact sheets, briefing papers, exemplary models of good practice and additional information on WHP and the Network: [http://www.enwhp.org/fileadmin/downloads/press/ENWHP\\_Presskit\\_english\\_22112006.zip](http://www.enwhp.org/fileadmin/downloads/press/ENWHP_Presskit_english_22112006.zip)



### 3.2.4. Standardisation and certification of OSH management systems

Standardisation and certification of OSH management systems play an important role in supporting the development and improvement of systematic OSH management in companies. However, in view of the differences in methods and culture of OSH management between highly developed and developing regions (related to, among other things, differences in legal systems), the International Organisation for Standardisation (ISO) has decided not to develop standards related to OSH management. At the same time ISO encourages and supports the development of national standards for OSH management systems, and many of the national standards are adaptations of ILO guidelines.

To create an international basis for the certification of OSH management systems, a consortium of certification and standardisation institutions, both private and governmental, representing different countries and under the leadership of the British Standards Institution (BSI), has worked out an international specification for an OSH management system: OHSAS 18000. The OHSAS 18000 includes two documents: OHSAS 18001 and OHSAS 18002. OSH management systems models adopted within these documents are compatible with the ISO 9001 and ISO 14001 standards, enabling the easy integration of OSH management systems into quality and environmental management systems. These specifications, although not ISO standards, are being promoted in a number of countries, mainly for the certification of OSH management systems.

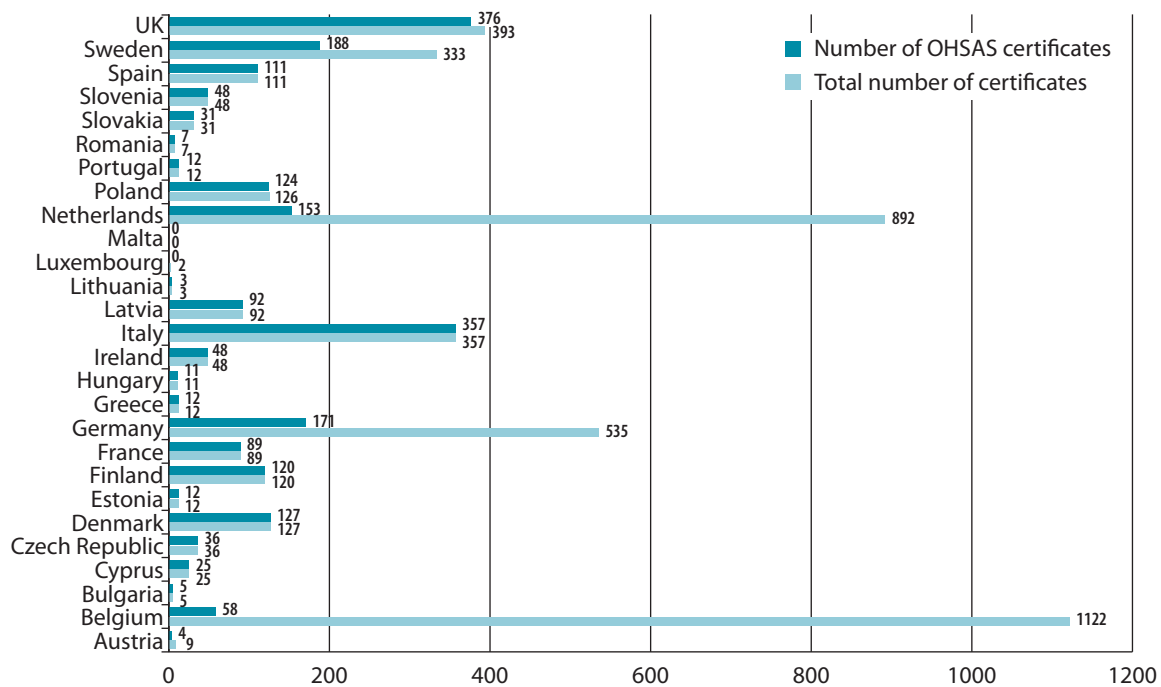
The model of the OSH management system in the OHSAS 18000 documents consists of the following elements:

- OHS policy
- Planning, including hazard identification, risk assessment and risk control, legal and other requirements and objectives
- OHS Management Programme(s) (to ensure that OSH objectives and the processes by which they are tracked are monitored, reviewed, updated and recorded as needed)
- Implementation and Operation, including structure and responsibility, training, awareness and competence, consultation and communication, documentation, document and data control, operational control, emergency preparedness and response
- Checking and Corrective Action including performance measurement and monitoring, accidents, incidents, non conformances, corrective and preventive action, records and audit
- Management Review.

According to the survey on standards and certificates conducted by the OHSAS Project Group there were 42 different guidance documents on OSH management systems available in 2004 in various countries. In the same year, the certification of OSH management systems occurred in 82 countries with the total number of certificates amounting to 14,019 of which 11,091 were OHSAS 18001 certificates. The number of OSH management system certificates within each of the EU countries is presented in Figure 11.



Figure 11: The number of certificates for OSH management systems in 2004 in the EU countries (source: OHSAS group survey)



The European Committee for Standardisation (CEN) has established a working group to develop a European standard on OSH management systems.

## 3.3. EXAMPLES OF NATIONAL PROGRAMMES PROMOTING AND SUPPORTING SYSTEMATIC OSH MANAGEMENT IN COMPANIES

### 3.3.1. Implementing Systematic Work Environment Management (Systematiskt arbetsmiljöarbete: SAM) in Sweden

In Sweden, provisions on Internal Control of the Working Environment came into force on 1 January 1993. Revised rules took effect on 1 March 1997. The new Provisions entered into force on 1 July 2001, revised on 18 July 2003. These Provisions have been given a different name, but the basic methodology of systematic occupational environmental management remains unaltered. The Provisions are issued by the Swedish Work Environment Authority and they apply to all employers. Companies with more than 10 employees are required to document their work environment policy as well as routines and tasks carried out within the working environment, and describe how Systematic Work Environment Management (SAM) has been further developed.

SAM means the work done by the employer to investigate, carry out and follow up activities in such a way that ill-health and accidents at work are prevented and a satisfactory working environment achieved. This includes particularly:



- Observing and taking account, in everyday work, of both psychological and social conditions and work environment issues of a physical nature.
- Taking decisions and measures, in everyday work, so that employees are not injured, do not fall ill and do not fare badly in any other way.
- Observing and taking account of all conditions in the work environment capable of affecting the employees' health and safety.

SAM has to be assessed by work environment inspectors on a 4-point scale, the purpose being to provide supporting documentation for the inspectors' follow-up of developments in the undertakings visited. SAM status can be rated during inspections when the employer's SAM is inspected in enough detail for the inspector to be able to assess the worksite's SAM.

The points on the SAM scale are:

- No SAM.
- SAM commenced.
- SAM viable.
- SAM viable and producing effects.

In order to support companies in SAM implementation the TräSAM method was developed. In winter 2003/2004, 47 companies were interviewed for TräSAM. Of those, 23 were already implementing SAM and 20 reported that they were interested in receiving help to implement SAM. In spring 2004 those 20 companies were contacted and offered a subsidised training programme and consulting support to implement SAM.

The project contained three parts: implementation of SAM, consulting and audit. The TräSAM method is an educational programme involving all employees at the company concerned. Companies assess their own 'SAM status' (1-4). The SAM status increased from an average of 1.4 at the beginning of the project to an average of 3.4 by the end of the project. The target of 3 was reached by all of the companies.

Earlier research has established that there are several success factors determining the success of SAM in small companies. A key factor is that the companies implement SAM by themselves as a team project, with support from work environment consultants. The method also has properties that stimulate motivation and engagement.

The TräSAM-method seems to be particularly suited to small companies that are prepared to allocate sufficient resources for implementing the method.

Evaluation of TräSAM implementation indicates that it increased job satisfaction in the companies concerned. Staff at four of five companies reported that they were happier with their work environment, as well as with the content of work.

*Further information:*

<http://www.av.se/dokument/inenglish/themes/sam.pdf> (brochure in English)

### 3.3.2. Promoting ILO-OSH 2001 in France

In March 2004, the French Ministry for Labour (Ministère de l'Emploi, de la Cohésion Sociale et du Logement) issued a resolution regarding the promotion of ILO-OSH 2001. This resolution was adopted unanimously by the members of CoS SST (Comité Stratégique Sécurité et Santé au Travail), the Ministry for Labour, the five major trade unions, employer organisations (FIM and UIC) and OSH experts (CNAMTS, INRS).

In order to promote and disseminate the ILO Guidelines on Occupational Safety and Health Management Systems (ILO, 2001) an evaluation guide was produced, and a promotional programme organised.



The guide 'ILO-OSH 2001. Guide d'évaluation pour les préventeurs et auditeurs de la sécurité et de la santé au travail' can be downloaded for free from the AFNOR website.<sup>28</sup> It was drawn up by a group of 15 experts; the foreword is by the ILO. The guide is addressed to all OSH professionals who are concerned with implementing and/or evaluating OSH management systems based on the principles of ILO-OSH 2001. The guide is also aimed at auditors of the AFNOR Group to help them evaluate OSH management systems within a certification process according to the ILO-OSH 2001 guidelines. The guide is structured in three parts:

- audit guide (comments, recommendations, documents, recordings, etc.);
- application of ILO-OSH 2001 (extract from the ILO manual, list of documents and recordings, etc.);
- rules to be applied in an audit (method, question examples, etc.).

The promotional programme that was set up to inform companies about ILO-OSH 2001 includes a series of regional exhibitions all over France. These shows were organised in collaboration with several CRAMs (regional sickness insurance fund offices) and other partners. More than 800 partners have participated in these shows.

*Further information:*

<http://www.ilo.org/public/english/protection/safework/managmnt/index.htm>

<http://www.afnor.org>

### 3.3.3. Safety Management Implementation Programme (SMIP) in Poland

To support the practical implementation of legal requirements resulting from the Framework Directive, particularly concerning risk assessment and risk management, in Poland national standards for OSH management system have been developed including:

- the standard with requirements for health and safety management systems, established in 1999 and verified in 2004 in order to fully implement ILO guidelines;
- the standard with guidelines to risk assessment, established in 2000, provides guidelines for assessing occupational risks;
- the standard with guidelines for the implementation of a health and safety management system in a company, established in 2001; and
- the standard with guidelines for auditing OSH management systems.

All the standards are intended for voluntary implementation. These standards together with new legal requirements have contributed to the popularisation of the rules of systematic OSH in Poland and to their implementation in Polish companies.

In order to promote a systematic approach to OSH management in companies, the Polish National Labour Inspection, in cooperation with the Central Institute for Labour Protection – National Research Institute (CIOP-PIB), launched a programme of OHS management systems promotion. Activities in the programme include:

- training representatives of companies in implementing OSH management systems;
- training labour inspectors in auditing OSH management systems;
- consultancy, planning and implementing the OSH management systems in companies; seminars for companies implementing OSH management systems; and
- internal OSH management systems audits conducted by companies' auditors together with labour inspectors and experts from CIOP-PIB.

<sup>28</sup> Association française de normalisation (AFNOR); the French standardisation organisation.



Almost 100 enterprises participated in the programme between 2000 and 2004. Many of them improved their OSH performance and hence their health and safety levels. Most of these companies received certificates of compliance with standards requirements.

The results of implementation of OSH management systems confirm their effectiveness as a tool supporting the fulfilment of legal requirements and improvement of working conditions.

In order to assess economic costs and benefits resulting from the implementation of OSH management systems, research was conducted in 35 companies. The costs of fulfilling legal requirements and additional costs related to improving OSH management which are not required by law were calculated. These additional costs amount to only a small part of the costs of fulfilling legal requirements (approx. 1.5-25%). They are related mainly to administrative activities, training and consultation. As result of OSH management system implementation:

- in 70% of companies accident rates decreased significantly;
- in 50% of companies the number of employees working in hazardous conditions decreased;
- 70% of companies will benefit from a fall in insurance premiums.

Additionally, the companies have noticed improvements in quality, productivity and awareness.

*Further information:*

[http://rop.sejm.gov.pl/1\\_0ld/opracowania/ciop1.pdf](http://rop.sejm.gov.pl/1_0ld/opracowania/ciop1.pdf)

<http://www.ciop.pl/22224>

### **3.3.4. Promotion of integrated quality and OSH management by subsidised certification in the nursing and care sector in Germany**

The rate of occupational accidents and diseases, and also of absenteeism, is traditionally high in the nursing and care sector. The German statutory accident and disease insurance for this sector, BGW (*Berufsgenossenschaft Gesundheitsdienst und Wohlfahrtspflege*), started an initiative in 2000 to introduce better OSH management in conjunction with the introduction of quality management according to ISO 9001. The initiative was called qu.int.as. The acronym means quality management (qu.) integrated (int.) with OSH (as.).

The BGW insures approximately 5 million employees in 500,000 enterprises. Most of these enterprises operate in the nursing and care sector, the rest work in loosely related areas such as hairdressing or wellness activities. The statutory average fee is 2.1% of the total sum of wages; this percentage is higher or lower depending on the degree of risk in a certain subsector.

Qu.int.as is a very prominent example of the strategic placement of OSH and quality management in companies, supported by incentives. Qu.int.as helps the insured enterprises – the ‘members’ of the BGW – to introduce an OSH management system in combination with a quality management system.

The qu.int.as implementation requires the adoption of the seven steps following:

Phase I: Commitment of the enterprise to start the qu.int.as process. The motivation for doing this is the reduction in rates, and the potential for reducing rates of absenteeism

Phase II: Analysis of the situation

Phase III: Development of Improvement Objectives and Planning of a project

Phase IV: Qualification and training of the project team

Phase V: Implementation of the qu.int.as System



Phase VI: Continuous improvement process

Phase VII: Certification.

Companies receive financial support for the qu.int.as certification costs, and certain employees can qualify as quality managers through the process. The steps are guided by certified consultants.

After successful completion of the project the company can claim back 50% of the certification costs. The total amount of the reimbursement cannot be higher than 50% of the statutory annual insurance fee to the Berufsgenossenschaft. Consequently for small companies the refund is less than 50%.

The BGW also reimburses the costs for participation in qu.int.as' qualifying seminars (EUR 300 a week), up to EUR 250 per participant. These qualification measures are seen as a necessary precondition for the successful introduction of an integrated OSH-QM-system.

Since 2007 the BGW has taken on some of the costs of qu.int.as' consultancy services. A number of consultants – around 60 in Germany – have been certified so far. On average about half of the consultancy costs are met by the BGW; a ceiling is defined depending on the type and size of the enterprise.

Up to July 2007 approximately 90 enterprises had implemented the qu.int.as System. The opinions on qu.int.as. and experiences with qu.int.as. of around 30 enterprises can be read in the form of a structured interview on the internet (see link below). The comments from the companies were in general very positive, but this is an obvious bias of publication. Companies that did not participate or were unsuccessful will not publish their experiences or reasons for declining to participate on the internet.

*Further information:*

<https://www.bgw-online.de/quintas/generator/Navi-quintas/homepage.html>

### 3.3.5. The SGM safety and health management system, Austria

The Austrian Social Accident Insurance (AUVA) offers help and advice on all questions of safety and health at work. In view of its role as a statutory accident insurance institution, accident prevention and the promotion of good practice at work is a crucial part of AUVA's daily work. Since 2002 AUVA has offered consultancy on the implementation of OSH management systems for companies. In order to reach small and medium-sized enterprises as well as larger ones, AUVA developed a safety and health management system (SGM)<sup>29</sup> which is easy to implement and suitable for companies of every size. SGM can also be certified and be integrated into existing management systems (see for example case study 4.3.10).

The implementation of a safety and health management system has many advantages. It can contribute to the prevention of work accidents by:

- defining targets
- defining responsibilities for safety issues
- promoting the systemisation and documentation of safety measures
- allowing for ongoing assessment of safety measures
- sensitising workers to safety issues
- promoting good work practice among company's staff.

<sup>29</sup> SGM stands for 'Sicherheits- und Gesundheitsmanagement'.





A successful OSH management system can result in:

- fewer accidents in the workplace
- less sick leave
- greater motivation and loyalty of employees
- better overall performance.

Unfortunately SMEs in particular are wary of the costs and extra work involved in the implementation of an OSH management system. Therefore AUVA developed, promotes, and certifies the SGM safety and health management system. In order to ensure high consultancy standards AUVA invests in the development of its own personnel. Since 2002 AUVA employees have trained in implementing and auditing OSH management. Besides their own SGM standard they are able to certify OHSAS 18001 management systems. Furthermore AUVA offers professional training in OSH management systems for external consultants.

A major activity of AUVA in the field of OSH management is developing, promoting and implementing SGM. SGM is an OSH management system that is based on organisation, information, employees' participation, and feedback. The advantage of SGM is that it is suitable for companies of all sectors and of all sizes. It can also be integrated into existing standardised quality and environmental management systems like ISO 9001 and 14001.

SGM offers possibilities for improvement for a wide range of management activities and work processes:

- Legal compliance: Rights and duties of employer and employees in regard to safety and health issues.
- Communication between management and workers.
- Vocational training, qualification measures.
- Systematisation and documentation of workplace risk assessment.
- Operational and supporting processes, maintenance, planning, and purchasing.
- External communication, application of safety measures among external workers.
- Emergency and accident management.
- Analyses of (near-) accidents, and occupational diseases.
- Medical examinations.
- Workplace health promotion.

Companies which are interested in SGM can request an initial meeting which will be free of charge. AUVA will inform the company about the advantages and benefits of the implementation of its management system. SGM is designed to be self-explanatory so that the company can implement it without external consultancy. For those who prefer professional assistance, AUVA offers its services for the implementation of the new management system. The implementation itself needs 3 to 18 months, depending on circumstances in the company.

SGM consists of four different packages that will be implemented in order to make the company a safer place to work:

- The company's policy: The management has to mainstream safety and health into the company's policy. It has to back the implementation process and promote safe work and good practice among all workers.
- The company's organisational structure: Responsibilities should be clear and be defined in such a way that targets can be set and success in meeting them monitored.
- The process organisation: Operational and supporting processes should follow a clear routine in order to improve work flow and safety.
- The documentation: Coherent documentation is essential for proper assessment of processes and target achievement.



The implementation process itself follows a set routine. The aim is to ensure that the process becomes a permanent cycle or, even better, an upward spiral: the cycle represents continuity, whereas the upward spiral implies constant improvement.

- In a first step the status quo is analysed, to determine the starting point for all further actions.
- The management should define targets and indicators to enable achievements to be measured. Indicators can be number of work accidents, employee turnover, costs due to sick leave, etc.
- Based on these indicators the management should periodically assess the progress and the achievement of the targets.
- When progress is reviewed new targets and indicators should be set in order to re-start the process.

*Further information:*

[http://www.auva.at/mediaDB/MMDB120011\\_SGM-System%20der%20AUVA%20Regelwerk.pdf](http://www.auva.at/mediaDB/MMDB120011_SGM-System%20der%20AUVA%20Regelwerk.pdf)

### **3.3.6. Safe Enterprise Programme: an awareness-raising and motivation campaign for OSH management systems in Slovakia**

One of the tasks in the context of the national policy for Safety and Health Protection at Work<sup>30</sup> (SHPW), is to help companies in the Slovak Republic introduce OSH management systems through the 'Safe Enterprise Programme' (SEP). The objectives and rules of the SEP are defined in the action plan for the realisation of the national strategy on SHPW. SEP is mainly a motivation campaign which promotes and supports the implementation of efficient OSH management systems in Slovak companies. It also aims to educate Slovak employers' associations and their representatives on the importance of OSH. The overall objective is to enhance the level of OSH in companies and to cut down on work accidents, occupational diseases and sick leave.

The OSH management system is based on the Slovak guidebook 'Management of Safety and Health at Work – System Implementation Guide', published by the National Labour Inspectorate in 2002. This guide was prepared in cooperation with the Swedish authorities under the auspices of the Slovak Ministry of Labour, Social Affairs and Family. The guide is relevant to companies of any sector and size and shows how to manage safety and health at work systematically with regard to Act 330/1996 Coll. on Safety and Health Protection at Work. It is based on the ILO Guideline OSH 2001 for OSH management systems and refers to the principles of the EU Framework Directive 89/391/EEC. It is also compatible with international standard OHSAS 18001, and British standard BS 8800.

Certification and awards are used as incentives to encourage companies to participate in the programme. On gaining the certificate the company is permitted to use the programme logo 'Safe Enterprise'. This can be a competitive advantage.

Improvement of OSH management can contribute in particular to:

- optimisation of working processes;
- systematisation and orderliness;
- improvement of adjustment and discipline at the workplace;
- enhancement of motivation and creativity of employees as well as their sense of responsibility concerning health;
- improvements in well-being; and
- improvement of the image and the competitiveness of the company.

<sup>30</sup> The national SHPW programme passed by the decision of the Slovak Republic government no: 838 7 August 2002, revised by the decision no: 665 16 July 2003.



A lower accident rate, in turn, influences:

- the level of insurance contribution;
- costs in relation to work incapacity which, according to new legal requirements, are met by the employer during the first few days;
- the costs of employee compensation.

At the same time the company fulfils the criteria for the inspections of OSH management systems, which will be carried out by the national labour inspectorate.

Every company (or in specific cases organisational units of a company) can participate in the 'Safe Enterprise Programme'. It is particularly suited to SMEs, but micro-enterprises and large enterprises can also take part.

The decision to establish this programme for the long term can surely be considered as a key success factor in the SEP. This long-term commitment is necessary to reach the main objectives of the programme, which can be described as:

- Supporting and motivating companies in Slovakia to introduce and adapt OSH management systems which lead to a permanent enhancement of safety and health at work and to the fulfilment of all legal requirements concerning occupational safety;
- Advancing the legal awareness, knowledge and motivation of employers, employees and the general public towards the active prevention of accidents and occupational diseases, and a systematic improvement of working conditions and the working environment;
- Developing systematic OSH management systems in companies that are functional, transparent, and effective and able to optimise working processes, enhance motivation and the creativity of employees, promote more responsibility for personal health, and to improve the image and competitiveness of companies.

*Further information:*

Web information on the Safe Enterprise Programme (in Slovak):

[http://www.ip.gov.sk/index.php?option=com\\_content&view=category&layout=blog&id=46&Itemid=100](http://www.ip.gov.sk/index.php?option=com_content&view=category&layout=blog&id=46&Itemid=100)

National Labour Inspectorate: Guideline and Good Practice Information on Safety and Health Management (2002). Available at:

[http://www.ip.gov.sk/Download/dobraprax/system\\_riadenia\\_bozpz.pdf](http://www.ip.gov.sk/Download/dobraprax/system_riadenia_bozpz.pdf)

[http://www.ip.gov.sk/Download/dobraprax/system\\_riadenia.pdf](http://www.ip.gov.sk/Download/dobraprax/system_riadenia.pdf)

### **3.3.7. Promoting and funding OSH management systems in Luxembourg**

L'Association d'Assurance contre les Accidents (AAA) is the public institution in Luxembourg responsible for the prevention of accidents at work and for the compensation of workers who suffer from occupational diseases and injuries caused by accidents at work.

One of its major activities is the promotion of good practice among enterprises in order to contribute actively to the prevention of workplace accidents and occupational diseases. Besides publications in the field of OSH the AAA sets financial incentives for good OSH practice in companies.

The main target of the AAA's work is the reduction of the number of accidents at work. This includes a broad range of prevention measures, the dissemination of good practice information and support for safety and health campaigns. In one such campaign AAA supports, promotes and funds the implementation of OSH management systems among enterprises in Luxembourg.



Companies that wish to participate are completely or partially reimbursed by the AAA and supported with financial grants of between EUR 6,000 and EUR 10,000. Participants can be of any size and from any sector.

The promoted standards are:

- International standard OHSAS 18001 which can also be integrated into quality management standard ISO 9001 and environmental management standard ISO 14001. The implementation of OHSAS 18001 will be audited and certified for the duration of three years.
- The VCA management system (Veiligheid Checklist Aannemers). This Dutch standard was developed in the 1990s and helps companies to structure processes and work organisation following a list of questions. Ten fields of action are defined: management and organisation, (safety) instructions, risk assessment, inspections, personnel management, hygiene, information, purchase and control, communication and coordination, registration and analyses. The VCA standard can also be audited and certified for three years.

Various enterprises have shown interest in the AAA funding and certifying programme:

- Some 30 of them have already successfully implemented an OSH management system and received OHSAS 18001 or VCA certification.
- Six companies have been funded by AAA so far and four companies are currently being considered for funding.

The AAA is considering further activities in order to address more SMEs, because SMEs are still hesitant to participate. One possible reason may lie in the complexity of the OHSAS 18001 OSH management standard. Therefore AAA wants to develop a more basic approach for OSH management systems, tailor-made for SMEs and micro-enterprises.

With regard to financial incentives the current practice of funding will be supplemented by a bonus-malus system in which enterprises that are particularly successful in the prevention of workplace accidents will receive further savings and other financial benefits.

*Further information:*

[http://www.aaa.lu/prevention/aides\\_financieres/systeme\\_management/index.html](http://www.aaa.lu/prevention/aides_financieres/systeme_management/index.html)

### **3.3.8. Promotion of an OSH management system by financial support, financial incentives and guidelines in Italy**

The Italian authorities and business associations concluded in the late 1990s that most SMEs cannot mobilise the capacity and the financial means to modify their work organisation and their business processes in order to improve health and safety at work. This project is a cooperative approach by labour unions, business federations, occupational insurance bodies, safety institutes and the Italian national standards body, among other organisations, that aims to help SMEs in achieving this.<sup>31</sup>

<sup>31</sup> The full list of these organisations is: GIL Italian General Labour Confederation / CISL Italian Confederation of Labour Unions / CNA National Confederation of Artisans and of Small and Medium Businesses / CONFAGRICOLTURA General Confederation of Italian Agriculture / CONFAPI Italian Confederation of Small and Medium Industries / CONFARTIGIANATO Italian General Artisan Confederation / CONFCOMMERCIO General Italian Confederation of Commerce, Tourism Services and Small and Medium Businesses / CONFINDUSTRIA General Confederation of Italian Industry / INAIL National Institute for Insurance against Job Accidents / ISPESL Superior Institute for Job Accident Prevention and Safety / UIL Italian Labour Union / UNI Italian National Standards Body.



The responsible authorities agreed with the main business associations and the trade unions to promote the introduction of OHS management system via four main instruments:

- financial support for the introduction of OHS management systems;
- financial discount for the insurance tariffs after successful introduction;
- national guidelines; and
- training courses.

The objective was the reduction of occupational accidents and injuries by promoting better OSH management.

In Italy the responsible authorities and the main social partners agreed to promote an OSH management system that is applicable to any organisation and is based on the following principles:

- ready for integration with quality management (ISO 9000) and with environment management system (ISO 14000 series);
- voluntary adoption of the system by companies;
- no supervision or control by public bodies;
- certification only by institutions and persons accepted by the OSH management system providers.

An essential aspect of OSH management systems has been their relevance to the structures, organisations and management systems of SMEs.

Financial incentives to encourage companies to take up the system were regulated in the Legislative Decree 38/2000. The national public insurance INAIL – Italian Workers' Compensation Authority – administers the two types of financial rewards for the SMEs that introduced an OSH management system.

Companies wishing to introduce an OSH management system can request financial assistance with the costs. So far 1,140 requests have been received and OSH management systems have been financed in almost 300 SMEs. 80% of these companies used the Italian guidelines.

The second financial incentive is a continuous reduction in insurance premiums for those SMEs that introduced OSH management systems. The average discount is approximately 10%.

Altogether EUR 230 million has been spent on introducing the OSH management systems.

In cooperation with some of the participants and main social partners INAIL has developed specific training courses to help auditors and consultants to disseminate the Italian OSH management systems. Approximately 100 internal auditors and 50 OSH management systems consultants have been trained. This training consisted of an 88-hour course, which was certified by a certification organisation for professional personnel (CEPAS).

The national guidelines were developed with the ILO guidelines as a model but are shorter (16 pages). The guideline is available in Italian and English and structured as follows:

- A. Purpose
- B. Cyclic sequence of an OSH management system
- C. The policy for occupational health and safety
- D. Planning
- E. System structure and organisation
  - E.1 Management system
  - E.2 Definition of duties and responsibilities



E.3 Involvement of personnel

E.4 Training and awareness

E.5 Communication, flow of information and cooperation

E.6 Documentation

E.7 Health and safety integration in company processes and operational management

F. Survey and analysis of results and relevant improvement of the system

F.1 Internal safety monitoring

F.2 Characteristics and responsibilities of inspectors

F.3 Monitoring plan

F.4 Management review

A major reason for the success of the guidelines is the fact that all relevant public parties and social partners were involved in drawing them up. All these parties agreed upon the principles, the methodology and the content of health and safety management in companies.

The financial incentives associated with the project provided initial motivation for companies to get involved, and were important in getting the project off the ground.

As a result of the initiative other certification bodies have introduced similar programmes. Courses to train personnel to become auditors or consultants have been introduced by qualified certification institutions.

*Further information:*

The national guidelines are available at: [http://www.ispesl.it/linee\\_guida/sgsl\\_en.htm](http://www.ispesl.it/linee_guida/sgsl_en.htm)

## 3.4. EXAMPLES OF PROGRAMMES ON DEVELOPING AND PROMOTING TOOLS SUPPORTING OSH MANAGEMENT

### 3.4.1. 'Risk Prevention and Health Protection in Adult Education' EDFORSA in Austria, Czech Republic, Germany, Greece, France, Poland and Slovakia

The EDFORSA project, carried out within the Leonardo da Vinci Programme, aimed to improve knowledge and skills by developing a distance-learning course on OSH and risk prevention issues for OSH managers, safety engineers and people responsible for OSH in enterprises including SMEs. The partnership formed by various institutions (research institutes, universities, providers of non-formal education, private companies) from seven countries (i.e. Austria, Czech Republic, Germany, Greece, France, Poland and Slovakia) strengthened transnational experience sharing. The project was coordinated by the Occupational Safety Research Institute (VÚBP) in the Czech Republic.

The result of the EDFORSA Project is the electronic course (see figure 12) 'Risk Prevention and Health Protection'. The following five thematic areas are covered in the course:

- OSH management in an enterprise
- Safety of technical equipment

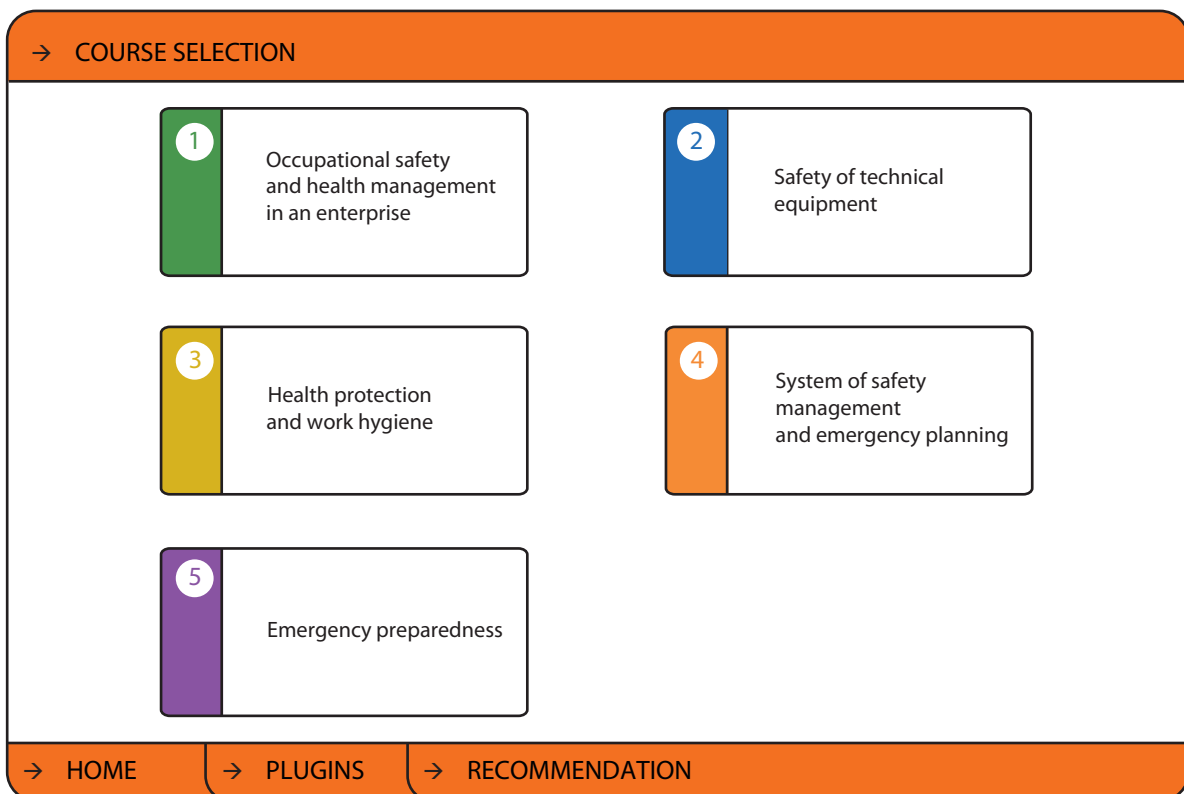


- Health protection and work hygiene
- System of safety management and emergency planning
- Emergency preparedness.

Study material relates to the legal basis formed by the regulations and standards framed by the European Union, i.e. mainly from the Framework Directive 89/391/EEC, OSH-related guidelines and standards including materials of the European Agency for Safety and Health at Work relating to occupational safety, health protection, the working environment and working conditions.

The course is structured in such a way that the user can study any part of it without having to go through the previous material. The thematic units are graded according to complexity (level 1 – elementary, level 2 – advanced (in thematic units with two levels, level 2 depicts the highest one) level 3 – proficiency).

**Figure 12: An example of a page for topic selection**



The 'Risk Prevention and Health Protection' course is available in seven languages. Apart from the source English version for internet-conducted study (see [http://edforsa.vubp.cz/products\\_vysledky.php](http://edforsa.vubp.cz/products_vysledky.php)) the following language versions are available: German, French, Polish, Slovak, Czech and Greek.

The German version may be studied online at <http://edforsa.cnb.g.de>.

Other language versions are available on CD-ROMs through the following national institutions: INERIS (Institut National de l'Environnement Industriel et des Risques, <http://www.ineris.fr>), TRANSFER Slovensko, spol. s r.o. (<http://www.transfer.sk>), Technical University of Crete (<http://www.tuc.gr>), CIOP-PIB (Central Institute for Labour Protection – National research Institute <http://www.ciop.pl>), and VÚBP (Occupational Safety Research Institute <http://www.vubp.cz>)



### 3.4.2. Maïtrisk – software for safety and health management in Luxembourg companies

The service de santé au travail de l'industrie (STI) is Luxembourg's major service provider for OSH issues. One focus of its activities is the active promotion of good practice and prevention measures. It has its own prevention team, specialised in risk avoidance and elimination of risk at source.

The STI's safety and health experts realised that many companies lacked a systematic approach as well as adequate documentation concerning the management of risk assessment and accidents at work. As very effective software for occupational medicine purposes already existed, the STI team decided to transfer this good practice and to develop software that would help companies implement structured safety and health management and provide documentation that met legal requirements.

The crucial points were: it should cover the most important safety and health issues faced in the workplace. It should be adaptable to the individual needs of companies, and it should be suitable for companies of any sector and of any size.

STI and its technical partner Lineheart & Soft developed a computer-based safety and health management tool for companies. STI and the Statutory Accident Insurance of Luxembourg (AAA) actively promote the use of this tool. STI itself provides advice and training for companies' safety representatives on the implementation of the software.

The instrument consists of modules focusing on different hazards and situations at work. It can be used for:

- Workplace risk assessment: Well structured documents describe different workplaces and typical situations with regard to common risks. It covers the legal obligations placed on employers. Checklists can be used and adapted individually for workplace risk assessment. Besides general checklists the software provides sectoral checklists for the health care sector, construction, office work, and various mechanical tasks. Effective risk prevention measures will be proposed.
- Management of dangerous substances: The programme contains a bibliography of more than 900 dangerous substances, with information on hazards, toxicity, and workplace exposure limits. The information is updated semi-annually on the basis of German standards. This module allows a structured assessment of workplace risks as well as of environmental risks. It allows simplified safety data sheets to be drawn up for users, and provides access to relevant original documents.
- Documentation management: Workplace risk assessment and assessment of dangerous substances can be entered on documentation sheets that meet the national standards.
- Bibliography of legislation: The software provides an overview of the most common laws and guidelines on OSH. Relevant checklists and documents contain the most up-to-date legal requirements. An update is provided semi-annually and will be integrated automatically into the software.
- Accident management: This function enables the company's management to categorise workplace accidents by type of accident, reasons for the accident, characteristics of the accident, number of days of sick leave caused, etc. It can be used to gather accurate in-house statistics. All data can be mainstreamed in a database which allows information to be bundled so that situations, environments and habits that pose high accident risks can easily be identified. Preventive measures can also be categorised and included in the database.

As the different modules cover various aspects of safety and health management, the implementation can be tailored to the specific needs of the company. This service is also provided by STI.

Since the official launch of the software 12 major Luxembourg companies representing some 20,000 workers have implemented it. Prominent examples include Goodyear, Arcelor Mittal, Cargolux Airlines, Luxair, and Cegedel Electric Energy Group. The public sector and companies in the health care and transportation sectors have also showed interest in the new software.

The AAA supports the implementation of Maïtrisk by providing funding: investments can be partially reimbursed up to a maximum of EUR 1,000. For SMEs with fewer than 50 employees the Maïtrisk package





is offered for only EUR 1,300, which means that up to 77% of the total investment can be recouped. This will hopefully help in attracting SMEs which have so far failed to implement the software.

Foreign companies have indicated to STI that they are interested in the software. Unfortunately it is only appropriate for Luxembourgish companies as it refers to national documentation standards. Theoretically it could easily be adapted to various national standards.

*Further information:*

<http://www.maitrisk.lu/>

<http://www.sti.lu/>

[http://www.aaa.lu/prevention/aides\\_financieres/maitrisk/maitrisk.pdf](http://www.aaa.lu/prevention/aides_financieres/maitrisk/maitrisk.pdf)

[http://www.aaa.lu/prevention/aides\\_financieres/maitrisk/index.html](http://www.aaa.lu/prevention/aides_financieres/maitrisk/index.html)

### 3.4.3. STER – a computer system supporting safety and health management in Poland

The Computer System for Hazard Registration and Risk Assessment, 'STER', is a computer program that aims to assist employers, occupational safety and health and health services and testing laboratories in occupational risk assessment and management. STER is a product of the Polish National Strategic Programme 'Safety and Protection of Man in the Working Environment'. STER was developed by the Central Institute for Labour Protection in 1997 and has been systematically upgraded in step with OSH technical progress, changes in OSH-related legislation and special user needs.

The STER system consists of five modules:

- RISK – hazard/disease registration and risk assessment module
- ACCIDENT – accident registration module
- OSH – module supporting management of employee data related to OSH benefits
- PPE SELECTION – module supporting selection of personal protective equipment
- ADMINISTRATION – module supporting management of data required for other modules and OSH management in general.

The STER system takes into account the requirements of the updated Polish Labour Code concerning:

- registration of hazards (in conformity with the Ordinance of the Ministry of Health and Social Welfare of 9 July 1996 on studying and measuring harmful agents in the working environment);
- detailed measurement and data processing (based on current standards and other related documents);
- making data sheets of the measurement results of most harmful agents in the working environment (in conformity with the aforementioned Ordinance);
- occupational risk assessment at workstations;
- creating obligatory documents (reports on working conditions, technical and medical prevention, etc.);
- documenting activities relating to technical, medical and organisational prevention;
- registering occupational accidents and diseases;
- collecting data necessary for documenting post-accident investigations and creating related obligatory documents;
- supporting the management of employee data related to OSH benefits;
- supporting the selection of personal protective equipment.



Assessment of hazards and occupational risk is conducted on the basis of Threshold Limit Values (TLV) of harmful agents in the working environment currently in force in Poland.

The system contains a module that helps to generate and print statistical data sheets on occupational accidents and occupational diseases in an enterprise. A list of standards in force in Poland and a list of personal protective equipment with the Institute's (CIOP-PIB) certificate are built into the system.

The STER system is also integrated with two other computer programs supporting health and safety management – a Chemical Safety Data Sheets computer database, and an electronic guide, INFOCHRON – with data on personal protective equipment.

The system has been evaluated positively by the Ministry of Labour and Social Policy, Ministry of Health and Social Welfare, Chief Labour Inspector, Chief Sanitary Inspector and Central Statistical Office. In 1997 the system was awarded a prestigious prize by the Chief Labour Inspector. At present it is being implemented in more than 500 enterprises.

*Further information:*

Information about the STER system can be obtained at the Central Institute for Labour Protection, Warsaw, Poland (<http://www.ciop.pl> ; Email: [masuc@ciop.pl](mailto:masuc@ciop.pl)).

### **3.4.4. Guidance to promote occupational health and safety management systems – a manual for OSH personnel<sup>32</sup> in Spain**

The guide is a product of the collaboration of the CC.OO. trade union institute ISTAS and the Unión de Mutuas. Zurich Insurance and the University of Valencia also contributed to the guide.

The 120-page guide was published in 2002 and offers comprehensive advice to OSH specialists in companies. It is very practical and systematic in its approach, and includes all technical and practical knowledge relevant for the implementation of efficient OSH management. Besides technical advice it also includes chapters on discussion and communication, including answers to common objections to the introduction of OSH management. Typical arguments against OSH management are quoted in the form of statements, e.g. 'the employer does not want to make life more complicated'. The guide answers such statements with very practical and well considered counter-arguments.

The indicators for assessing the efficiency of the OSH management system are grouped into two categories: 'Prevention indicators' and 'Socio-economic indicators (or results)'.

For the prevention assessment there are three sub-indicators:

- dimension of exposure
- health indicators
- indicators to assess the preventive climate.

The socio-economic indicators are divided into:

- indicators for the efficiency of the preventive measures
- indicators for compliance with legislation and standards
- indicators for the social and public image of the enterprise.

For each of these six sub-indicators 5 to 10 criteria are named, e.g. for social image the following six criteria are presented:

- ranking of the enterprise in internal and external studies

<sup>32</sup> 'Guía para promover la implantación de sistemas de gestión preventiva en las empresas – manual para el personal técnico del servicio de prevención'.



- diffusion of the enterprise experience to other enterprises
- relation to authorities and other important institutions
- publications
- media
- awards.

Part 2 of the guide begins with a questionnaire to assess the status of prevention. The questionnaire consists of more than 100 questions covering the prevention policy, the structure and extent of prevention, objectives and practice, the involvement of workers, the efficiency of preventive activities and collaboration between the relevant parties. The user is guided through the calculation of the quantitative outcome of the questionnaires.

For micro-enterprises a second questionnaire is attached with about 60 questions.

The other six chapters of part 2 deal with the evaluation of the results of the questionnaire and their transposition into preventive activities. Again, there is a chapter discussing economic considerations to help the user overcome arguments that might pose short-term economic barriers to prevention.

The other chapters present ideas and models for structuring prevention activities. Flowcharts and examples make the text easy to understand and apply. There are plans to translate the guide into several languages for use in other Member States.

*Further information:*

The full guide is available at: <http://www.istas.net/web/abreenlace.asp?idenlace=4234>

### 3.4.5. The Metatechnical Evaluation System in Belgium

The Metatechnical Evaluation System (MES) is a monitoring tool used by the Chemical Risk Directorate of the Belgian Federal Public Service Employment, Labour and Social Dialogue. Its aim is to assess the organisational competence of so-called 'Seveso enterprises' in managing the risk of major accidents.

The 'Seveso II' Directive on the control of major-accident hazards involving dangerous substances was approved on 9 December 1996. This European Directive was enacted in Belgian law via the Cooperation Agreement of 21 June 1999 between the Federal State, the Flemish Region, the Walloon Region and the Brussels-Capital Region. The 'Seveso II' Directive replaces the first Seveso directive of 24 June 1982 and places much more emphasis than the previous Directive on the importance of safety management within the company. It has, after all, been generally accepted for quite some time that the fundamental causes of industrial accidents have their roots within the management of a company. The safe operation of a company thus depends to a significant extent on the company's competence in the field of safety management. The 'Seveso II' Directive also sets higher standards for the inspections that have to be carried out by the Member States in those companies to which the Directive applies. These inspections must consist of regular and systematic audits of the systems that exist within the establishments involved, including the organisational and management systems as well as those of a technical nature.

The MES is intended for the systematic auditing of the organisational and managerial competence of companies that are concerned with managing the risks of major chemical accidents.

The MES is in the first place intended to be an inspection instrument for the inspection teams that are charged with ensuring compliance with the stipulations laid down in the Cooperation Agreement of 21 June 1999. This manual will also be made freely available to relevant companies in order to allow them to prepare thoroughly for the MES audits. Although the MES has not been developed specifically for carrying out internal safety audits, companies can use it to do initial surveys to allow them to draw their own appropriate conclusions in order to improve their management system for major accident prevention.



The first version of the MES was issued in June 1997 and was applied in more than 60 companies by the Chemical risks directorate. The second version is a far-reaching modification on the basis of the experiences and results of these audits.

The MES is based on the international quality standard ISO 9001. This quality standard is the most complete of the ISO 9000 series of quality assurance standards in contractual situations. The requirements for quality systems of the ISO 9001 standard were not simply copied, however. A certified quality system does guarantee product quality according to agreed product specifications but it is not enough to control the process' risks. The general requirements for an effective safety management system can be abstracted from the quality standard by considering 'safety' within the company as a 'product' of which the quality has to be assured in a demonstrable manner. The 'contract' referred to in the quality standard is the commitment of the company to comply with all (legal, regulatory or other) conditions necessary to exclude accident risks or limit them to a minimum. The result of this approach is a management system for quality assurance in the field of safety. The relation between the elements of MES and those of the quality standard ISO 9001 are demonstrated in Table 13. The structure of the MES runs parallel to the structure of ISO 9001 and is deliberately kept that way to maintain the compatibility with the quality system as far as possible. Companies that already have a certified quality system should therefore face little difficulty in building an analogous safety management system.

**Table 13: Similarity of the MES with the quality requirements of ISO 9001**

Section in MES	Equivalent section ISO 9001
Senior management responsibilities	4.1
Safety management system	4.2, 4.5
Implementation of the safety standards	4.3
Design and modification of installations	4.4, 4.8
Purchasing and Working with third parties	4.6
Process control	4.9
Inspection and maintenance	4.10, 4.11, 4.12
Emergency planning	4.13
Corrective and preventive actions	4.14
Safety audit	4.17
Training	4.18

*Further information:*

The manual is available at:

<http://werk.belgie.be/assetlibrary/2a17e27d841446a68e53e237f5a5dd5c/e36f71252b004bf59b8a66d220b067b42.pdf>



# 3.5. EXAMPLES OF PROGRAMMES DIRECTED AT SUPPORTING SMEs IN OSH MANAGEMENT

## 3.5.1. SME Risk Management Toolkit (PK-RH) in Finland and UK

Recognising the importance of managing safety and health risks alongside all other business risks, the IOSH Technical Affairs Department has adapted a risk management toolkit specifically designed for small firms. The IOSH toolkit, translated and modified from the Finnish original, was part-funded by the European Agency for Safety & Health at Work and developed in partnership with IOSH (UK), VTT (Finland) and IAD (Germany).

The SME Risk Management Toolkit provides a wealth of information and many tools for SMEs interested in risk management. Accessible and easy to use, this extensive Toolkit offers practical assistance for many risk management needs. The toolkit was originally developed and successfully used in Finland, and one of its strong points is that it helps small firms (and possibly larger ones) to tackle business risk management in a user-friendly way, using tools such as work cards, checklists, information cards and workbooks.

The SMEs' most significant risk areas, such as personnel, production, business, contractual liability, environment, information security and fire safety are covered. OSH is an essential part of the toolkit and it was one of the starting points for the project. The project did not concentrate exclusively on OSH issues, however. The toolkit was developed in such a way that the same approach can be used in all areas of risk management. It includes a wide range of tools for risk assessment and management, including:

- introductory material
- booklets
- work cards (checklists, risk charts)
- information cards
- material for training
- a list of risk management literature (in Finnish)
- a list of risk management expertise (in Finnish).

The toolkit could be transferred easily to other countries with some modifications for local conditions, for example legislation, authorities and contact addresses. The toolkit has also been used in bigger companies. Risk-management consultants have shown great interest in the toolkit.

*Further information:*

<http://www.pk-rh.com/>.

<http://www.iosh.co.uk/>



### 3.5.2. Promoting occupational safety and health in the SME sector in Poland

This project was introduced by the Polish Agency for Enterprise Development to help increase the capacity of the Polish SMEs to fulfil legal requirements in the field of OSH. Part of the PHARE 2002 framework, the project aims to:

- build up the capacity of employers and employees in SMEs, particularly in the construction sector and the chemical, rubber and plastic industry, and representatives of chambers of commerce in assessing and improving working conditions; and
- encourage SMEs to develop and implement an occupational risk prevention culture within the framework of an OSH management system.

The main project activities included:

- training for employers and employees from SMEs, OSH consultants for SMEs, and representatives of chambers of commerce
- the development of handbooks and guides supporting risk assessment and risk management in SMEs
- the provision of financial support for the implementation of safety measures and advisory services.

Training programmes and training materials were developed and training has been provided to more than 160 OSH consultants, 50 representatives of chambers of commerce, 400 employers and 800 employees from SMEs.

SMEs participating in the programme could apply for grants to implement technical safety measures necessary to eliminate or to limit occupational risks or to hire consultants to assess risks and to implement an OSH management system. This financial support covered up to 50% of expenditure, from EUR 500 to EUR 4,000 in the case of advisory services and from EUR 2,000 to EUR 50,000 for introducing technical safety measures. The overall budget of the programme was EUR 7,729,900.

Motivation on the part of SMEs to participate was the key factor determining the success of the programme. The involvement of chambers of commerce was very helpful in explaining to employers that participation in OSH training is not a waste of time but can be beneficial for companies. Additionally, consultants from chambers of commerce and the Polish Agency for Enterprise Development helped interest companies to draw up applications for grants.

*Further information:*

<http://archiwum.parp.gov.pl/archiwum/dotphare2bhp.html>

### 3.5.3. The CASA-Bauen<sup>33</sup> guide for construction SMEs in Germany

CASA-Bauen is a ready-to-apply instrument for self-assessment, organisational development and resource management, designed and developed especially for SMEs in the construction sector. It combines safety and health management and workplace health promotion measures on the one hand with economic and quality aspects on the other hand. Companies that have fully implemented CASA-Bauen have the option of self-assessment according to EN ISO/IEC 17050. It can be used as standalone instrument or combined with further advice and consultancy services from the partners of INQA-Bauen.

INQA-Bauen believes that a fundamental orientation towards quality has to be established throughout the construction industry. The organisation is a partnership between the various stakeholders in the sector

<sup>33</sup> The full title is 'CASA-Bauen – Chancen ausloten – systematisch arbeiten'.



including social partners, public authorities, construction companies, service providers, architects' associations, and the statutory accident insurance bodies.

INQA-Bauen's major goal is to actively support the improvement of quality in the construction sector in the belief that quality in all its facets determines competitiveness. INQA-Bauen contributes concretely to fair competition and high quality work by providing tools and guidelines which are easy to use and relevant for construction work. Besides CASA-Bauen, products include KOMKO-Bauen (Communication and cooperation in construction works), and Check-Bauen (Resources and communication management for clients).

CASA-Bauen is a central instrument of INQA-Bauen. For 14 essential fields of action it describes concrete measures related to safety and health at work, work organisation, project management, construction site management, and quality management. The 14 fields of action are divided into two catalogues of seven points of interest each, which are self-explanatory and easy to understand and implement. They allow companies to set priorities and to structure management processes and responsibilities. The idea is that the restructured management will meet the expectations of customers as well as business partners, and will ensure legal compliance. Effective use of CASA-Bauen also sets a stable foundation for certified management systems.

The first catalogue covers organisational issues on a company level:

- clearly defined objectives
- successful leadership and company management
- efficient work organisation
- performance-promoting deployment of staff
- information and communication
- efficient procurement and failure-free use of technical equipment
- innovation and sustainability.

The second catalogue covers organisational issues on the construction site:

- effective tendering and calculation
- cooperation and communication between everybody involved in the construction process
- clear organisational planning and work preparation
- practice-oriented construction (project management)
- productive and motivational deployment of staff
- continuous control and management of the construction progress
- improvement and innovation (warranty).

One core element is the process-oriented risk assessment. First, CASA-Bauen shows how to integrate workplace risk assessment into company and construction site management processes. Second, it gives advice on organisational structure and management responsibilities.

CASA-Bauen also gives concrete advice on how to carry out workplace risk assessment. It has a CD-Rom with risk assessment tools for the construction sector as well as advice on medical attendance. Further instruments can easily be accessed with the help of the INQA-Bauen network partners, especially via BG Bau (statutory accident insurer for the construction sector).

The self-explanatory character of CASA-Bauen makes it an attractive and low-cost alternative compared to conventional management systems, especially for SMEs and micro-enterprises. Numerous companies in the handcraft and construction sector have consulted it and implemented management structures according



to EN ISO/IEC 17050 with the help of CASA-Bauen. All these companies are SMEs; some offer complete construction management, others are specialised in particular tasks, e.g. bricklayers, carpenters, or roofers.

*Further information:*

[www.inqa.de](http://www.inqa.de)

## 3.6. EXAMPLES OF SECTOR-SPECIFIC PROGRAMMES

### 3.6.1. Implementing the Responsible Care Programme in the Finnish chemical industry

Responsible Care (RC) is a voluntary international environment, health and safety initiative of the chemical industry (for more information see Section 3.2.2). The goal of the programme is to ensure that relevant companies comply with the guidelines of sustainable development in terms of the environment, health and safety.

In Finland the Responsible Care programme was launched in 1992 under the name 'Vastuu Huomisesta'. A total of 105 Finnish companies with a workforce of over 19,000 employees are committed to the programme, representing over 80% of the production of Finland's chemical industry. The Chemical Industry Federation is responsible for coordinating the programme in Finland.

In a 'Safety 24hr' campaign launched in November 2001 over 40 projects were implemented with the help of over 200 participants. The campaign year ended in November 2002. However, the initiative lived on in the form of an annual safety seminar, at which a network of people working in the field was formed. The experience and know-how of this network is available for general public benefit. The network and the annual seminars are meeting points for experts and supporters of occupational safety, and best practice is shared across organisational levels. In 2003, 'Safety 24hr' won an award for best practice from the European Agency for Safety and Health at Work.

In 2005 'Safety 24hr' was partially integrated into the RC programme's national, association-level collaboration. Active partners include the Chemical Industry Federation of Finland, Chemical Workers Union, the Union of Salaried Employees (TU) and the Federation of Professional and Managerial Staff (YTN). This partnerships ensures that there is fruitful interaction between workers in all relevant industries.

The RC programme has offered an advanced and solid foundation for corporate responsibility. The companies committed to the programme practice responsibility in many different ways. A common feature to all activities is that they reflect the needs and expectations of both the customers and the immediate environment.

Emission cuts, which are the most significant result of the work carried out so far, were largely realised during the first few years of the initiative. Since then positive development has continued, as reflected in key water discharge and air emission indices. More than 90% of RC companies now run an OSH management system. Training courses focusing on the environment, health and safety are organised annually, addressing the entire workforce of participating companies. Substantial funds are being invested in environmental, health and safety work. Over 60% of the companies committed to RC have introduced a national occupational safety card. The number of lost time injuries (LTI) was 13.1 in 2005. During the 15 years of the programme, the number of accidents has declined by around 70%. No fatalities occurred in the companies committed to the RC programme during 2006.





Through RC, the chemical industry in Finland has been monitoring development of its environment, health and safety performance for 15 years. The results are available on the internet.

RC results: [http://www.chemind.fi/rcaikajana\\_en](http://www.chemind.fi/rcaikajana_en).

RC report: <http://report.chemind.fi/enviromenthealth>.

### 3.6.2. A partnership for construction health (APaChE) in the United Kingdom

In the construction sector clients and contractors have a duty to develop effective health risk management systems, based on full and careful appraisal of the health risks to which all their employees (including subcontracted workers) will be exposed. Support in this field is provided by APaChE.

APaChE is a UK-based partnership between industrialists, academics and government which aims to stimulate a step change in the physical, psychological and social health of all those involved in the industry. The partnership involves a core group of four organisations that meet on a regular basis:

- Loughborough University: the Department of Civil & Building Engineering, the Department of Human Sciences, and the Department of Design & Technology
- The Construction Confederation
- The Institute of Work, Health and Organisations, University of Nottingham
- The Health & Safety Executive (HSE), Construction Industry Division.

The APaChE vision is a construction industry with healthy workers, healthy work systems and practices and healthy work organisations. APaChE is pursuing this vision by developing and exploiting a health strategy for the industry, concentrating on improving construction processes, technology and innovation. APaChE's objectives are to:

- improve understanding of the nature, extent and causes of ill health experienced by construction workers, collating the full range of costs and consequences for individuals, organisations, projects and the industry;
- identify and develop construction processes, methods, materials, equipment and tools that eliminate or reduce risks to health;
- develop usable, effective methods and techniques to support management of health risks;
- develop personal protective equipment that is effective, comfortable, stylish and affordable;
- identify methods and structures to encourage dynamic participation in the development, implementation and ownership of health promoting solutions;
- establish an inclusive construction environment that is safe, healthy and attractive for workers; and
- determine and disseminate best practice.

#### Currently two projects are being carried out by APaChE:

HASPREST (the effect of standardisation and pre-assembly on health, safety and accident causality in construction). This is a research project which aims to provide a comprehensive study covering non-volumetric, volumetric and modular building approaches across engineering construction, civil engineering and building sectors. It will establish the extent of the effect of standardisation & pre-assembly (S&P) on health, safety and accident causality in construction. The project is funded by EPSRC (Engineering and Physical Sciences Research Council) and DTI (Department of Trade and Industry).

Further information on the HASPREST project: <http://www.lboro.ac.uk/research/hasprest/>



D4h – Designing for Health. The overall strategy of this new research project funded by the DTI and HSE is to:

- compare and contrast ‘healthy-design’ practice in different sectors;
- develop a ‘healthy-design’ strategy toolkit appropriate to mainstream construction; and
- introduce this strategy to relevant organisations.

### **The focus was on practical deliverables to maximise impact and work alongside the other initiatives in the area.**

The project identified current ‘best practice’ where it existed for healthy design, particularly issues relating to construction processes, such as musculoskeletal disorders, hand-arm vibration and noise.

Further information on the D4h project: <http://www.lboro.ac.uk/research/design4health/index.html>

*Further information:*

<http://www.irbdirekt.de/daten/iconda/CIB537.pdf>

[http://www.lboro.ac.uk/departments/cd/docs\\_dandt/research/ergonomics/apache/index.html](http://www.lboro.ac.uk/departments/cd/docs_dandt/research/ergonomics/apache/index.html)

## 3.7. CONCLUSIONS

Policies related to OSH management include obligatory as well as voluntary measures. Obligatory measures result from the legislation adopted by all the EU countries which fully reflects the provisions of the EU Framework Directive. The Directive defines basic goals of OSH management and measures necessary to achieve these goals and indicates the need to strengthen prevention by, among other things, incorporating risk assessment into all company activities, and ensuring the involvement of both employer and employees in OSH issues. Moreover, the Directive’s provisions require the adoption of preventive measures in the changing working environment, and the striving for continuous improvement. The implementation of legislation is supported by various voluntary initiatives directed at OSH improvement.

The International Labour Organisation plays an important role in promoting voluntary OSH management systems. The ILO Global Strategy and ILO Promotional Framework Convention and Recommendation underline the importance of the integrated approach to OSH management laid down in the *ILO-OSH 2001 Guidance on OSH Management*. The guidelines define the elements of an effective OSH management system in companies; a system that should be integrated with the overall management system. Implementation of this system is perceived as an effective way of building a safety culture in the company. This approach is supported by numerous national practices including national guidelines and programmes of promotion.

As a rule, developing and establishing policies related to OSH management require cooperation between different actors, including governments, insurance institutions, employers’ organisations and trade unions. This cooperation is one of the key success factors in effective implementation.

When implementing these policies, the willingness of companies to introduce changes plays a crucial role. Different incentives, including providing free seminars, tools and training, can be used to increase the motivation to change. The involvement of the labour inspectorate and social partners is very important, especially in the case of policies directed at SMEs.



Different indicators can serve to assess the impact of policies. The most commonly used are indicators related to the implementation of actions resulting from the policy, such as number of participants, amount of training provided, tools produced, etc. In some cases changes in safety level (including changes in accident and disease rates) and in OSH costs are also registered and used to assess the impact of a policy. It should, however, be noted that there are limitations when using these indicators because they can be affected by a number of different factors which are not directly related to the policy.

One of the main factors influencing the long-term impact of policies is their sustainability. This can be achieved by, among other things, encouraging people to become involved in the relevant organisations and to use them for networking.

Different examples of successful actions implemented in various EU countries confirm that the policies and practices play an important role in motivating and supporting companies to introduce OSH management. Their further development is needed to ensure better integration of all the OSH-related issues with overall company management.





# 4.

## CASE STUDIES



## 4.1. INTRODUCTION

This section features cases that illustrate how OSH has been mainstreamed into general business, resulting in an improvement in OSH and/or the general performance of the company concerned.

Many companies place such a high priority on OSH that they move beyond merely obeying the regulations in force and try to create a safety culture that is an integral part of their corporate culture. In these companies OSH management is, as a rule, part of the overall management and OSH-related issues are incorporated into general management processes.

The cases presented in this section aim to demonstrate how OSH issues can be incorporated into general business. The cases include an analysis of the background, the involvement, motives, and targets of the concerned groups as well as results, side effects, success factors and problems faced.

The organisations presented in the different case studies have implemented formalised OSH management systems based on national or sectoral requirements and recommendations. In some of these organisations, OSH management has been integrated into the existing quality and/or environment management systems, while in others OSH management is treated as an element of quality management (e.g. Total Quality Management, Lean Production). OSH management can also be linked more closely to Human Resources Management (HRM), by stimulating cooperation between the organisation's OSH and HRM departments.

The main factors contributing to the success of these different approaches include greater management involvement in OSH and the improvement of workers' motivation, as well as an enhanced risk assessment process and measurement of OSH performance. In each case study, the incorporation of OSH into general management processes resulted in an improvement of the working conditions and well-being of the workers and, consequently, in a decrease in occupational accident rates, number of days lost due to accidents and work-related diseases and related costs. Moreover, better communication between individuals, and organisational units, and better coordination of activities carried out within different management systems, were achieved. These factors have helped increase the efficiency of the organisation as a whole.

The aim of this chapter is to present good practice related to mainstreaming OSH into general business. The selected case studies show which methods of implementation were successful and resulted in an improvement of OSH and/or general company performance. Most of the cases are concerned with:

- the implementation of an OSH management system in the company according to specific requirements or guidelines (e.g. national guidelines based on the *ILO-OSH 2001 Guidelines on OSH Management Systems*);
- the implementation of specific elements of an OSH management system, such as top management commitment and OSH policy, employee participation, hazard identification and occupational risk assessment, setting objectives, targets and action planning, training, awareness, competence and motivation, communication, procurement and contracting, management of change, monitoring, corrective and preventive actions, etc.

The cases were identified using different sources of information. Partners' own networks, internet searches, literature reviews, interviews with the people from the companies and labour inspectors were the main information channels used. Expert knowledge was helpful in identifying the best sources of information.

Each partner initially identified at least 5 cases implemented by companies in EU countries. The partners analysed the identified cases and selected cases for inclusion in the report. The quality of information available



as well as the potential for implementation in different companies and countries were the main criteria taken into account when choosing the cases.

This section presents 20 company cases from 12 EU countries. Of these 13 are presented in detail as case studies and the other 7 are presented as 'snapshots' (shorter cases). The main purpose of the cases is to present a practical approach to OSH management in companies and its integration into overall business, and to show how this integration can increase the effectiveness of OSH-related activities and the organisation's performance as a whole.

The cases are divided into four main categories according to methods and scope of OSH management incorporation into general business. Since most of the cases can be linked to more than one case category, this typology is optional. The basic criterion used for grouping the cases is to what extent the case focuses on particular aspects related to mainstreaming OSH into general management.

The **first category** includes cases and snapshots aimed at improving elements of OSH management, as well as OSH management as a whole. Most of these cases focus on occupational risk management as a central element of the OSH management system. The importance of employee participation in increasing awareness and knowledge of OSH and improving communication in this field are key points touched on by a majority of cases. Background information on these approaches to OSH management in companies and its relationship with overall management is also presented in Section 2 of this report.

The **second category** of cases focuses mainly on practical experience from integration of OSH management with environmental and quality programmes including, among others, implementation of integrated management systems and TQM concept. Both concepts are presented in detail in sections 2.2.2.2. and 2.2.2.3.

In some cases presented in the first two categories quality management concepts such as lean manufacturing,<sup>34</sup> world class manufacturing or Kaizen<sup>35</sup> can be found.

The **third category** comprises three cases that focused on improving employees' health both at work and in general. Different approaches to work health promotion (WHP) are also described in section 2.2.2.1.

The **fourth category** refers to different aspects of human resources policy and organisational culture including ways of shaping safety culture and increasing top management's commitment to OSH management. More on this topic can be found in section 2.3.

The overview of the cases and snapshots presented below should help readers find the cases most relevant to them quickly and easily.

---

<sup>34</sup> Lean Manufacturing is better known as World Class Manufacturing (WCM). The main objective of the concept is to increase the value stream (for the customer) and to reduce losses. Unintentional side-effects arise in every company process and such effects do not always add value. Side-effects that are an obstacle to productivity are called losses. The elimination of losses will lead directly to higher productivity.

<sup>35</sup> 'Kaizen' means a constant perfecting. It engages workers into searching for small improvements at their workplaces which enable them work in a better, cheaper and faster way. On the one hand it brings higher productivity, and on the other hand it helps to create a more congenial workplace, with easier tasks, less hurry, fewer defects and misunderstandings. Workers are involved in planning the arrangement of workplaces and tools, as well as analysing work processes. The Kaizen method is based on small, progressive changes and does not demand financial resources but rather systematic, consistent acts to improve technique, technology and methods of work.



## 4.2. OVERVIEW OF CASES AND SNAPSHOTS

Full name of the case	Country	Key points	Short description of the case
<b>Examples of cases focused on improving elements of OSH management</b>			
Implementation system of OSH management in the Teoflów textile works	Poland	<ul style="list-style-type: none"> <li>• Implementation and improvement of OSH management systems</li> <li>• Ensuring employee participation in OSH management</li> </ul>	<p>This textile works in Lodz (Poland) has been implementing the rules of systematic occupational safety management since 1997. It started the implementation with the help of external experts, using experience gained from the implementation of a quality management system. After two years the number of accidents fell to a third of previous levels. Days taken as sick leave fell by over 4,000. The company is constantly undertaking activities aimed at improving the existing OSH system and treats it as a part of general management.</p>
Practical implementation of a comprehensive OSH management system for windmills in a repair and maintenance company	Portugal	<ul style="list-style-type: none"> <li>• Introduction of a comprehensive OSH management system into a regional maintenance and service department with 100 employees</li> <li>• Detailed risk assessment</li> <li>• Commitment of the management and participation of workers</li> <li>• Reduction of normal and high risks in maintenance</li> </ul>	<p>The repair and maintenance of wind turbines involves considerable OSH risks. VESTAS Portugal, part of the VESTAS Group, has developed a comprehensive management system to cope with these risks. The OSH system covers regular repair and servicing as well as emergency repairs. VESTAS has developed detailed instructions and effective implementation measures and has won the commitment of management and employees alike.</p>



Full name of the case	Country	Key points	Short description of the case
The safety management system in a waste processing centre at SITA Sud	France	<ul style="list-style-type: none"> <li>• Formal presentation of some tools and procedures in a computerised integrated management system</li> <li>• A safety assurance manual, with the objective of MASE safety manual certification</li> <li>• A commitment to precise, measurable objectives</li> <li>• Numerous computerised communication materials and tools made available</li> <li>• Extensive resources devoted to equipment (PPE and other equipment)</li> <li>• Risk assessment to support the approach</li> </ul>	<p>The Penne sur Huveaune processing centre, one of the main facilities of SITA France in the south-east of the country, was a candidate for MASE certification in 2004.</p> <p>Implementation of an OSH management system according to MASE requirements has resulted in improved working conditions, a 50% drop in occupational accidents and 10% fewer workdays lost.</p>
Achieving zero accidents at a plasterboard wall factory	Germany	<ul style="list-style-type: none"> <li>• Improving OSH management system</li> <li>• Risk assessment</li> <li>• Awareness raising</li> <li>• Accident and near-miss documentation system</li> <li>• Building material industry</li> </ul>	<p>With the help of a bundle of safety measures including computer-based risk assessment, near-miss reporting, documentation, and ongoing training of workers and management representatives, Saint Gobain Rigips has drastically reduced the number of workplace accidents.</p>

Full name of the case	Country	Key points	Short description of the case
The health and safety management system of Bayer CropScience Villefranche	France	<ul style="list-style-type: none"> <li>• Permanent management commitment to health and safety management</li> <li>• Heavy expenditure in this area</li> <li>• An annual action plan supplemented by numerous sector initiatives</li> <li>• Risk monitoring competencies and numerous tools and methods</li> </ul>	<p>The Quality, Health, Safety, Environment Department (QHSE) action plan carried out in the Bayer plant testifies to ambitious occupational risk prevention objectives, with updated technical measures and significant results in terms of improved health and safety.</p> <p>The integrated management system has made it possible to structure and reinforce health and safety management in general in a chemical sector traditionally exposed to risks. It provides risk prevention facilities of which the company can be proud.</p>
<b>Examples of snapshots focused on improving elements of OSH management</b>			
OSH as an integral part of the general management system at Grindeks pharmaceuticals	Latvia	<ul style="list-style-type: none"> <li>• OSH as one of the most important issues in this pharmaceutical company</li> <li>• Systematic approach to improving OSH conditions</li> <li>• Implementing best practice for risk assessment in day-to-day operations</li> </ul>	<p>The OSH management system introduced at Grindeks started with hazard identification and occupational risk assessment. It has brought about real improvements, not least in working conditions and the image of the company as a leader in OSH.</p>
Improving safety management at Helsinki Water	Finland	<ul style="list-style-type: none"> <li>• Relates to work done outside normal workplace</li> <li>• Focuses on health risks</li> <li>• Public sector</li> <li>• Providing occupational risk assessment</li> </ul>	<p>Helsinki Water provides drinking water and processes waste water for over 1 million residents of Helsinki and district. The number of injuries per 100 employees fell from 8.5 in 2005 to 6 in 2006.</p> <p>This was a result of systematic risk assessment at each site, as well as training and commitment from top management to shopfloor level on issues of OSH management.</p>

Full name of the case	Country	Key points	Short description of the case
<p>'Because we are not as Strong as our products OSH is a priority' – an integrated approach to OSH management at ArcelorMittal Steel</p>	Poland	<ul style="list-style-type: none"> <li>• Involvement of employees from management to shop floor in shaping safety culture</li> <li>• Communication as a tool for improving OSH</li> <li>• Kaizen method used to improve working conditions</li> </ul>	<p>The project, which was aimed at all employees of ArcelorMittal Steel Poland, had the goal of increasing safety awareness to enable the plant to achieve a world-class safety level. The project required an intense focus by management on OSH issues, and a determination to embed them in the general management of the enterprise.</p>
<p>Sustainability and OSH Management, Global Reporting Initiative, Sandvik AB</p>	Sweden	<ul style="list-style-type: none"> <li>• Importance of social responsibility</li> <li>• Introduction of sustainable development and systematic reporting</li> <li>• Introduction of OSH indicators into the annual report</li> <li>• Objectives and targets include both qualitative and quantitative measures</li> </ul>	<p>Sandvik has introduced a risk management process throughout the organisation that covers risks related to the environment, human rights, labour legislation, business ethics, international guidelines and Sandvik's own Code of Conduct.</p>
<p>SME introduces the SGM System of the Austrian Social Accident Insurance</p>	Austria	<ul style="list-style-type: none"> <li>• Implementation of the OSH management system in a small company</li> </ul>	<p>AUVA developed a modular OSH management system (SGM) intended for SMEs. This case describes how a small engineering company named EAS (25 employees) introduced the system.</p>
<p><b>Examples of cases with a main focus on the integration of OSH with environmental and quality programmes</b></p>			
<p>OSH management in a supermarket chain</p>	Germany	<ul style="list-style-type: none"> <li>• Risk assessment as an element of quality management system</li> <li>• Safety and health management in retail stores</li> </ul>	<p>The introduction of OSH Management in a large German retail chain (REWE) is a kind of pilot for this sector. The REWE group management decided to standardise risk assessment with the help of modern technology: safety inspections with personal digital assistants (PDA) allow the use of the same checklists and risk assessment instruments in all of the chain's branches.</p>



Full name of the case	Country	Key points	Short description of the case
Establishment of an integrated Quality, Safety and Environment management system for waste reclamation at Apinor	France	<ul style="list-style-type: none"><li>• Certification based on OHSAS 18001</li><li>• An overall approach driven by senior management to 'supervise' site management capitalising on the existing situation</li><li>• Formal presentation of processes and procedures in a single Quality Safety Environment (QSE) Management Manual</li><li>• A commitment to precise, measurable objectives</li><li>• Numerous computerised management materials and tools made available</li><li>• Extensive resources devoted to equipment (PPE and other equipment)</li><li>• Risk assessment to support the approach</li></ul>	<p>Establishment of the integrated Quality Safety Environment (QSE) management system at Apinor enabled safety management to be aligned with the overall organisation of the company's management, in an industry where this has competitive implications.</p> <p>This safety management system is consistent with its operations and its experience; it thus supports perfectly the company's growth and is reflected by tangible results. The success of the approach is also largely due to the conditions of project support and to investment in the field.</p>
Implementation of an Integrated Management System (Quality, Environment, Safety and Health) in Vienna's Municipal Department	Austria	<ul style="list-style-type: none"><li>• Integration of existing management systems</li><li>• Integration of environmental and OSH management into quality management</li><li>• Raising management awareness of OSH and environmental issues</li></ul>	<p>In 1997, MA 48, a part of the 'environmental group' of the municipal administration of the City of Vienna, implemented a new quality management system (QMS) according to ISO 9001:2000 in the four units: waste management, street cleaning, vehicle fleet, and administration. In order to meet the requirements of the different topics in one single system it was decided to re-organise the existing quality management system in two ways: First, the four single-unit QMS had to be merged into one general QMS valid for all units. Second, the QMS had to be amended in such a way that OSH and environmental management systems could be integrated. The integrated management system meets the needs of MA 48. It is transparent, applicable for all operational processes and an effective steering tool for the management.</p>

Full name of the case	Country	Key points	Short description of the case
Embedding safety in the company's core business: the 'Stuck Pipeline' case	Netherlands	<ul style="list-style-type: none"> <li>• Embedding safety in the company's core business</li> <li>• Safety as core business</li> <li>• Embedding safety in quality programmes (Lean Manufacturing, World Class manufacturing)</li> </ul>	<p>This case was one of five case studies in the context of a research project titled 'Safety as core business' that was carried out by TNO for the Dutch Ministry of Social Affairs and Employment.</p> <p>This research project aimed to map the critical factors that companies face when incorporating safety as a part of their core business, which means that safety issues are seen as a critical element of all relevant processes and activities in the organisation, e.g. day-to-day decision-making, investments, purchasing, management of employees and work practices. After a list of advantages and disadvantages had been drawn up through a literature review and interviews with OSH and non-OSH (e.g. management) experts and company visits, a theoretical framework was developed: the Safety@corebusiness© model. The model was tested for practical use in case studies, including the 'Stuck Pipeline'.</p>

### Examples of snapshots with a main focus on the integration of OSH with environmental and quality programmes

Corporate Social Responsibility and Total Quality Management in an SME	Finland	<ul style="list-style-type: none"> <li>• Occupational and safety issues as a part of corporate responsibility and total quality management</li> <li>• Minimising risk to environment and employees</li> </ul>	<p>Total quality is the key concept in Kilito's business. The management system incorporates systematic awareness and management of environmental and safety aspects. It integrates an environmental system conforming to ISO 14001, a safety system conforming to BS 8800, an application of European quality award criteria of the European Foundation for Quality Management (EFQM), and the principles of Responsible Care, the environmental, health and safety programme of the chemical industry.</p>
--	---------	---	--



Full name of the case	Country	Key points	Short description of the case
<b>Examples of cases focused on integration of employees' health management into general management</b>			
Project AddHealth	Austria	<ul style="list-style-type: none"> <li>Analysing mental health of workers</li> <li>Introducing 'Health Teams' to improve mental health of employees</li> </ul>	<p>Employees at computer firm addIT suffered from severe stress caused by tight deadlines, high customer expectations and fierce competition in the ICT sector. As an initial step the stressors were identified. Secondly an OSH management system was designed which fitted exactly with the needs of the company. It included ongoing workplace evaluation, health circles, and individual health promotion.</p>
Workplace health promotion at Česká rafinářská (oil refinery)	Czech Republic	<ul style="list-style-type: none"> <li>Ensuring general health of employees (general health protection, promotion of sporting activities)</li> <li>Health campaigns (smoking cessation, weight reduction, etc.)</li> </ul>	<p>Health protection at work and high motivation on the part of employees and contractors to observe the rules of health protection are the fundamentals of the success of Česká rafinářská. The project won the company an award for 'Health Promoting Enterprise of the year 2005'.</p>
<b>Examples of cases focused on OSH culture and Human Resources Management</b>			
Partners in Safety at Corus Htd	Netherlands	<ul style="list-style-type: none"> <li>Improving occupational safety through a change in safety culture</li> <li>Linking the vision on safety to the company's values and translating these values into measurable key performance indicators</li> <li>Deploying a communication structure (cascade) and communication tools with regard to occupational safety</li> </ul>	<p>The largest branch in the Netherlands of steel company Corus is located in IJmuiden. Despite previous attempts to promote occupational safety within the maintenance and service department, the level of occupational accident-related absenteeism had not fallen by much. The plant therefore launched a programme called 'Partners in Safety' in 2003 at this branch, with the support of the Ministry of Social Affairs and Employment. The objective was to bring about a change in culture as regards safety and leadership through interventions in the labour process and the organisational structure. Thanks to this project the number of (near) accidents resulting in absence from work fell from 97 per million hours worked in 2001 to 7 in 2006.</p>

Full name of the case	Country	Key points	Short description of the case
A joint vision for Human Resources Management and Welfare at Work	Belgium	<ul style="list-style-type: none"> <li>• Human Resources Management (HRM)</li> <li>• Welfare and well-being at work</li> <li>• Provincial Government</li> </ul>	<p>The changing labour market and new trends in Human Resources (HR) policy have incited the Personnel Department of the Provincial Government of Antwerp to change its operations and to formulate a new vision and new objectives. The social awareness of human capital within an organisation needed to be translated into a policy, in this case an HR policy. During discussions regarding the transformation from a classic personnel department into an HR department and the drafting of the strategic memo for 2007-2012, the joint objective 'the welfare of employees at work' kept on cropping up, thus creating the foundation for an excellent working relation.</p>
OurTime – a work-life balance project at Inland Revenue	UK	<ul style="list-style-type: none"> <li>• Management and unions working together</li> <li>• A joint management-union group oversees the process</li> <li>• Widest possible involvement of staff, including managers</li> </ul>	<p>The UK's Inland Revenue department needed to extend its opening hours to the public to provide a more accessible service. The Revenue also wanted staff to gain a better balance between work and personal life. The answer was 'OurTime' – a partnership between the Revenue and the Public and Commercial Services Union (PCS), which gives staff options about their working hours and allows Revenue offices to open outside normal business hours and at weekends.</p>



# 4.3. EXAMPLES OF CASES AND SNAPSHOTS FOCUSED ON IMPROVEMENT OF OSH MANAGEMENT

## 4.3.1. Implementation of OSH management system in the Teofilów textile works (Poland)

### KEY POINTS

- Implementation and improvement of OSH management systems
- Ensuring employees' participation in OSH management

### INTRODUCTION

ZTK 'Teofilów' S.A., a textile works employing 450 people, has been implementing the rules of systematic occupational safety management since 1997. External support and expertise in OSH management were important factors contributing to its success in this field. The company has participated in two initiatives: the pilot EVISA project (1997-1998) on 'Improvement of Safety & Health Management System in Polish Enterprises' conducted by the National Labour Inspectorate in cooperation with Norwegian consulting firm Det Norske Veritas and the OSHMAN project (1999-2000) entitled 'Occupational Safety and Health Management in Polish Industry' provided by the Central Institute for Labour Protection with assistance from Swedish experts.

### BACKGROUND

ZTK Teofilów S.A. has been involved in the production and sale of top-quality knitted fabrics for over three decades. The company offers the most comprehensive textile product range in Poland. In August 1998 it received the TÜV Certificate which confirms the successful implementation of ISO 9001 requirements for knitted fabric production. Moreover the company's efforts to ensure the quality of its products and safety and satisfaction of its clients is testified by other certificates, including the 'Safe for baby', 'Safe for child', 'Friendly for man', 'Sanitiget' and 'Confidence in Textiles' certificates.

The top management have always paid considerable attention not only to clients' satisfaction but also to safety and health at work of their employees. The company is a member of the Safe Work Leaders Forum.

In 1997 company management decided to break away from the traditional approach to safety at work and to implement an OSH management system that would result in:

- minimisation of losses related to OSH;
- implementation of assessment and control measures for occupational risk related to activities and tasks being planned;
- elimination of occupational hazards in the planning phase of company development plans; and
- enhancement of reliability and image of the company among partners and external institutions.

OSH objectives have been set in the company's 'Safety Strategy' as follows:

- producing products of the best quality while at the same time ensuring OSH for all employees;
- minimising losses resulting from bad working conditions; and
- ensuring the participation of all employees in creating and maintaining safe and healthy working conditions at the required level.





To implement the OSH management system and consequently to achieve the abovementioned objectives, ZTK Teofilów S.A. participated in two initiatives relating to OSH management: the EVISA pilot project (1997-1998) and the OSHMAN project (1999-2000).

### **AIMS AND OBJECTIVES**

The main objective of company participation in both initiatives was to support the implementation of a new OSH management system.

The objective set for the EVISA project was to gain a basic knowledge of OSH management and risk assessment in the workplace and to implement elements of an OSH management system. The second project, OSHMAN, focused on adjusting the already implemented OSH management system to the requirements of Polish standard PN-N-18001 'Occupational Safety and Health Management Systems. Requirements'.

### **SCOPE OF THE PROJECT**

In the EVISA project the labour inspectors and Norwegian experts provided training on OSH management. The knowledge gained during the training and the external assistance given by the labour inspectors and the experts enabled the company to assess working conditions and to improve safety procedures. As a result the company gained the 5th Safety Level according to the International Safety Rating System (ISRS).

Within the OSHMAN project two specific problems were identified: a technical problem – too high a level of occupational risk at workplaces in the Dye Shop – and an organisational problem – lack of an effective information system ensuring that employees were informed about occupational risks at their workstations. To work towards solving both problems the following activities were undertaken:

- training on OSH management systems defined in the Polish standard PN-N-18001 'Occupational Safety and Health Management Systems. Requirements' was provided to all employees;
- development of a plan to adapt OSH management systems to the requirements of Polish standard PN-N-18001;
- establishing procedures for communication in OSH and on protective and corrective actions;
- workshops aimed at improving employees' negotiating skills;
- establishing and approving a schedule of workplace meetings for discussing OSH-related problems;
- designing and printing the company bulletin 'Organisational Safety Management' dedicated to OSH issues as well as environmental ones.

The activities undertaken in the Dye Shop included hazard identification and occupational risk assessment at workstations in cooperation with all employees, as well as follow-up actions. The corrective and preventive actions were aimed mainly at improving organisational procedures on harmful chemical substances, identifying Dye Shop employees' need for personal protective equipment (PPE) and improving the communication and organisational climate in the Shop by ensuring that all staff participated in OSH-related activities. The information on occupational risk assessment was placed on the noticeboard in the Dye Shop and published in the company bulletin.

### **RESULTS AND EVALUATION OF THE PROJECT**

Two years after the implementation of the OSH management system the number of occupational accidents had fallen to one-third of its previous level. Days lost to sick leave fell by over 4,000. All employees gained significant knowledge about OSH management that contributed to the improvement of the safety culture. Employees became more aware of their responsibility for their own safety and that of their colleagues. Thus the employees' commitment to OSH-related activities has also increased. Moreover, the transfer of information between management and employees, and cooperation between them in OSH activities, has improved significantly.



The company is continuously involved in activities aimed at improving the OSH management system. Major emphasis is laid on ensuring valid occupational risk assessment at all workplaces, and on-the-job training and consultation in OSH with all employees. These activities are resulting in both technical improvements in working conditions and increasing knowledge and awareness of OSH. Since 2002, the following corrective and preventive actions have been taken:

- verification of occupational risk assessment, if necessary;
- providing occupational risk assessment of all new workplaces;
- modernisation of floor surfaces in manufacturing shops (reduction of risks related to falls, trips, and slips);
- improving lighting at knitter workstations;
- modernisation of a machinery park (reduction of risks related to superficial injuries and wounds);
- elimination of exposure of employees to harmful chemical substances in the Dye Shop;
- modernisation of internal transport (reduction of risks related to manual handling);
- modernisation of ventilation system in manufacturing shops (improvement of microclimate);
- purchase of new display screen equipment (DSE) and chairs complying with ergonomic requirements (improvement of ergonomic conditions at workstations equipped with DSE).

Moreover the company liaises constantly with the Central Institute for Labour Protection, using its educational and information materials, participating in events organised by the Institute and other institutions operating in OSH. Consequently since the conclusion of both initiatives the number and severity of occupational accidents have been systematically decreasing.

All the activities undertaken within the second project (OSHMAN) were aimed at adjusting the already implemented OSH management system to the requirements of the Polish standard, which is fully compatible with the ISO 9001 standard. This contributed to better coordination of activities in the company and a higher effectiveness of both OSH and general management. Consequently OSH aspects have become a part of business and are being incorporated into decision-making processes at every level of management.

### **PROBLEMS FACED**

During both projects all significant problems were overcome. Nevertheless, a problem appeared after termination of the projects: how to continue the initiative without external support and motivation. However, the enthusiastic involvement of the employees in the activities of both projects, as well as ongoing access to OSH-related expertise provided by the Central Institute for Labour Protection, have allowed this problem to be overcome and guarantee that activities aimed at OSH management improvement are being continued in the company.

### **SUCCESS FACTORS**

The main idea of both projects was to involve all employees in activities aimed at improving working conditions. This active participation of all employees as well as external expertise and consultations given by labour inspectors, researchers from the Central Institute for Labour Protection as well as international experts have contributed to the success of both projects. The compatibility of quality and OSH management systems and their integration facilitated the improvement of the OSH management system in the company.

### **TRANSFERABILITY OF THE PROJECT**

The OSH management system can be implemented in any organisation irrespective of its type of activity and size. When implementing the system companies can use their experience of implementing existing systems (e.g. quality or environmental systems) to facilitate the process.



**CONTACT INFORMATION**

Czesław Reczulski & Krystyna Bednarz  
 ZTK 'Teofilów' S.A.  
 ul. Szparagowa 6/8 91-211  
 Łódź, POLAND  
 Tel: +48 426136148  
 Web: www.teofilow.com.pl

### **4.3.2. Practical implementation of a comprehensive OSH management system for windmills in a repair and maintenance company in Portugal**

**KEY POINTS**

- Introduction of a comprehensive OSH management system into a regional maintenance and service department of 100 employees
- Detailed risk assessment
- Commitment of the management and participation of workers
- Reduction of normal as well as high risks in maintenance

**INTRODUCTION**

VESTAS is a large international wind turbine producer with branches all over the world. The risks tackled by its OSH management system concern the repair and maintenance operations (not production operations). Wind turbines are complex machines requiring continuous maintenance to keep them running 100% of the time.

The OSH management system covers two situations: regular service and 'repair on demand', sometimes in emergency situations. In the case of regular servicing, operations, including OSH aspects, can be planned thoroughly in advance. In 'repair on demand' cases a single worker or a group of workers is sent to the wind turbine to perform the tasks necessary to achieve normal operation. In such situations the manager and the workers cannot normally foresee the type and extent of the damage and the risks involved.

VESTAS has developed a comprehensive system to reduce such risks to the minimum possible. The system was designed for worldwide use, but has national and regional deviations where appropriate.

**BACKGROUND**

International studies have shown that working in repair and maintenance involves a higher risk of accidents than daily routine work in standard situations. Factors which contribute to this phenomenon are: high work pressure, unfamiliar working environment for workers from external services, poor cooperation between groups of workers and different departments, and dangers from the damaged or malfunctioning equipment itself.

Wind turbine maintenance and repair is in many aspects comparable with standard service tasks in the engineering industry. In some respects, however, the risks are much higher than average:

- working at height
- work with or in rotating parts
- work under electrical current.

These high risks require special safety precautions.



## **AIMS AND OBJECTIVES**

The objective of this management system is to keep the accident rate as low as possible. The target incidence of industrial injuries per million working hours for 2008 was 15 (VESTAS group annual report, 2006). Achieving this target required standard information and communication routines to be clearly defined, as well as working standards for all major or dangerous working situations.

## **SCOPE OF THE PROJECT**

The implementation of an OSH management system is seen by VESTAS as an important tool to help it work in a more systematic way to improve OSH aspects. Some of the most important features of the OSH management system implemented in VESTAS Portugal are described below.

### **Risk Assessment**

VESTAS Portugal applies a risk assessment tool that is based on the probability and severity of risks. It covers both environmental and safety incidents and accidents. The identification of the risks takes into account:

- normal operation
- abnormal operation
- emergency situations.

Risk identification is performed by the responsible Quality, Safety and Environment (QSE) personnel of the Service Business Unit with the collaboration of all interested parties. Tools that can be used for the identification of risks are available at the Group QSE's homepage.

Based on the risk assessment, preventive measures have to be taken. After implementation of the preventive measures the risk level is assessed once again.

### **The Mediterranean Occupational Risk Prevention Plan**

Based on the company's prior experience and the risk assessment, VESTAS Portugal has developed a comprehensive system that covers all relevant aspects (the plan is accompanied by detailed 'Business Process' (BP) and Instructions (INST)). These aspects are listed below.

- Roles and responsibility of the management and the workers.
- OHS Programme Management (keeping the system up-to-date and implementing it effectively by safety meetings and work planning).
- Emergencies (rules for situations such as fire, accident to a worker or runaway situations).
- Incident Reporting (rules for reporting of accident near-misses and unsafe conditions).
- General Safety (good housekeeping and special regulations for visitors).
- Fire Prevention (instructions for welding, handling of flammable liquids and smoking).
- Personal Safety (instructions for working alone and work under different weather conditions, e.g. protection of the skin in sunny periods, protection during strong wind and thunderstorms).
- Personal Protective Equipment (comprehensive instruction on many aspects of personal protection. Special attention is paid to work at height, especially on fall arrest equipment (approved harness, lanyard with energy absorber, positioning rope, fall arrester for wire or rail).
- Work at heights (this chapter sets out rules for this type of work).
- Rules for electrical work (workers often deal with high voltage over 1000v AC. This requires a strict regime to avoid fatal accidents).
- Safe working with Hydraulics (hydraulic parts and equipment can lead to serious injuries. The instructions cover some of the most risky situations).



- Work on rotating parts (this is one of the high-risk areas which require special rules).
- Working with hazardous materials (to function properly, windmills need considerable amounts of oil, lubricants and cooling fluids).
- Tools and other Equipment (this chapter deals with typical sources of accidents such as scaffolds or ladders).
- Vehicles Heavy Transport and Lifting Equipment (cranes and other heavy lifting equipment is required to repair or maintain the upper and higher areas of the windmill. They often have to be used on unsuitable natural surfaces, which poses considerable accident risk).
- Subcontractor OHS Requirements.

### **Responsibilities of the management – information and communication**

The OSH management system has a chapter entitled OSH Programme Management that clarifies the role and responsibilities of the management. The management is first and foremost responsible for ensuring that work is carried out in compliance with health and safety guidelines. The tasks of the management are defined as follows (shortened version):

- Encourage employee and subcontractor involvement in the safety process.
- Provide appropriate supervision at work sites.
- Ensure that both legal and internal requirements are complied with.
- Ensure that workers are informed about job hazards and are prepared to handle any site-specific hazards on the work site.
- Ensure that personal protective equipment (PPE) is readily available at the work site, correctly used, correctly stored, correctly maintained and replaced when necessary.
- Ensure that workers and suppliers are appropriately qualified to carry out the work required.
- Develop and maintain a certifiable environment and work environment management system in accordance with ISO 14001 and OHSAS 18001.
- Communicate the management system to all personnel and subcontractors affected by the system.
- Implement and document regular audits of all VESTAS workplaces to show that procedures and rules are being complied with and to identify areas of improvement.
- Maintain all safety and environmental records in accordance with applicable legal regulations.
- Ensure that industrial accidents and near-misses are reported and processed with a view to corrective and preventive action.

General safety meetings are one of the major tools used to implement these targets. The responsible manager must conduct regular safety meetings with the department's employee safety representative. Beyond that he/she must also conduct safety meetings with employee safety representatives and representatives from relevant subcontractors and other partners at the site.

A template of topics to be addressed at such meetings is provided in the OSH management system.

VESTAS conducts a number of training courses to help staff implement the principles successfully. The safety training consists of four main elements:

- Basic Safety training – Training provided according to the OSHA Safety Manual.
- The duration of this training is 2 1/2 days.
- First Aid – 8 hours training (theoretical and practical).
- Fire fighting – 8 hours training (theoretical and practical).
- Rescue and evacuation from a Wind Turbine – 8 hour training (practical).

This adds up to 44 hours of training in total. No worker is allowed to work without this training. Once it has been completed, then technical training commences.



### **Responsibilities of the management – planning of work**

The responsible manager is also obliged to plan the work. She/he must be informed of any task that is to be carried out on the site, and he/she must give permission before the task can be carried out. VESTAS requires a 'Permit-to-Work process' on special and non-routine work activities to ensure hazards and risks associated with these activities are identified and safeguarded.

### **Responsibilities of the workers**

The main responsibility of the workers is, on one hand, to follow the health and safety instructions and to apply the appropriate procedures. This concerns the use of PPE, good housekeeping and operation of all equipment. On the other hand the OSH system gives the worker an active and preventive role. This active role is expressed in instructions as:

- Report any hazardous or unsafe conditions to their immediate manager.
- Observe activities of fellow employees and subcontractors to ensure their safety and the safety of those around them, and to correct unsafe acts in a proactive, positive manner to prevent an incident or near-miss from occurring.
- Respectfully refuse to perform work when unsafe conditions exist or when unable to perform the task competently.
- Report all industrial accidents, near-misses, injuries and illnesses to their immediate manager.

VESTAS also has a network of safety representatives, who are appointed from among the employees according to local regulations.

The person in charge of the task must discuss the tasks of the day in detail with all those involved to ensure coordination of all the parties involved. In the case of a serious accident, all involved parties must be informed and involved in future efforts to prevent similar incidents.

### **Supervision**

All equipment and operations that can have an impact on the environment or on the OSH of the employees are subject to operational control. For each device (tool, machine, installation, safety equipment, measuring equipment) with an actual or potential impact on the environment or OSH of personnel, a procedure for maintenance or operational control is established in order to ensure that it is in an acceptable condition to perform the required work.

Applicable legal requirements are considered when procedures are established.

Education or training requirements related to the established procedures for operational control and maintenance are identified and the necessary training and education is planned and performed.

### **Audits**

Part of the supervision involves regular audits to determine whether the QSE management system conforms to the requirements or not, whether it has been properly implemented and maintained, and whether it is effective in meeting the VESTAS QSE policies and objectives. Previous audits are reviewed, and the result are reported to the management.

## **RESULTS AND EVALUATION OF THE PROJECT**

Published figures are only available for the VESTAS group as a whole. These figures show a decline in accident incidence and injuries parallel to the increasing introduction of management systems.



Table 14: VESTAS Group – Introduction of management systems and OSH development

Products							
Occupational health and safety							
Objective							
To give highest priority to safety.							
To include consideration for employees and environment in the planning and implementation of activities.							
Measuring point/method	2002	2003	2004	2005	2006 <sup>1)</sup>	2006	Target 2008
Incidence of industrial injuries per million working hours	48.5	39.3	42.5	46.7	38.8	36.5	15
Absence due to illness among blue-collar employees (%) <sup>3)</sup>	4.5	4.4	3.5	4.1	3.8	3.2	2.5
Absence due to illness among white-collar employees (%) <sup>3)</sup>	1.7	1.4	1.6	1.5	1.6	1.5	-
Management system							
Objective							
Systematic introduction of certified management system according to the ISO 14001 and OHSAS 18001 standard.							
Measuring point/method	2002	2003	2004	2005	2006 <sup>1)</sup>	2006	Target 2008
Percentage of VESTAS certified according to the ISO 14001 standard (%) <sup>4)</sup>	N/E <sup>2)</sup>	71	57	75	N/E <sup>2)</sup>	76	100
Percentage of VESTAS certified according to the OHSAS 18001 standard (%) <sup>4)</sup>	N/E <sup>2)</sup>	64	51	63	N/E <sup>2)</sup>	77	100

1) Sites included in the reporting for 2005.

2) Not estimated for the year.

3) Absence due to illness has been designated as a benchmark for employee welfare.

4) VESTAS is working systematically with the improvement of environmental and OSH aspects, and the introduction of environmental and OSH management is seen as an important tool in this connection.

Source: Environmental and OSH indicators for the Group, VESTAS Annual Report 2006

Each service unit has to report monthly about the safety status of the equipment, the training measures, accidents and injuries.

### PROBLEMS FACED

There are some situations where instructions do not exist. For these situations VESTAS Portugal has developed a special Business Process (BP). This BP determines the steps to follow when specific work has to be carried out in a wind turbine and no relevant instructions exist.



### **SUCCESS FACTORS**

The high commitment of the management at the head office and at the regional offices is one of the main success factors. Certification of enterprise units according to OHSAS 18002 and ISO 9001 has added to this. VESTAS Portugal is certified according to ISO 9001, and is undergoing certification by OSHA 18001 and ISO 14001.

### **TRANSFERABILITY OF THE PROJECT**

The system can be transferred easily to other wind turbine service companies in Europe and worldwide. In some countries specialised SMEs are contracted by the wind turbine producers or the owners of the wind parks to perform regular servicing and repair operations. These SMEs can profit from the VESTAS OSH management system.

In addition, the general regulations and the methodology could be transferred to other types of maintenance and repair work.

### **CONTACT INFORMATION**

Francisco Monteiro  
Health, Safety & Environmental Coordinator  
VESTAS Portugal  
Tel: +35 1 229 477 514  
Email: fjcnm@vestas.com

Anna Buxaderas  
VESTAS Mediterranean  
QSE Manager  
Tel: +34 902 41 98 00  
Email: anbux@vestas.com

## **4.3.3. The safety management system in a waste management centre at SITA Sud (France)**

### **KEY POINTS**

- Formal presentation of some tools and procedures in a computerised integrated management system
- A safety assurance manual, with the objective of MASE safety manual certification
- A commitment to precise, measurable objectives
- Numerous computerised communication materials and tools
- Extensive resources devoted to equipment including personal protective equipment (PPE)
- Risk assessment to support the approach

### **INTRODUCTION**

The processing centre of La Penne sur Huveaune, on the outskirts of Marseilles, is one of the main facilities of SITA France, an environment services company of Suez Group, a world leader in water and waste services.





The processing centre in question handles all waste management activities: selective collection (glass, cardboard, etc.), industrial collection (non-hazardous but also hazardous industrial wastes, waste from healthcare operations, etc.), household waste collection, transport, sorting and treatment. It employs about 60 workers, handling operators, machine operators (including about 30 drivers) and team leaders, 10 office workers and 10 executives.

The Penne sur Huveaune processing centre was a candidate for MASE certification in 2004.

## BACKGROUND

The MASE corporate safety assurance manual is a reference system for safety management that was developed by a federation of chemical firms and defines the minimum measures required for a company to be able to establish an efficient OSH management system. The reference system consists of two main parts, which provide the company with all the information required to set up or improve its safety management system. The first part describes in detail the five factors that form the essential foundations of the system:

- management commitment;
- the competence and occupational qualification of the personnel;
- work preparation and organisation;
- inspections; and
- continual improvement.

The second part of the manual comprises a set of technical appendices containing advice and serving as a decision-making aid for the company.

Waste management is one of the most dangerous sectors, with regular fatal injuries and frequency and severity levels which are nearly double the average injury rates in other activities. As a European leader in its field and a member of SUEZ Group, which signed an ethical charter in 1998, SITA has committed itself to achieving an exemplary record with regard to safety.

## AIMS AND OBJECTIVES

The goal of achieving MASE certification results from a twofold concern for safety, both general and local, in a context of critical statistics.

The Penne sur Huveaune processing centre's application for MASE certification also represented a local challenge. The aim for this centre is first to meet the company's objectives by overcoming the high accident rate. As an operating manager at the centre commented, 'the goal is to acquire a safety-related work method'.

It was also a commercial opportunity to expand the business, since the MASE label is necessary for the centre to be able to obtain access to certain markets (customers or invitations to tender for industrial wastes).

## SCOPE OF THE PROJECT

### **Application to the Penne sur Huveaune processing centre**

In 2000 SITA France set in motion an Environment Quality Safety (EQS) programme, and an EQS charter was established in 2001. This EQS policy provided a framework for quality, safety and environmental measures that had in fact been established for several years in some subsidiaries.

To develop its policy, in 2002 SITA France worked out an Integrated Management System (IMS) for use by the head office and the subsidiaries 'to assure customers that every task is approached from three angles simultaneously: environment, quality and safety' (P. Dauvin, CEO of SITA France, 2001).



Each regional Technical Department of the group has local correspondents for the Integrated Management System: Quality Manager, Safety Coordinator, Safety Instructor, environmental managers, etc. The Technical Department is heavily involved in working out the safety management system for the centre and the safety assurance manual, as required by the MASE reference system.

Application of the management system to the processing centre and conformity to the MASE required a great deal of work on the part of the regional safety coordinator as well as the operating manager.

Before applying the MASE reference system, the manager of the centre reorganised operations. This was carried out in several stages:

In 2001, work was performed to improve the equipment and bring the facility into conformity, especially from an environmental and organisational viewpoint.

In 2002 a document was drawn up initiating the work on risk assessment which continues today.

In 2002 and 2003, efforts were made to raise awareness of safety, both through regulations and quality procedures, but also via training, especially for the supervisory staff.

In 2003, emphasis was placed on implementation of the MASE reference system:

- writing of the manual;
- fulfilment of certain requirements;
- pre-audit;
- adoption of new initiatives ('safety talks' at the start of the quarterly team meeting, establishment of annual evaluation of all the personnel, etc.).

These talks were conducted chiefly by the operations manager, who called on the safety coordinator to provide support for dissemination of his safety messages. But in the future, the operations manager will pass on this task to the operators (supervisory staff) themselves.

### **Support provided by SITA head office**

The major measures taken by the SITA head office for safety management are:

The provision of human resources: SITA France has provided the operators with a regional safety coordinator and safety instructor. The role of the regional coordinator is to 'promote risk prevention and the improvement of working conditions' in all the agencies in the region. The instructor, for his part, trains relay instructors to provide training for the personnel: handling operators, drivers, etc.

The provision of material resources: SITA has provided IT resources, in particular the organisation of the Integrated Management System (IMS) on the Intranet, which thus serves as a safety management database. In addition to the IMS, the 'CLEAR' computerised invoicing tool helped structure the operators' work; it requires data management relating to vehicles, loads, collection and dumping locations, working hours, etc. which provides a framework for rounds and management operations but also work traceability, which is a new requirement for these normally autonomous teams.

The elaboration of a safety assurance manual: A 17-page document produced to meet MASE requirements covers the measures taken to manage the safety policy. This document, dedicated to safety, is organised in accordance with the five chapters of the MASE (management commitment, skills and qualifications, work preparation and organisation, evaluation and measurement of results, and constant monitoring and commitment). It refers to various procedures of the IMS: management, human resources, surveillance and measurement, etc. and is illustrated by excerpts from SITA internal documents.

Updated, measurable objectives: The health and safety policy and the commitment to it is summarised in a detailed list of objectives, revised annually and set for each agency and centre of SITA Sud.



## RESULTS AND EVALUATION OF THE PROJECT

The safety management system benefited from an industry context favourable to making allowances for safety considerations, in view of the dangers of the waste collection industry which have resulted in serious injuries and even deaths.

There is growing sector awareness of the risks involved in waste management operations, combined with a more general heightened awareness of road safety in the company. The statutory obligations are therefore better accepted.

Safety management received attention at the highest level of the firm.

The stated objectives, the resources assigned and the repeated attention to safety make it one of the prime concerns of personnel and management. Everyone supports this policy in a united fashion. Action is taken to solve the problems that arise.

Extensive training is offered to maintain and develop skills in the area of safety.

The fact that management has adopted the project and continues to regard safety as a strategic issue means that safety practices have become permanently established.

The measures that have most impact on staff safety awareness include:

- Computerised scheduling of rounds with CLEAR;
- The 'safety talks'; collective meetings for safety discussions between the personnel and senior management;
- The 'truck manual' which, for the personnel involved, brings together the administrative documents for each truck, the safety protocols for customers' facilities and the SITA rules of good conduct;
- The follow-up provided by quality-safety assessments and accident analyses;
- Induction with the safety booklet, a collection of safety and risk prevention instructions, illustrated with drawings or pictograms, published by SITA France.

The visible results are as follows:

- The frequency level of accidents in the agency, which was around 100 between 2000 and 2001, fell to about 50 in 2002.
- The La Penne centre which, in 2001 and 2002, accounted for almost three-quarters of the agency's accidents, accounted for 'only' 50% in 2003.
- In 2002 the centre accounted for 10% of the number of workdays lost by SITA Sud; accidents were still numerous but less serious than before.

From the qualitative viewpoint, the results observed are as follows:

- An improvement in working conditions: The safety investments made by SITA are giving good results. The staff unanimously recognised the change in the facilities, material, equipment, etc.
- A feeling of belonging to a leading firm: The safety policy promoted by SITA (requirements, resources, etc.) reassures staff and reinforces the image of the company as being concerned about safety.
- Giving responsibility to staff, especially the supervisory staff: The measures taken and the information provided on safety give the staff a sense of responsibility in this matter. Safety is presented as an expression of professionalism.



### **PROBLEMS FACED**

Despite this growing awareness of safety, attitudes to risks vary greatly from one person to another, and there is a difference in perception between the labour force and senior management.

For management, the main risks concern traffic and the operation of the machinery and equipment for which it is responsible.

For the supervisory staff, the main risks concern their teams: the major risks, in their view, are risks of falling related to net laying or risks of injury when opening the doors of the bins or during travel.

For the drivers, the risks are above all to the safety of others (passers-by, customers) or the possibility of damaging private or public property (cars, etc.) if the net fails or if a bin falls. They do not express much concern for their own safety and the risks that they personally face. At most they speak of certain difficult situations, risks from electric cables, or certain handling operations. This disregard for personal risk is well known and common in situations of danger, but this hierarchy of risks shows that the drivers' safety in a given situation will depend on constant compromises between various priorities.

Numerous areas for improvement remain, however, as shown by the quality-safety assessments and the EQS inspections, for example:

- Breaches of the regulations or obligations (for example: using the phone when driving, cigarettes on hazardous sites, etc.);
- Wearing of personal protective equipment (PPE) highly variable in all operations;
- Postures contrary to health and safety recommendations;
- Shortcomings regarding compliance with certain instructions: inadequate noticeboards on site or inadequate circulation of emergency evacuation instructions, brief and incomplete accident analysis reports, etc.

These shortcomings are mostly being dealt with by analyses and corrective measures. While safety takes high priority in SITA's policy, it can nevertheless be further reinforced in operating practices.

The policies apply above all to safety. While priority has been given to injuries in the safety policies of the IMS, it is likely that health may prove – as much as safety – a major issue for SITA's agencies over the coming years for all types of personnel.

### **SUCCESS FACTORS**

Passing on a sense of responsibility to the staff is clearly a factor in the success of this initiative, leading the workers to feel a greater commitment to health and safety matters.

Management supported the establishment of this safety management system (MASE) with training, documentation and material resources that enabled safety practices to become established permanently; the radical change in the attitude of the staff is significant.

### **TRANSFERABILITY OF THE PROJECT**

This initiative is transferable to other industries. It requires strong management involvement to work out the strategy and the management system, but also a will to involve all the workers so that they feel a sense of ownership of the system.



**CONTACT INFORMATION**

Jean Louis Denisot  
CRAM Sud Est  
35 rue George  
13386 Marseille Cedex 20  
Tel: +33 4 91 85 85 00  
Email: jean-louis.denisot@cram-sudest.fr

**4.3.4. Achieving zero accidents in a plasterboard wall factory (Germany)****KEY POINTS**

- Improving OSH management system
- Risk assessment
- Awareness-raising
- Accident and near-miss documentation system
- Building material industry

**INTRODUCTION**

Saint Gobain Rigips GmbH is the oldest manufacturer of plasterboard walls in Germany, and the company name has become synonymous with its product. Nearly 810 employees in nine factories are responsible for various plasterboard, gypsum and insulation products used in the construction industry. In 2005 Rigips became part of the Saint Gobain Group.

The Saint Gobain Rigips integrated management system (IMS) consists of a certified ISO 9001:2000 quality management system and a safety and health management system certified by the Statutory Accident Insurance for the Stone Quarry and Building Material Industry (StBG), in accordance with the OHSAS 18001 standard.

**BACKGROUND**

Until 1994 Rigips documented up to 53 notifiable accidents<sup>36</sup> at work annually (StBG, 2006). This was considered unacceptable, not only because of the risks to workers' health but also because of the effect the accidents had on productivity and annual turnover.

In 1995 Rigips decided to implement the ISO 9001:2000 quality management standard, which was later supplemented by a safety and health management system of StBG standard. Since then the IMS has been regularly re-certified.

<sup>36</sup> Notifiable / reportable accidents = accidents that lead to three or more days of sick leave. According to German law accidents need only be reported to the accident insurer if the worker dies or suffers from injuries that lead to more than three days of sick leave, section 193 I SGB VII. See German Code on Social Law, Book 7 (SGB VII), section 193, available at: [http://bundesrecht.juris.de/sgb\\_7/\\_\\_\\_193.html](http://bundesrecht.juris.de/sgb_7/___193.html) ([http://bundesrecht.juris.de/sgb\\_7/index.html](http://bundesrecht.juris.de/sgb_7/index.html)). The practice in EU Member States varies significantly: Eurostat (ed): ESAW 2001, Methodology. p. 24. Available at: [http://ec.europa.eu/eurostat/ramon/statmanuals/files/ESAW\\_2001\\_EN.pdf](http://ec.europa.eu/eurostat/ramon/statmanuals/files/ESAW_2001_EN.pdf)



The implementation of the IMS was accompanied by a bundle of concrete measures with the aim of reducing the number of accidents at work. These included:

- investing EUR 1.7 million in the improvement of machinery safety between 2001 and 2005;
- periodical auditing of all production processes;
- re-organisation of production and in-house transportation processes;
- training and awareness-raising of the workers;
- elaborating specific OSH programmes for each factory; and
- a coherent system of warning signs at places of elevated risk.

### **AIMS AND OBJECTIVES**

The aim of the activities undertaken was as simple as it was ambitious: to reduce the number of accidents leading to sick leave to zero. The question that needed to be answered was: What had to be done in order to reach this goal?

There were two elements to this process. On the one hand safety and health management had to be mainstreamed into general management. On the other hand workers had to be educated and sensitised to safety and health concerns. Only with the full acceptance of all in-house stakeholders would the ambitious objective of zero accidents be realised.

Furthermore, the goal was not only to reduce accidents but to avoid near-misses. The Saint Gobain Rigips management therefore decided to invest in risk assessment and a near-miss reporting system known as 'SMAT auditing' (SMAT = Safety Management Audit System).

### **SCOPE OF THE PROJECT – WHAT WAS DONE**

#### **Computer-based risk assessment**

Based on the Saint Gobain Rigips action plan, workplace risk assessment is carried out periodically: 200 workstations and individual tasks are assessed annually. As a first step the safety management representatives use a computer-based checklist for the inspection of the workstations. The results of the checklists are added to a newly developed in-house calculation tool which allows the evaluation of the risk by taking into account

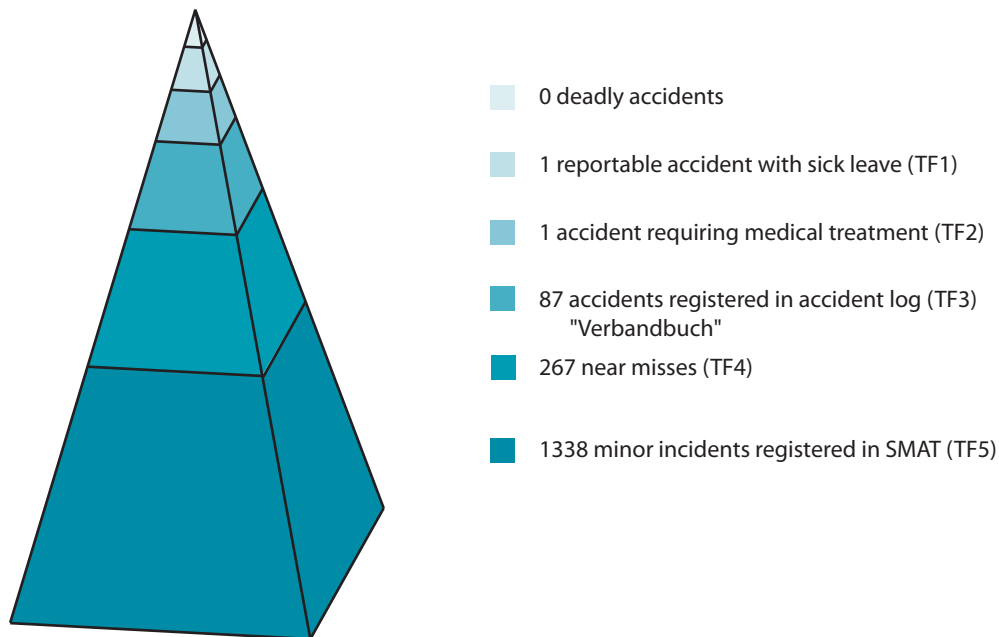
- kind of hazard
- frequency of hazardous task (daily, weekly, monthly, etc.)
- chance of realisation (unlikely, likely, very likely, etc.)
- damage outlook (what would an accident mean for the workers' health?).

The result of the evaluation determines whether the risk can be considered to be negligible, elevated or even critical. In cases of elevated or critical risk at a certain workstation or for certain tasks the database documentation system proposes a catalogue of possible measures. The safety manager can choose the most appropriate measure from the list and define a completion date for implementation.

#### **SMAT auditing**

To reach the ambitious objective of zero accidents it was considered necessary to take into account not only major accidents but also minor incidents and near-misses that are sometimes overlooked. The 'iceberg model' (or safety pyramid) illustrates that many minor incidents in the workplace will often occur before an accident actually happens. These minor incidents are invisible, like the part of the iceberg under water. Only the accidents that are reported are visible above the water line. A holistic and effective approach to ensuring greater safety at work should include sensitising the workers for such near-misses, because each implies the risk of a potential accident. Thus a vital safety culture should include awareness of near-misses, too.



**Figure 13: Safety pyramid Saint Gobain Rigips GmbH (2007) (839 full-time workers)**

Safety Management Audit Training (SMAT) means ensuring ongoing safety at work by regular inspection and interviews of the workers. A computer-based reservation system ensures that workplace inspections are scheduled regularly, on average four times a year.

The inspectors, who may be members of the safety management team as well as foremen of the various factory sections, do the SMAT auditing with the help of a checklist for the particular workplace. The audit is carried out by examining the workstation and asking the workers about their observations and experiences. In cases of irregularities, the findings are discussed directly with the workers of the area.

Every irregularity or near-miss is registered and will be added to the computer documentation system. The system will record whether the irregularity has already been eliminated or if further measures are required. In this case measure, time frame and date for re-inspection will be defined.

SMAT auditing has had a positive effect on general safety awareness: near-misses are now reported by the workers themselves, who also suggest improvements and take responsibility for one another as well as for visitors and delivery workers.

### **Reporting and documentation system**

All accidents and near-misses are documented in a central database. The safety representatives are responsible for documentation and evaluation of each and every incident, categorised by character, risk, and damage outlook. It also includes incidents where visitors, contract workers and delivery workers were involved:

- Serious accidents are documented and measured with the help of the Ishikawa or 'Fishbone' method.
- Minor accidents or near-misses are documented and evaluated with the help of the Toyoda or 5-why-method.

The safety management team can therefore obtain a good overview of accident 'hot spots', areas or workstations of elevated risk, and possible misbehaviour by workers. Measures can be taken to enhance ergonomics, to change work organisation or to strengthen individual, behaviour-related accident prevention.

The results of risk assessments and SMAT auditing are also documented in the database. This allows the safety representatives to check easily whether notified risks or near-misses have been eliminated successfully or if proposed measures have not yet been put in force.



### ***Training and sensitising of management representatives and workers***

The measures are reinforced by a two-year training programme that ensures safety awareness is constantly on the agenda. It is particularly crucial to sensitise management permanently to the issue, to ensure that OSH targets are taken as seriously as other business objectives. The training programme is carried out in cooperation with the Ingenieurbüro König (consultancy).

In 2007 the target group of the training seminars was the general management of Saint Gobain Rigips: Rigips management board, plant managers, master craftsmen and foremen. Each management representative had to suggest an action plan of safety measures within their own area of responsibility. The action plans will be assessed after they have been in place for a year.

In 2008 workers were the particular focus of training. Even though SMAT auditing already showed a positive influence on general safety awareness, their knowledge of OSH and safety culture was extended. In 2009 additional courses were held for the safety and health management team in order to include everybody at Saint Gobain Rigips in safety training.

### ***RESULTS AND EVALUATION OF THE PROJECT***

The SMAT auditing contributed enormously to the safety awareness of the workers. More workers are reporting near-misses, and they are taking more care about the safety of their workstations, their colleagues and third parties. In cases of misbehaviour people are challenged directly and motivated to change their ways.

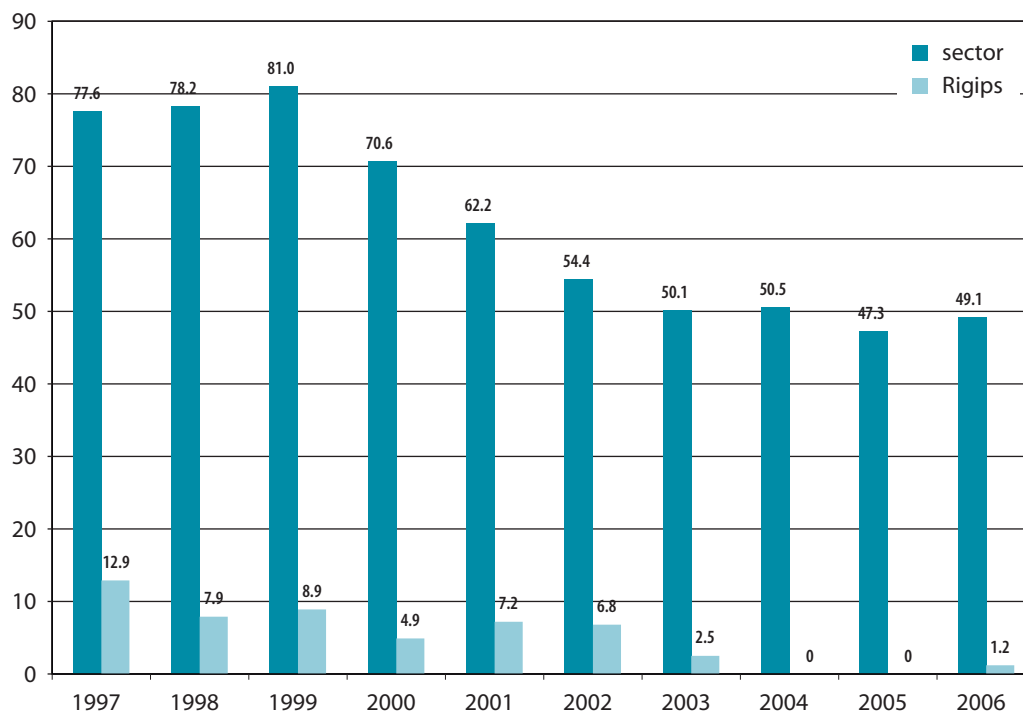
The computer-based risk assessment and accident documentation system allows the safety and health management to work effectively and precisely. Results of risk assessment, SMAT auditing and measures taken can be monitored and analysed.

In 2003/2004 the zero-accident objective was fulfilled for the first time. In the three years up to 2006 not a single accident at work was reported. In 2006/2007 Saint Gobain Rigips managed to reduce the number of reportable accidents to zero once again. Figure 14 contains details of accident statistics at the company and in the sector as a whole from 1997 to 2006.





**Figure 14: Accidents at Saint Gobain Rigips in comparison to the entire quarry and stone sector in Germany (per 1000 full time workers 1997-2006, sectoral numbers taken from StGB, 2007)**



In 2005 Saint Gobain Rigips was certified by StBG 'Gütesiegel' for its OSH management system, according to OHSAS 18001 standards. The integrated management system at Rigips was re-certified in 2009. Since 2003 Saint Gobain Rigips has received four awards from StGB for going a whole year without an accident.

### PROBLEMS FACED

A major problem that needed to be overcome was that of gaining the full support of all levels of non-OSH management at the company. OSH targets have to compete with other business objectives in the day-to-day running of the business. The OSH management therefore felt it was a priority to sensitise and to involve all management representatives in order to create a real and dynamic safety culture. If the management demonstrates their belief in safety and health it will be easier to mainstream the issue at all levels of the company. Motivation and awareness have to be communicated from the top to the bottom.

Another problem was to keep OSH management and improvement measures as simple as possible: a good balance had to be found between comprehensive and comprehensible OSH management. The message must be clear and understandable for all stakeholders in the company, for the management as well as for the workers.

### SUCCESS FACTORS

One key success factor of the Rigips activities can be seen in the combination of collective prevention measures on the one hand and individual training and motivation on the other. Safety will be most effectively realised when the safety culture among the management can be strengthened in parallel with the safety culture of the workers.

It is important to note that accident prevention, successful safety management and awareness-raising have to be done on a long-term basis. It took a long time for this project to achieve the goal of zero accidents, and the commitment of management to the project had to be relentless.



### **TRANSFERABILITY OF THE PROJECT**

The certification of OSH management system offered by StBG is a cost-efficient option compared with commercial alternatives. It can also be carried out by smaller companies in the stone quarry and building material industry.

The example of Saint Gobain Rigips also shows that concrete measures such as SMAT auditing can contribute to building safety awareness among workers by taking even minor incidents and near-misses seriously. Being aware of dangers arising from near-misses helps ensure they do not contribute to more serious accidents.

Risk assessment which is carried out frequently and well documented can contribute to improving working conditions and avoiding accidents. Data based documentation also helps keep the process transparent and transferable.

### **CONTACT INFORMATION**

Dr. Andreas Smolka

Head of Department 'Occupational and Environment Safety, Quality Management'

Werk Brieselang

Rigipsstr.1

14656 Brieselang

Tel: +49 3321 407 240

Email: juergen.bauhahn@rigips.de

Web: www.rigips.de

#### *Sources and further information:*

Statutory Accident Insurance for the Quarrying Sector (StBG 2006): *Gütesiegel „Sicher mit System“ zum 200. Mal verliehen*. In: Die Industrie der Steine und Erden, No. 2 / 2006. Available at: <http://www.steine-und-erden.net/se206/rigips.htm>

Statutory Accident Insurance for the Stone Quarry and Building Material Industry (StBG 2007): *Unfallbilanz 2006 der Steinbruchs-Berufsgenossenschaft: Entwicklung weiterhin positiv*. In: Die Industrie der Steine und Erden, No. 4 / 2007. Available at: <http://www.steine-und-erden.net/se407/stat.html> and <http://www.steine-und-erden.net/se407/stat2.html>

### **4.3.5. The health and safety management system of Bayer CropScience Villedfranche (France)**

#### **KEY POINTS**

- Permanent managerial commitment to health and safety management
- Heavy expenditure in this area
- An annual action plan supplemented by numerous sector initiatives
- Risk monitoring competencies and numerous tools and methods



## INTRODUCTION

With more than 150 products, Bayer CropScience Villefranche (BCSF) has a leading position in various business sectors: number one in insecticides, number two in fungicides, and number three for herbicides.

The Villefranche plant produces 30,000 tonnes of products a year and supplies 50% of all Bayer CropScience products distributed in France. Ensuring the availability and speedy delivery of its products is central to its success. The plant observes a quality policy and has ISO 9000 certification.

However, this market position and distribution role are not synonymous with stable, routine operations. The plant, built in the 1970s, must adapt not only to changes in its premises and equipment, but also to new environments: new product development, replacement of a major product range requiring conversion of the production units and increased flexibility, etc. The plant organisation must adjust to these changes.

Production is not the only challenge facing the company. For the chemicals sector generally, safety is also of prime importance. The group has carried out numerous campaigns, especially communication campaigns on the themes of the environment, sustainable development and health and safety.

## BACKGROUND

Bayer CropScience intends to fulfil its commitments regarding sustainable development and Quality, Health, Safety and Environment (QHSE) in all its operations. The group's safety policy is being applied gradually in all its new plants. This policy is outlined in a programme of about 30 pages, describing the main features of the QHSE management system that all the plants are supposed to comply with. While quality and environment certification is required, no external 'label' is demanded for health and safety. However, the group proposes its own standards on the subject.

The circulated document describes key requirements and directives in detail. It covers the measures to be taken on 13 general aspects: management principles, personnel training and qualification, audits and evaluation, reporting and communication, emergency management, etc.

The document deals in detail with several relevant aspects of the management system, detailing management of the four areas of risk prevention: quality, health, safety and the environment.

For health and hygiene, for example, it covers the medical data monitoring and recording programme (retention for 30 years after retirement), involvement of personnel in risk assessment, prohibition of alcohol and drug consumption by company employees, wearing of personal protective equipment (PPE), etc. The section on safety covers nine aspects: safety of employees, drivers, subcontractors' personnel, safety of processes and units, fire fighting, operating and maintenance safety, safety in the laboratory, and transport, store and equipment safety. A detailed description is given of the requirements for the design of processes and facilities, personnel information, the necessary work permits and the available equipment (ventilation, emergency aid, etc.).

The overall aim is to coordinate practices and create a QHSE culture in the whole group.

## AIMS AND OBJECTIVES

The QHSE department is considering OHSAS 18001 certification of the plant in the near future. This objective reflects a twofold goal: to achieve excellence in the area of health and safety management and to simplify and coordinate the management systems with an integrated risk management system and the related audits (SE, etc.).



## **SCOPE OF THE PROJECT**

The plant's current health and safety management structure consists chiefly of a set of risk management facilities and tools, inherited from different periods in the plant's operations and associated with different levels of follow-up.

The main measures taken for health and safety management are:

### **Establishment of an annual action programme**

Each year, a health and safety action plan is established for the plant, and is followed up and validated during the twice-yearly management review. It lists the main actions performed or planned on various levels (establishing conformity of plant and equipment, risk prevention measures, etc.). For example, in 2005 the health and hygiene programme was separated from the safety programme; it refers in particular to four measures:

- definition of hygiene requirements and good practice;
- development of chemical risk assessment in risk assessment;
- reduction of traffic risks on site (residual risk); and
- establishment of preventive sanitation.

### **Activity management documentation structure**

In accordance with the ISO 14000 specifications and the Safety Management System (SMS), an environment and safety management manual exists. It conforms with the standards and regulations in force, and is structured according to the standard stages of the continual improvement approach: policy, planning, implementation and operation, checking and corrective measures, management review.

This manual refers to about 50 so-called organisational procedures relating to general management requirements: in production (taking charge of new production, delivery, inspection and storage of raw materials, manual management, etc.), in QHSE monitoring (requests for servicing/work permits which represent mini risk prevention plans, reception of outside contractors, internal audits, etc.), in human resources (recruitment, training, accreditation), etc.

These procedures form the basis of the company's routine management. Beyond this general management framework, there are operating procedures such as workshop manuals specific to each activity.

The workshop manuals represent a third, more detailed, level of organisation. Used for operating purposes by the supervisory staff, they describe the installations and the general conditions of use of these installations: processes, jobs, instructions (start-up, stoppage, checks on work in progress, waste management, etc.).

These documents are extremely comprehensive; structured around diagrams, summary tables and descriptions, they group together the basic technical data for a sector and serve as a basis for training users of the equipment concerned.

Finally, these manuals are supplemented with operator manuals and operating procedures or 'detailed procedures' which describe in even greater detail individual operations and tasks. They list, among other details, the type of products loaded, the risks incurred, the equipment used, etc. These documents are generally concerned with a specific work phase and are destroyed at the end of the phase.

Each new employee is also given an induction booklet that describes the company and provides practical information: working hours, badges, etc. Six pages are devoted to health and safety: health and safety objectives, protective equipment, general instructions and specific instructions. The sector line management go over this information with the employee at shift takeover. The booklet must be signed on each page to signify that this has been done.



### **Fault-finding facilities and supervision tools**

Numerous risk analysis methods are used, including *a priori* methods such as hazard studies, or *a posteriori* methods such as the fault-tree. These methods are used systematically upstream or downstream of operations or malfunctions to help in drawing up technical and work organisation planning.

By breaking down work stages by units, the risks were identified and then scored (severity and frequency level). By a comparison with the risk prevention resources (level of control), residual risk levels are calculated, leading to the classification of risks in three categories (yellow, green and red colour codes).

This classification highlights priorities for action: priority handling of red critical points; risk prevention action plan or additional corrective measure to be planned for other situations. The corrective measures are funded from the supervisory staff's budget; senior management has made special allocations for this purpose. The number of 'red points' allocated throughout the plant has declined from 45 to 9 in two years.

Other risk control and monitoring methods are used, such as atmospheric measurements, surface biopsy and blood sampling for exposure values, or traditional healthcare follow-up.

All employees take part in management of the system and in monitoring health and safety objectives over time.

### **Human resources and organisation**

The annual budget of the overall safety programme is more than EUR 2 million. This covers plant and machinery but also work equipment (including PPE) and personnel. The plant, which is old, has been completely renovated in recent years. Training courses on health and safety are held regularly, and an Awareness of Raising Day was introduced in 2003.

The measures that best illustrate the initiatives taken for health and safety management, from the point of view the staff, are as follows:

- the plant visit (for newcomers): water networks, shower points, eye rinses, meeting points, etc.;
- the strict regulations regarding PPE;
- work instructions;
- the need for accreditation and work requests;
- hygiene, cleaning and sanitation plans;
- information concerning chemical risks (safety day dedicated to hygiene and toxicology for the last two years);
- medical screening since 2004;
- assessment of risks to workers' health and safety (especially for executives).

### **RESULTS AND EVALUATION OF THE PROJECT**

The QHSE action plan carried out in the Bayer plant testifies to high occupational risk prevention objectives, with updated technical measures and significant results in terms of improved health and safety.

The IMS has made it possible to structure and reinforce health and safety management in general in a chemical sector traditionally exposed to risks. It provides risk prevention facilities of which the company can be proud.

There nevertheless remain a few areas for progress which can be acted on to fully complete the risk management programme: there are still shortcomings in dealing with industrial hygiene, problems in the application of measures and tension regarding the settlement of actions.



The results observed are as follows:

### ***An improvement in safety and working conditions***

In the current context of stricter safety requirements and sensitivity to risks faced by chemicals firms, the safety investments made by the BCSF plant are giving good results.

Apart from this observed progress, safety management conditions appear to have changed, with more systematic coverage of risks and a more disciplined and methodical approach in comparison with earlier periods. Even the industrial hygiene and chemical risk fields, which had been overlooked, have progressed well. Sensitivity to chemical risk has increased among the workers.

### ***Disparities in adoption of the new rules***

The new work rules which are put in place through QHSE initiatives are not necessarily adopted immediately. One reason for this is that there are differences in how the proposed measures are regarded: between technical measures (method, tool, installation) and management measures (organisation, procedures, training, etc.), the former will more easily lead to a consensus (they are in response to regulations and the only question is the budget), and they will be more easily granted, implemented and complied with.

Then there is the question of the type of risk. The measures relating to industrial hygiene, a subject that remains in the background, are the hardest to apply: the use of air locks and showers, traffic flows, cleaning of clothing, and the wearing of PPE, are often not observed.

### ***Different perceptions of risks and safety***

There are major differences in the perception of risks, particularly when it comes to chemical risks. The toxic, irritant and noxious nature of products is often not well identified. Despite the awareness-raising, the perception of risks varies greatly from one person to another; different names are used for risks and their assessment is highly subjective (different concepts of severity, frequency, etc.).

Strengths of the project were:

- A strong safety policy
- Major material and human resources in QHSE
- Extensive organisation and subdivision of health and safety policy
- A solid organisation
- Risk analysis tools and methods well under control (fault-tree, etc.)
- An organised and active committee for health, safety and working conditions
- Personnel attentive to safety
- A participative, monitored risk assessment approach
- A real link between risk assessment and SMS.



**PROBLEMS FACED**

While risk management may be reinforced from a formal viewpoint, on the operational level deviations from the rules persist, and there are still shortcomings in the operational control of risks. Problems include:

- deviations in the application of certain preventive measures;
- health still assigned less importance in the management system (in comparison with the 'technical' and regulatory safety aspects);
- new expectations to be managed, related to increased sensitivity to chemical risk;
- management tools to be defined in detail and adapted to operations,
- relative participation of employees in risk management;
- few indicators of exposure to chemical risk;
- antagonistic safety cultures (safety vs hygiene);
- safety coordination based on QHSE;
- complexity of documentation and problems of information circulation;
- large staff turnover;
- numerous projects and changes underway.

**TRANSFERABILITY**

This initiative is transferable to other companies and other activities. It requires management involvement and involvement of employees to be fully successful.

**CONTACT INFORMATION**

Christine GUICHARD  
 CRAM Rhône-Alpes  
 Tel: +33 4 72 91 97 07  
 Email: cguichard@cramra.fr  
 Web: www.cramra.fr

### **4.3.6. OSH as an integral part of the general management system at Grindeks pharmaceuticals (Latvia)**

**KEY POINTS**

- OSH as one of the most important issues in this pharmaceutical company
- Systematic approach to improving OSH conditions
- Implementing best practice for risk assessment in day-to-day operations

**LEAD ORGANISATION**

Joint Stock Company Grindeks is the largest drug manufacturer in the Baltic countries. The enterprise has two business structures applying diverse technology. The work requires the handling of various hazardous chemicals, including solvents.

**AIMS AND OBJECTIVES**

The main objectives of the company are to protect the health and safety of its employees, and to become a leader among Latvian employers in the field of OSH.



### KEY ELEMENTS

Since the mid-1990s, risk assessment and elimination has been an important part of general management at Grindeks. The process has been carried out on the basis of EU Directives and seminars arranged by EU institutions, the state labour inspectorate, the Latvian association of testing laboratories, the Baltic environmental forum, the Latvian association of chemical and pharmaceutical employers and other organisations. Significant stages in the process were:

- The identification and evaluation of the company's risk hazards. At this stage, mid-level technological staff and qualified workers were heavily involved in risk evaluation. As a result of this risk assessment, plans were drawn up to improve working conditions.
- Detailed OSH audits to detect faults and disparities that posed serious risks in the workplace. Measures were put in place to eliminate these deficiencies. An 'appraisal coefficient' was introduced to enable the comparison of structural units in terms of their level of risk and the effectiveness of corrective actions.
- Regular inspection of workplaces and systematic evaluation of occupational risks was carried out by the plant's Occupational Health and Safety Group together with site managers and specialists.
- Joining the International Programme of the Chemical Industry, i.e. Responsible Care, which aims to achieve a high level of environmental protection, safety and health for employees, consumers and the public.

Special attention is paid to occupational risk assessment. To minimise the impact of hazardous chemicals on employees, there is a documented procedure for evaluating risks in the work environment, which includes all phases of risk appraisal and recording results, as well as planning protection measures and checking their implementation.

### RESULTS AND EVALUATION OF THE PROJECT

- Hazardous chemicals have been replaced with less hazardous ones.
- Equipment has been installed to enable employees to work with hazardous substances without handling them directly when loading chemicals into a dryer.
- The quality and efficiency of ventilation has been improved, so that air flow is in the direction of the source of contamination rather than towards the employees.
- Employees have been further protected from risks in their working environment by the issue of individual protective equipment and non-standard measures, e.g. special medical examinations.

Grindeks' efforts in OSH were marked when it received the National Good Practice Award in 2003 for the best project for improving working conditions within a company, by eradicating exposure to harmful substances. In 2006 Grindeks received the European Good Practice Award in recognition of its effective management of workplace safety and health care for young workers in particular.

### CONTACT INFORMATION

Joint Stock Company Grindeks  
53 Krustpils, Riga, LV 1057, Latvia  
Laila Kļaviņa  
Tel: + 371 7083370, +371 29256012  
Email: laila.klavina@grindeks.lv





### 4.3.7. Improving safety management at Helsinki Water (Finland)

#### KEY POINTS

- Relates to work done outside normal workplace
- Focuses on health risks
- Public sector
- Providing occupational risk assessment

#### LEAD ORGANISATION

Helsinki Water provides drinking water and processes the waste water for over 1 million residents in Helsinki and district. The average age of the employees is relatively high: 47.4 years in 2006. The number of staff has fallen by 50% in the last 20 years.

#### AIMS AND OBJECTIVES

The company wanted to reduce the number of accidents faced by its staff, and at the same time to raise the competence level of employees.

#### KEY ELEMENTS

Helsinki Water's health and safety committee was reorganised in 2004: the committee now consists of eight members, and both the employer and employees are represented. The personnel manager and occupational health specialists also take part in meetings when needed. The company's various departments have also nominated a total of 20 representatives, so that the official OHS team comprises some 30 members. Each department's own health and safety group meets once a month to discuss reported accidents, near-misses, etc.

- A systematic risk assessment was carried out at all sites throughout the organisation, in conjunction with the employees, to identify all risks associated with the work.
- Training was planned and organised to raise safety awareness and OSH skills throughout the organisation.
- Top management is highly committed to the project.
- The project was supported with communications: safety is now one of the most prominent topics on the company's intranet and every issue of the employee magazine 'Pikaliitin' includes OHS issues.
- Near-misses are systematically reported and evaluated

#### RESULTS

The number of occupational accidents more than halved from 2002 to 2006. In 2005 direct OHS training made up 28% of all training carried out in the company (the comparable figure was 21% in 2004). Training therefore appears to have had a direct effect on the accident rate.



**Table 15: Figures demonstrating the reduction of occupational accidents at Helsinki Water**

Social Performance	2006	2005	2004	2003	2002	2001
Number of personnel	316	307	326	331	328	345
Regular/temporary	299/17	293/14	309/17	313/18	310/10	318/20
Average personnel age (yr.)	47.4	48.4	47.5	47.1	47.0	46.5
Training days/reg. personnel	6.0	3.8	3.9	2.4		
Occupational accidents per 100 employees	6.0	8.5	7.4	11.5	12.2	
Occupational accident total, including travelling	17	26	24	38	39	41(5)

**CONTACT INFORMATION**

Helsinki Water

Ari Nevalainen

PO Box 1100

FIN-00099

Tel: +358 9 3103 3008

Email: ari.nevalainen@hel.fi

#### 4.3.8. 'Because we are not as Strong as our products ... OSH is a priority'<sup>37</sup> – an integrated approach to OSH management at ArcelorMittal Steel (Poland)

**KEY POINTS**

- Involvement of employees from management to shop floor in shaping safety culture
- Communication as a tool for improving OSH
- Kaizen methods used to improve working conditions

**LEAD ORGANISATION**

ArcelorMittal S.A. is the world's number one steel company, with 320,000 employees in more than 60 countries. ArcelorMittal Steel Poland S.A. runs large steel plants in Krakow, Dabrowa Gornicza and Swietochlowice that produce about 70% of Polish steel. These plants have been a part of the company since 2005.

**AIMS AND OBJECTIVES**

The goal of ArcelorMittal Steel is to become the safest company in the steel industry. To maintain progress towards this aim, general as well as more specific goals have been established, as follows:

- to reduce the accident rate
- to carry out a scheduled programme of renovation and investment that will enhance OSH
- to improve working conditions
- to carry out a pilot project aimed at increasing OSH awareness and developing safety organisation at the hot-rolling mill in Dąbrowa Górnica.

<sup>37</sup> The title of the case study is taken from a speech by Gregor Muenstermann, President of ArcelorMittal Steel Poland S.A., published in the company weekly 'Polska Stal' vol. 10/1986, 06.03.2007.



### KEY ELEMENTS

- The company's OSH services are extensive, but also centralised. The main OSH Board consists of trade union representatives and social labour inspectors from all branches. They supervise OSH conditions in the entire company. Additionally, each steel plant has its own OSH service, managed by the Main OSH Specialist, subordinate to the company president. There are also branch and local OSH Boards. The trade unions and their critical approach play an important role in the system.
- According to the Code of Business Conduct, implementation of the safety and health rules in practice is a priority for all employees. Additionally, each steel plant may also have its own OSH policy. One example is a document entitled 'Politics of integrated system of quality, environmental and OSH management in ArcelorMittal Steel Poland S.A, Steel Plant in Cracow', which provides a list of commitments related to OSH for this particular plant.
- The company is also attempting to improve working conditions by progressively implementing the Kaizen methods. These methods contribute to a gradual improvement of the company's operation but, more importantly, they greatly improve safety. Many problems, including safety issues, have already been solved due to ideas contributed by employees.
- Under the project implemented in the hot-rolling mill in Dąbrowa Górnicza the following initiatives were carried out:
  - development of tight system of supervision of subcontractors (preparation of detailed guidelines, training and control)
  - interactive training for middle-level management
  - popularisation of OSH issues – talks with workers
  - development of a list of 'Golden OSH rules' which will be followed by all workers
  - development of materials and information for workplaces
  - visualisation of OSH results in all plants
  - preparing a book of instruction common for all branches
  - implementation of rules and training, as well as development of safety culture in other plants.

### RESULTS

The number of work accidents at ArcelorMittal Steel Poland S.A. decreased in 2007 compared with 2006, despite the fact that the number of workers had risen by 850. Additionally, all reported accidents were minor. Communication between employees and management and consequently safety culture have improved significantly.

### CONTACT INFORMATION

Andrzej Krzyształowski  
ArcelorMittal Poland S.A.  
Chorzowska 50  
40-121 Katowice, Poland  
Tel: +48 32 776 75 94  
Email: andrzej.krzyształowski@arcelormittal.com



### 4.3.9. Sustainability and OSH Management, Global Reporting Initiative, Sandvik AB (Sweden)

#### KEY POINTS

- Importance of social responsibility
- Introduction of sustainable development and systematic reporting
- Introduction of OSH indicators into the annual report
- Objectives and targets include both qualitative and quantitative measures

#### LEAD ORGANISATION

Sandvik is a high-technology engineering group with advanced products and a world-leading position in selected areas. Worldwide business activities are conducted through representation in 130 countries. The Group has 47,000 employees all over the world, of which 11,000 are in Sweden.

#### AIMS AND OBJECTIVES

The project's social objectives were:

- Zero accidents
- Reduced absence due to illness
- Increased equality of opportunity at work

The project's social targets were:

- Reduce the number of days lost because of injuries and the injury frequency rate by 50% before year-end 2008 (base year: 2005).
- Reduce the number of lost working days due to illness by 50% before year-end 2010 (base year: 2005).
- All major production, service and distribution units to be certified in accordance with OHSAS 18001 (or an equivalent standard) before year-end 2007.
- Increase the number of female employees to 25% before year-end 2010.
- All employees to have formal annual review discussions.

#### KEY ELEMENTS

- Group management requires all employees to be educated in the company values and provides training for this on an ongoing basis. The company's senior managers participate in a mandatory two-day seminar, after which they are responsible for ensuring that training is implemented locally and that the Code of Conduct is followed. By the end of 2006 approximately 81% of Sandvik's employees had undergone this training.
- Sandvik has introduced a risk management process throughout the organisation that also covers risks related to the environment, human rights, labour legislation, business ethics, international guidelines and Sandvik's own Code of Conduct. The risk management system covers not only the Group's own operations but also risks related to customers, partners and, in particular, suppliers.
- A key part of following up Sandvik's sustainability work is efficient collection and consolidation of non-financial indicators and key figures from the Group's approximately 320 reporting units. For the past two years, the collection process has been integrated with the financial reporting system. Indicators and key figures are constantly being developed, based on the Group's overall social and environmental goals and recommendations from Global Reporting Initiative.
- The Sandvik Group includes some 270 companies with their own boards of directors. Follow-up of the Code of Conduct and environmental and work-environment issues is on the agenda at the board meetings of these companies.



- Within the Group there is an independent internal audit body, Group Assurance, that, among other functions, monitors adherence to the Code of Conduct and identifies risks related to the Code. Group Assurance reports directly to the Board's Audit Committee once each quarter.
- In addition to these measures, Sandvik encourages its employees to present their views on adherence to the Code of Conduct. All employees can discuss this with their immediate superior, the HR function or directly to the Group's chief legal counsel.

## RESULTS

Table 16 shows the company statistics for 2005 and 2006 as regards the number of days lost to injuries.

**Table 16: Statistics for 2005 and 2006 as regards the number of days lost to injuries**

	2006	2005
Number of days lost to injuries (work-related injury (own employees) resulting in minimum one day's absence from work)	980	1 030
Lost days injury frequency rate (number of days lost to injuries per one million work hours)	13.2	16.1
Lost days due to lost days injuries	14,897	12,715
Working days lost per employee due to injuries	0.40	0.40
Total sick leave (whether work-related or not) %	2.5	4.0

## CONTACT INFORMATION

Sandvik AB

SE-811 81 Sandviken

Sweden

Tel: +46 (0) 26 260000

Web: [www.sandvik.com/](http://www.sandvik.com/)

Source of information:

[http://www3.sandvik.com/pdf/sustainability/Sandvik\\_hallbarhetsredov\\_2006\\_ENG.pdf](http://www3.sandvik.com/pdf/sustainability/Sandvik_hallbarhetsredov_2006_ENG.pdf) (the report)

### 4.3.10. SME introduces the SGM System of the Austria Social Accident Insurance (Austria)

#### KEY POINTS

- Implementation of the OSH management system in a small company

#### LEAD ORGANISATION

EAS (Engineering Application Software) was founded in 1990 and now has 25 employees. Its core business is to develop software and it specialises in projects in the fields of metrology, control engineering and process control systems. EAS is a chartered engineering company for electrical engineering. Its main reason for introducing the AUVA-SGM was to improve the running of the organisation and its processes and to overcome communication problems faced by employees dealing directly with customers at the customers' workplace.



### **AIMS AND OBJECTIVES**

The main objective was to introduce the modular OHS management system (SGM) that is especially aimed at SMEs developed by AUVA (see Section 3.3.5 of this report).

### **KEY ELEMENTS**

- A two-day workshop was held for the SGM Team at EAS. The team consisted of the CEO, the financial officer and three employees. Participants were tasked with formulating guiding principles for the company, to define rules and control criteria.
- The basic idea was to introduce a systematic and integrated safety and health and quality management system.
- The documentation system was completely redesigned. The employees now have a forum to exchange ideas and to improve processes.

### **RESULTS**

Company management estimated the cost of the project at EUR 3,000, mainly for external advice and certification. The main costs are in terms of working hours of employees devoted to the project, which the management estimates at 1,000 hours.

The main result has been the improvement of the business processes and internal communication.

### **CONTACT INFORMATION**

AUVA

Ing. Bernd Toplak (AUVA-SGM expert)

Tel: (01) 33133- 606

bernd.toplak@auva.at

Web: [http://www.auva.at/mediaDB/MMDB120011\\_SGM-System%20der%20AUVA%20Regelwerk.pdf](http://www.auva.at/mediaDB/MMDB120011_SGM-System%20der%20AUVA%20Regelwerk.pdf)

[http://www.ots.at/presseaussendung.php?schluessel=OTS\\_20060919\\_OTS0242&ch=wirtschaft](http://www.ots.at/presseaussendung.php?schluessel=OTS_20060919_OTS0242&ch=wirtschaft)

## **4.4. EXAMPLES OF CASES AND SNAPSHOTS FOCUSED ON INTEGRATION OF OSH, ENVIRONMENTAL AND QUALITY PROGRAMMES**

### **4.4.1. OSH management in a supermarket chain (Germany)**

#### **KEY POINTS**

- Risk assessment as an element of a quality management system
- Safety and health management in retail stores



**INTRODUCTION**

The REWE Group is an international enterprise with a cooperative structure. About 320,000 workers in retail markets and administration in 16 European countries are responsible for an annual turnover of EUR 49.8 billion. Nonetheless, because of the cooperative structure, many supermarkets are run mostly independently and have to be considered as SMEs with 50 or less employees.

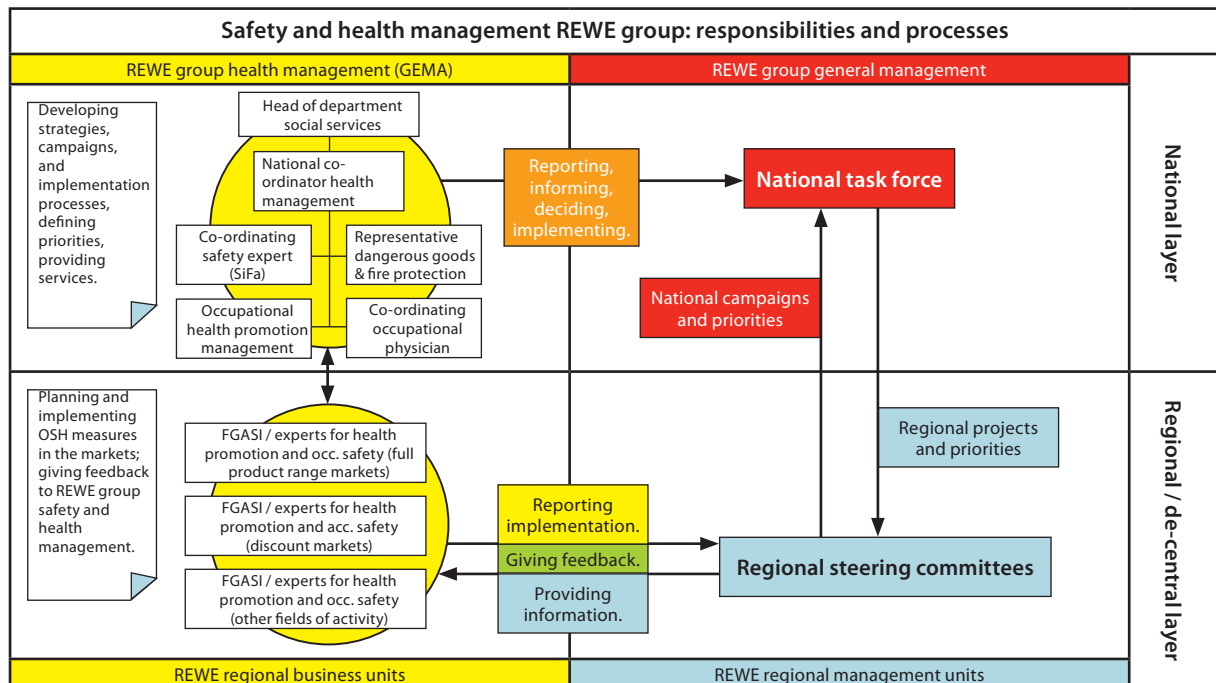
REWE strives for innovation, growth and profitability in its core sectors of food and tourism. To reach these strategic objectives and to ensure sustainability it is of major importance to have clearly defined responsibilities and well structured management processes between headquarters, regional administration units and more than 6,000 supermarkets and department stores in Germany. This affects all management processes, including safety and health management.

**BACKGROUND**

Workplace risk assessment has to be carried out in accordance with the European and national legislative framework. To ensure safe and healthy workplaces it is important to regard this not as a mere formality but to take adequate intervention measures whenever indicated and to periodically re-assess all workplaces.

The person responsible for workplace risk assessment in retail stores is the store manager. He can request assistance from experts in health promotion and occupational safety (Fachkräfte für Gesundheitsförderung und Arbeitssicherheit, FGASI) from REWE's regional administration units. The general design of REWE's health management, including the different layers and processes of management, is shown in Figure 15.

**Figure 15: REWE OSH management scheme**



The core question at the beginning of the project was how locally conducted risk assessments could be mainstreamed into REWE Group management processes. A more centralised and standardised design was considered to be helpful to figure out typical risks in retail stores in general, to compare strains and workload for different workstations and work processes, and to evaluate the efficiency of intervention measures.



### **AIMS AND OBJECTIVES**

The REWE Group management decided to standardise risk assessment with the help of modern technology: inspecting supermarkets with the help of a personal digital assistant (PDA) allows the use of the same checklists and risk assessment instruments in all shops. Data can be saved in a central database that allows direct comparison between findings and interventions. This contributes to better documentation and sustainability in workplace health interventions.

Milestones of the project were:

- designing the PDA checklist
- testing PDA checklists in inspections in full product range supermarkets
- documenting experiences
- expanding the use to further markets and fields of activity
- periodically evaluating the findings and proposed interventions
- identifying areas of elevated risks and tackling them.

### **SCOPE OF THE PROJECT**

In Germany, workplace risk assessment has to be carried out under the provisions of sections 5 and 6 of the Arbeitsschutzgesetz (Law on occupational safety). Additional provisions have to be taken into account with regard to the safe handling of dangerous substances (s.7 Gefahrstoffverordnung, Decree on dangerous substances) and general operational safety (s.3 Betriebssicherheitsverordnung, Decree on operational safety).

Within the REWE quality management system (RQMS) workplace risk assessment was carried out by the shop manager, assisted by experts on health promotion and occupational safety from FGASI. During their inspections they used checklists to assess occupational safety, hygiene, and general aspects of quality.

The FGASI experts were able to customise the checklists to suit the needs of the supermarket under inspection. Results were filled in manually and transferred later to a computer database. However, because the checklists were not standardised it was not possible to directly compare results between supermarkets.

The company therefore decided to introduce PDAs to standardise risk assessments and to enable data to be entered into the central database immediately.

The risk assessment checklists were amended by the quality management team and the FGASI experts. The new computer-based risk assessment tool is comparable to checklist A110 of the Statutory Accident Insurance for the Retail Sector (BGHW 2007) but contains additional questions relevant to the different parts of each supermarket: 77 questions cover the following areas:

- whole supermarket environment in general
- electric equipment
- stock
- bakery
- convenience
- service counter
- till area
- in-house traffic routes
- transportation equipment
- fire protection
- dangerous substances
- first aid inspections
- training measures
- other areas of activity.





Each question allows the inspector to decide whether safety requirements are being met or not. If deficiencies are noted, comments can be added. Every question is given a specific weighting. The average weightings in different categories allow the FGASI expert and the central safety and health unit to compile a safety profile of each supermarket which is fully comparable with the profiles of other supermarkets in the group. In this way it becomes obvious if the general safety profile of the store is very good, good, tolerable or poor and which interventions are required to improve its rating.

The supermarket managers can profit from the experience of FGASI and management experts. Adequate measures can easily be taken to improve working conditions, and these measures can be targeted precisely on the relevant area. The efficiency of measures can be evaluated and activities and general strategies can be adapted to target new situations.

### **RESULTS AND EVALUATION OF THE PROJECT**

In the current business environment, operational objectives can only be met if management can make decisions quickly on the basis of clearly identified needs. This applies to general management as well as safety and health management. Risk assessment with the help of PDAs and a central database permits transparent and systematic safety management in regard to risk assessment and intervention measures. The use of a computer-based, standardised checklist can be seen as a positive contribution to safety and health management. In this supermarket chain, risk assessment is no longer a standalone activity undertaken by individual store managers. The management of each supermarket can request help and advice from regional and central management at any time. Areas of elevated risk or deficiencies in work organisation can be identified and problems can be solved systematically. Direct comparability of supermarket profiles, risk assessment results, and interventions have allowed the group's safety and health managers to start a real spiral of permanent improvement.

### **PROBLEMS FACED**

Problems lie in the corporate structure of the REWE Group: within the first project group of full product range supermarkets some markets are run independently by their owners. They are only bound to the REWE Group by a cooperation contract. These owners are offered the new risk assessment instrument, but its use is voluntary.

For the Group as a whole this means that in the long run acceptance of the new risk assessment instrument, risk assessment practices, and safety standards may differ between independent REWE supermarkets and supermarkets that are full subsidiaries of the Group.

### **SUCCESS FACTORS**

The design of a single checklist suitable for supermarkets was the first step to standardisation and transparency. The use of the PDA and the direct transmission of data to a central database enabled a clear and comparable workplace risk assessment which allows cooperation between local, regional and central management units and can help to improve working conditions in all group stores. Existing quality management and health management structures helped to realise the project quickly.

### **TRANSFERABILITY OF THE PROJECT**

The principle can easily be transferred to other sectors of activity in the REWE Group. This will only require adjustments in the design of the risk assessment checklist and the addition of a correlating module to the database.

The design of the project can be seen as an option for effective safety management for all enterprises that consist of a central steering unit and various local subsidiaries, as is commonly found in the food and non-food retail sector, a sector that employs some 15.5 million workers in Europe (EU-25, Eurostat 2006).



### **CONTACT INFORMATION**

REWE Zentral AG  
Roland Kraemer  
Domstraße 20  
50668 Köln  
Tel: +49 221 149 -1922  
Fax: +49 221 149 -971922  
Email: roland.kraemer@rewe-group.com

#### *Sources and further information:*

Berufsgenossenschaft für Handel und Warendistribution: *Sicherheitscheck – Verkaufsstellen allgemein. Eine Handlungshilfe zur Gefährdungsbeurteilung.*

Available at: <http://www.bghw.de/praevention/sparte-einzelhandel/sicherheits-checks/a-110-verkaufsstellen-allgemein>

## **4.4.2. Establishment of an integrated Quality, Safety and Environment management system for industrial waste land reclamation at Apinor (France)**

### **KEY POINTS**

- Certification based on OHSAS 18001
- An overall approach driven by senior management to ‘supervise’ site management capitalising on the existing situation
- Formal presentation of processes and procedures in a single Quality Safety Environment (QSE) Management Manual
- A commitment to precise, measurable objectives
- Numerous computerised management materials and tools made available
- Extensive resources devoted to equipment (personal protective equipment and other equipment)
- Risk assessment to support the approach

### **INTRODUCTION**

The establishment of the integrated Quality Safety Environment (QSE) management system at Apinor enabled overall organisation of the company’s management and in particular safety management, in an industry sector in which this has competitive implications. This management system is consistent with its operations and its experience; it thus supports perfectly the company’s growth and is reflected by tangible results. The success of the approach is largely due to the conditions of project support and to investment in the field.

### **BACKGROUND**

Apinor is a young organisation that was set up in 1991 for industrial waste land reclamation operations. Located near Douai, Apinor is in the heart of the Nord-Pas de Calais region, which contains almost half the industrial waste land in France. Its operations cover decontamination, site reclamation, landfill rehabilitation, industrial demolition, asbestos removal, river work, and the treatment of water and industrial effluents.



In 2001, Apinor took over SND (a company specialising in public works and river work, dredging and pile driving). Apinor achieved triple Quality Safety Environment certification in 2002 (ISO 9001, OHSAS 18001 and ISO 14001). This triple certification, which attests to the integration of the safety management system (SMS), is still rare in France, especially in SMEs.

### **AIMS AND OBJECTIVES**

The pollution control industry is often criticised for its undemanding level of regulations and code of conduct. The price levels for these activities hardly correspond to the level of requirements and the risks involved in the industry.

Apinor's certification approach, on the other hand, can claim to be consistent with its policy of environmental protection and its concern for risk management. Regarding this, Apinor's goal is not only to settle injury problems but also solve problems of occupational health.

### **SCOPE OF THE PROJECT**

The QSE management approach has been under development since 2000 with the revision of the ISO 9000 standard (version 2000) and a revival of the quality policy initiated in 1995.

The company consulted a specialist consultancy firm that suggested it should adopt the OHSAS reference system, and underlined its compatibility with Apinor's other policies. The Apinor management saw this as an opportunity to distinguish itself from its competitors, as well as to consolidate safety policy in the firm. The QSE approach seemed an ideal way of enhancing and perpetuating the company's management practices.

Design of the QSE reference system required major investment by management and support from consultants between 2001 and 2002.

The approach took the form of

- an initial pre-audit of practices and the identification of discrepancies and objectives to be achieved for certification;
- identification of processes;
- management review; and
- pre-audit before certification.

Major work was performed on the content of the system: review by the QSE manager with the consultant and an employee on a fixed-term work contract (for the environmental aspect), analysis with the site personnel and finalisation with senior management (1 day a week for three months).

Management's commitment was obtained following the interim management review performed at the end of 2001. This mobilisation of senior management was decisive in achieving the objectives: it made it possible to confirm the options, encourage everyone to take part in the project and, finally, meet the required implementation deadlines (one year between the two audits). The QSE approach was recognised as a major objective for the company.

The French standards organisation AFAQ issued the triple QSE certification in July 2002. Initially, establishment and application of the SMS were prepared by producing the single document for risk assessment.

At the structural level, the QSE role is performed by a single manager in the head office, reporting directly to the CEO.

At the responsibility level, QSE tasks are delegated to the project manager level (works foremen). Finally, safety is explicitly mentioned as one of the assessment criteria in annual personnel evaluation.



A 50-page document describes the 20 processes in Apinor's operations distinguished by category (6 production processes, 8 support and 6 management processes). This common QSE document refers to numerous procedures and documents in which health and safety questions are covered.

Various documents, tools and methods have been developed and made available in hard-copy or electronic form. They serve as an extremely rich database and a toolbox to control operations in the field.

They contain, in particular, a summary of the regulations applicable on site, the lists of products used with their safety data, and a model OSH plan.

The health and safety policy and the company's commitment to it is encapsulated in a precise list of objectives that is revised annually.

### **RESULTS AND EVALUATION OF THE PROJECT**

From the qualitative viewpoint, the results were as follows:

#### ***A unified approach to safety***

The SMS promotes a uniform approach to safety in the company, between the various site teams and the various strata and positions in the company, with the unification of practices and requirements.

#### ***A safety level which reassures the staff***

Apinor's standards in matters of safety are relatively high; they extend beyond mere personal protection and concern the whole work organisation.

Apinor's staff appreciate this high level of attention to safety. It enables workers to go about their tasks with confidence, even though they often have to work in hazardous environments.

#### ***Greater staff awareness of risks and rules***

The health and safety management approach has encouraged staff to learn more about the subject and apply it to their jobs. The risks are clearly named and their evaluation is more precise (seriousness, frequency, etc.).

The established procedures, systematic information, training and checks on site have helped everyone to take risks into account and observe the necessary precautions. Learning has been rapid because this concern for safety has now become the norm.

#### ***Greater sense of responsibility among staff***

The approach not only favoured the learning and understanding of safety instructions. It also changed the value assigned to safety, giving rise to a thorough change in attitudes toward risks and to safety responsibility in general.

### **PROBLEMS FACED**

Despite the successes achieved in safety management at Apinor, some points can still be improved.

For example, application of the SMS chiefly concerns Apinor's core business (work sites) whereas it would be useful to apply it to other activities. The equipment depot is a case in point.

While the maintenance of equipment is covered by a process, the procedures for and conditions of equipment management are not greatly developed. Supervision of the recommendations that do exist is minimal.

Another potential area of improvement is the sustainability of the system. Divergences are appearing among the supervisory staff concerning the importance of the SMS. For some, now that the goal of certification



has been achieved, investment in safety can be relaxed. For others safety remains a priority, as they see certification as merely an indicator of the system's operation.

For Apinor the formalisation of the SMS contrasted with certain features of its style of operation. First, the formalisation of an SMS represents a break with the informal adjustment practices often existing in SMEs.

The problem concerns the tools made available and their suitability for the field (computer systems, etc.). But above all, there is a problem with the considerable workload involved.

### **SUCCESS FACTORS**

The success factors observed are as follows:

#### ***Industry culture conducive to safety***

Observation shows that the SMS has benefited from an industry context favourable to prioritising safety considerations.

#### ***Safety promoted as a strategic issue***

The stated objectives, the resources assigned, the checks performed and the repeated attention to safety make it one of the prime concerns of staff and management alike.

Because senior management has promoted safety as a strategic issue the safety practices persist; the change in staff attitudes to the SMS project at the end of 2001 is evidence of this management influence.

#### ***Successful integration of the SMS***

Safety appears well integrated into Apinor's practices, and safety management has been embedded in the existing management rules. Unlike other companies that completely 'erase' previous approaches when they redesign their operations, at Apinor the design of the system took into account existing procedures and practices.

The SMS was designed at the same time as the introduction of environmental management; the quality management system was also being overhauled at the time. The choice of the OHSAS 18001 reference system helped to coordinate and standardise processes. But the important thing to note is that safety has been organised in coordination with the other approaches. This joint approach to management systems enhances their relevance.

The SMS has been designed as a full management tool for the company and not merely as a protection system. It has proved to be an advantage when tendering for projects and hence contributes to corporate profits.

#### ***A rational organisation framework***

The main characteristics of this organisation are clear objectives, adequate resources assigned and precise responsibilities. The company has appointed staff solely responsible for safety. In addition, the QSE manager and the safety coordinator have the power to stop site work should the need arise.

#### ***Ongoing involvement of staff***

The employees' contribution to safety appears decisive for the effectiveness of the management system. Not only are the staff consulted, but they are also involved in risk assessment. This staff involvement ensures that measures adopted will be pragmatic and appropriate to the workstation concerned.

#### ***Numerous safety management support tools***

A whole set of tools and indicators have been developed relating to safety management.



### **TRANSFERABILITY OF THE PROJECT**

This initiative is transferable to other companies and other activities. It requires management involvement and the employees' commitment to the success of the SMS.

### **CONTACT INFORMATION**

Jean René LAMOUR  
CRAM Nord Picardie  
Tel: +33 3 44 09 93 74

## **4.4.3. Implementation of an Integrated Management System (Quality, Environment, Safety and Health) in Vienna's Municipal Department (Austria)**

### **KEY POINTS**

- Consolidation of existing management systems
- Integration of environmental and OSH management into quality management
- Raising management awareness of OSH and environmental issues

### **INTRODUCTION**

The Municipal Department (MA) 48 is part of the 'environmental section' of the municipal administration of the City of Vienna. 3,600 employees are responsible for waste management, especially waste collection (recyclables, organic waste, residual waste etc.), waste treatment, street cleaning and winter service. MA 48 runs a waste treatment plant (Abfallbehandlungsanlage, ABA, with facilities for sorting plastics, treating (mechanically) residual waste and bulky waste, treating residues of the incineration plants, etc. and a reloading point for recyclables ), a biogas plant, composting plant) and a waste disposal site. It also provides other facilities such as public toilets, civic amenity sites, and collection points for household hazardous waste.

Besides waste management, there are further fields of activity including promoting waste avoidance, introducing new techniques, e.g. in composting organic waste, snow clearing, de-icing, and towing services. MA 48 is also responsible for the vehicle fleet of the City of Vienna.



Figure 16: Municipal cleansing worker, Vienna



### BACKGROUND

In 1997, MA 48 began to implement a new quality management system (QMS) according to ISO 9001:1994. It took three years to implement the system in the four units of MA 48: waste management, street cleaning, vehicle fleet and administration. The QMS of each unit worked independently and was audited externally. Ongoing certification and auditing processes offered the possibility of permanent evaluation and improvement of the management system.

The department found that expectations in the management system were changing. Quality management in itself ceased to be of central interest and keeping up with new environmental standards and ensuring safety and health at work became more and more important. Hence, it seemed logical to mainstream the new safety, health and environmental management processes into a single integrated management system (IMS).

In order to meet the requirements of the different activities in a single system it was decided to re-organise the existing QMS in two ways. First, the four single-unit QMS had to be merged into one general QMS valid for all units. Second, the QMS had to be amended in such a way that OSH and environmental management systems could be integrated. First steps of planning were undertaken in 2004 and first pilot implementations tested until the middle of 2005. Another year passed until the new IMS was implemented in the whole of MA 48. It was audited and certified externally for the first time in July 2006.

### AIMS AND OBJECTIVES

The aim was to implement a management system that could actively support running MA 48. It had to be flexible enough to take into account customer orientation as well as ensure the best performance of MA 48's services. The main criteria for the new management system were:

- to coordinate service offer and clients' demands
- to reduce environmental pollution
- to ensure the highest safety standards for the workers
- to ensure legal compliance.



### SCOPE OF THE PROJECT

The first step in autumn 2004 was to set up a concept and milestones for merging the four different QMS units and for integrating the areas of OSH and environment. External consultants provided support by analysing a sample of processes of the quality, environmental and OSH management systems according to the old QMS standards in the different units. The results of these analyses determined the time frame for the implementation (end of June 2006).

The first step in the implementation of the IMS was the introduction of a new quality policy and a restructuring of the entire process landscape into management processes, business processes and supporting processes. The existing QMS was evaluated with regard to the different categories to find loopholes and to define requirements for the new IMS. The new quality policy was intended to provide the background for the new management system and to make the IMS implementation more transparent. A target performance comparison was carried out for all three fields of management processes. Environmental and OSH management were intended to be mainstreamed as early as possible into the new IMS design.

Before implementation of the OSH and environmental management systems, personnel from all units were invited to special three-day training seminars. After the training each of these members of staff became a 'SGU-contact person' (SGU stands for safety, health, environment) in their particular unit. The contact persons are part of the management system and are responsible for the implementation of measures in their unit. Management representatives were also invited to special seminars informing them about the new tasks and responsibilities.

With regard to OSH management, the former safety and health management system was evaluated. The old documentation consisted basically of (more or less detailed) instruction material. Standardised training documentation was essential for the new OSH management, so new safety and health guidelines ('SGU-Vorschriften') were developed. The new guidelines aimed to ensure that workers were better prepared to handle dangerous substances and to work with different devices and tools. All workers and management representatives are trained in using the guidelines, and workers can access the guidelines directly via their department's intranet.

A central unit for OSH was established. The unit is the main focal point for all safety and health actions. It is responsible for:

- Carrying out periodic workplace risk assessments. Plans for inspections are prepared by the central OSH unit.
- Central documentation of risk assessment processes in a database, accessible by all SGU contact persons.
- Frequent coordination with SGU contact persons of the various sub-units in the department. The units of MA 48 carry out the workplace risk assessment in their particular area. Multi-area risk assessments and their evaluation are coordinated by the central OSH unit.
- Proposal of adequate measures and their implementation.
- Involvement of the management. Multi-area risk assessments require the departmental management to participate, because the management has to decide on financial resources and on building measures (if required).
- Examples of measures taken as result of risk assessment. New fire doors, a new fire alarm system and new emergency exit signs were installed, and a new guideline for the handling of asbestos was introduced.

At management review meetings, OSH management is at same priority level as quality and environmental management. Points of special interest are:

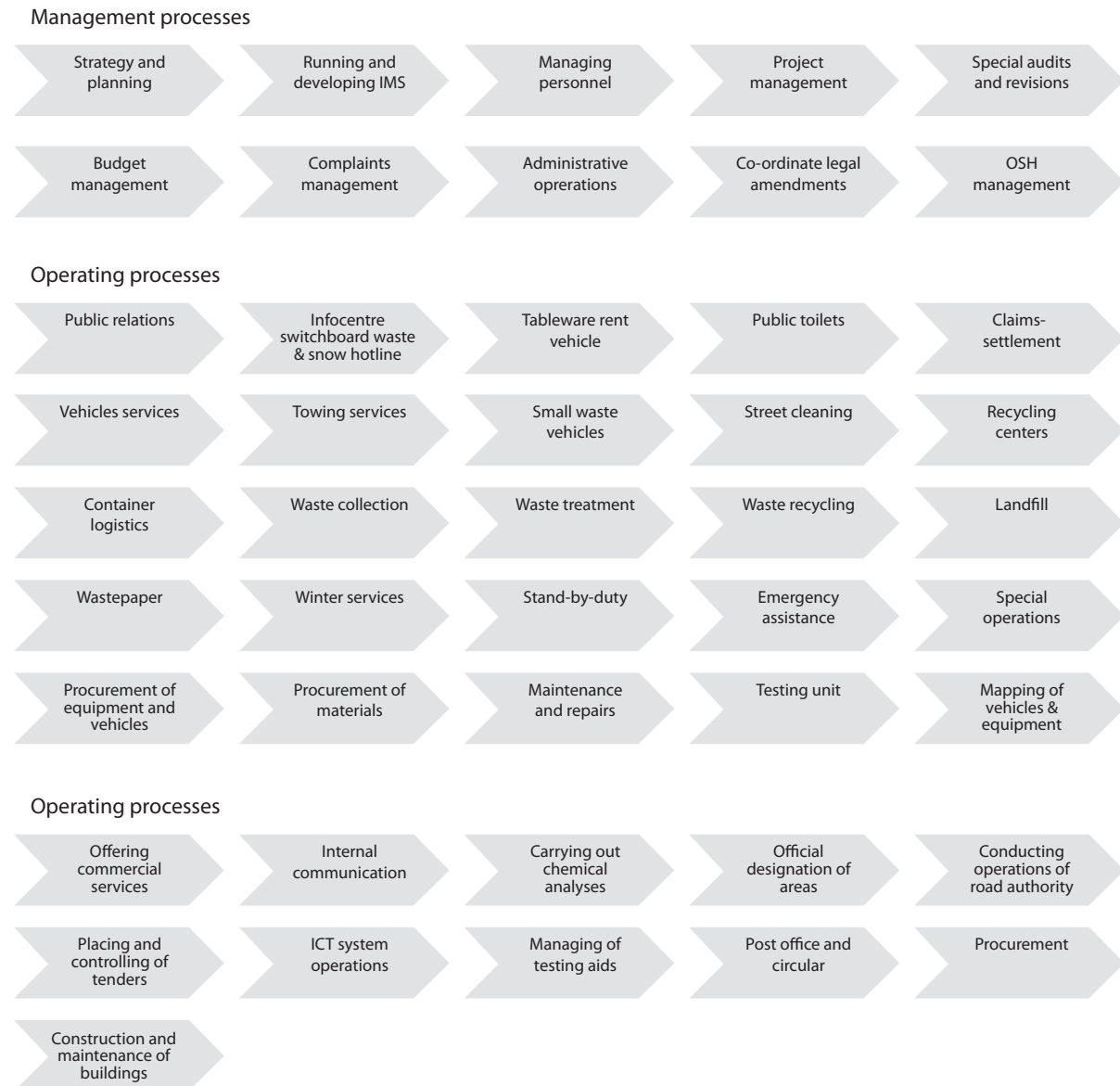
- Has the OSH management cycle been completed?
- Were adequate measures taken?
- Are there any measurable results?
- What can be done for further improvement and efficiency?





Generally speaking the new IMS achieves a good balance in the management of the three aspects: quality, environment and OSH. All three aspects are part of a single quality policy and are mainstreamed into common documentation. Thus, all findings and data can be evaluated collectively and various processes taken into account when adjustments are made, so that actions are coordinated and duplication avoided.

**Figure 17: Process landscape**



## RESULTS AND EVALUATION OF THE PROJECT

The main objective of the project, to implement a harmonised management system customised for the needs of MA 48, was realised. The system is transparent, applicable for all operational processes and an effective steering tool for the management. The core aspects can be summarised as follows:



- concrete management process flow
- synergies in management because of simplification of workflows
- standardised training tools (e.g. safety and health guidelines)
- clearly defined responsibilities
- customer orientation
- defining of objectives in regard to quality, environment and OSH.

The advantages of IMS in comparison to the former QMS of MA 48 can be summarised as follows:

**Table 17: Quality Management System vs. Integrated Management System**

QMS Disadvantages	IMS Advantages
Successive, incoherent implementation process	Coherent communication and implementation process
Separate treatment in the particular units of MA 48	Applicable in all units of MA 48
No concerted reporting to department management of MA 48	Direct and coordinated reporting to department management of MA 48
Local steering in units, frictional losses, different management strategies	No frictional losses, one central steering instrument
Possible synergies could not be used	Synergies between different management processes
No coordination of unit interfaces	Defined interfaces between the different units of MA 48

The IMS of MA 48 could be certified according to:

- ISO 9001, ISO 14001 and OHSAS 18001 for quality, environmental and OSH management from Det Norske Veritas GmbH (DNV Environmental Expertise and Certification, Germany).
- EMAS certification of Umweltbundesamt (Austrian Environmental Agency) for environmental management.
- EFB certification for waste management facilities of the Austrian Waste Management Certification Council (Verein für Entsorgungsfachbetriebe, VEFB) of the Austrian marketing boards of the waste management facilities (VÖEB, ÖWAV and ISWA).

The implementation of the new IMS covered some new ground for the department. Although the project can be described as a success, many steps could not be foreseen and had to be improvised. Therefore a thorough and ongoing evaluation is of major importance. The IMS will be continually assessed and adapted to new demands to ensure that it functions properly.

**PROBLEMS FACED**

One major problem was to adjust the IMS to the different needs of various departments in MA 48, and to implement it as an integrated and coherent management system for effective steering and for daily workflows. It was difficult to communicate the IMS in its complexity to the staff. A lot of effort was devoted to ensuring that the implementation process was as transparent as possible.



Another constraining factor was the strict timetable of the project. Only two years passed from the first steps in planning until the final inauguration of IMS. The management preferred to keep the implementation process short in order to gain time for evaluation and enhancement of the IMS under real operating conditions.

Under these conditions steering the implementation process was a real challenge for the management core group. To achieve the objectives, to involve the staff and the heads of unit at short notice and to meet everyone's expectations was difficult. The IMS team had to be persuasive and persistent in gaining people's support.

### **SUCCESS FACTORS**

The first key success factor was the interest and the support of the project by the whole management. The head of Municipal Department 48 was directly involved and the implementation process was high on the agenda at management meetings.

The second key success factor was the involvement of the employees. To ensure that the project was as transparent as possible, workers were informed via intranet, in-house newspaper and noticeboard. A feedback chain was implemented that allowed workers to express criticisms and suggestions concerning the IMS, find out information about the IMS, and communicate with the IMS management. The audit stated that both the top-down information and the bottom-up feedback worked well and that workers were thoroughly informed about the new IMS.

Third, the central management of the IMS with the consultation and involvement of the different units was another crucial point. It was important to find a compromise between coherency and diversity with regard to the different needs of the units. With the help of the SGU contact persons in the units and frequent exchanges between them and the department's management, friction was avoided.

Another important aspect was the decision of the Viennese municipal administration to implement the so-called PUMA programme for Environmental Management in all municipal administration departments. This gave an added impetus to the implementation of the new IMS, and PUMA was integrated in the IMS.

### **TRANSFERABILITY OF THE PROJECT**

Management systems can be implemented in any kind of enterprise or public administration. In doing so it should be taken into account that success is closely connected to the individual needs of the particular facility. In other words, the management system has to be adapted to the special needs of the enterprise concerned. Opting for an IMS has several advantages, first and foremost the bundling of all management processes into a single steering unit. In the project phase of implementation it should be taken into account that:

- objectives should be clearly defined;
- time frames and milestones should be determined in advance;
- management must explicitly support the IMS;
- coherent structures must be set up, consisting of a central core group and decentralised communication units; and
- management system and policy should be communicated to staff in every phase of the project.



### CONTACT INFORMATION

Magistrat der Stadt Wien  
Magistratsabteilung MA 48 (Abfallwirtschaft, Straßenreinigung und Fuhrpark)  
Einsiedlergasse 2  
1050 Wien  
Mag. Martin Hassfurther  
Tel: +43 1 58817-48021  
Fax: +43 1 58817-99480021  
Email: martin.hassfurther@wien.gv.at  
Web: www.abfall.wien.at

#### Sources and further information:

Det Norske Veritas (DNV 2007, Ed.): Eine saubere Sache. In: DNV Direkt Nr. 2. Available at: [http://www.dnv.de/ressourcen/publikationen/direkt/20\\_ausgabe\\_2/eine\\_saubere\\_sache.asp](http://www.dnv.de/ressourcen/publikationen/direkt/20_ausgabe_2/eine_saubere_sache.asp)

<http://www.wien.gv.at/umwelt/ma48/service/publikationen/pdf/umwelterklaerung-ma48-2009.pdf>

PUMA: Programm Umweltmanagement im Magistrat der Stadt Wien. Available at: <http://www.magwien.gv.at/umwelt/puma/index.html>

## 4.4.4. Embedding safety in the company's core business: the 'Stuck Pipeline' case (Netherlands)

### KEY POINTS

- Embedding safety in the company's core business
- Safety as core business
- Embedding safety in quality programmes (lean manufacturing, world class manufacturing)

### INTRODUCTION

This case started as one of five case studies in the context of the research project 'Safety as core business' by TNO for the Dutch Ministry of Social Affairs and Employment (see Section 2.1). This research project is aimed at mapping the critical factors that companies face when considering safety as a part of their core business, which means that safety issues are seen as a critical element of all relevant processes and activities in the organisation, e.g. daily decisions, investments, purchasing, management of employees and work practices. After a list of positive and negative factors had been drawn up through a literature review and interviews with OSH and non-OSH (e.g. management) experts and company visits, a theoretical framework was developed: the Safety@corebusiness© model. The model was tested for practical use in case studies. One of the most interesting cases was case A, also called 'the stuck pipeline'.

### BACKGROUND

The underlying assumption of the research project was that safety issues should be closely linked to the business processes of an organisation in order to be effective. The challenge of the project was to find out how this could be done. The Safety@corebusiness philosophy was shared by the company's safety executive. It was one of her challenges to establish greater synergy between the 'business' and 'safety' frameworks. She was dealing with a company that is outstanding in its quality programmes: a lot of attention had been paid to the potential risks in the production process of the end product. However, too many accidents still occurred.



Occupational safety sometimes benefits from the high attention given to the quality programme, but this is not always the case. In critical situations, environmental issues and production errors have priority over safety issues. Time pressure of line management appears to be the major reason why safety efforts are hampered. Another conventional safety programme would not have been a solution for the long term. Therefore, an assessment based on the Safety@corebusiness concept had to identify ways of embedding safety in the core business and raise safety performance to a higher level.<sup>38</sup>

### **AIMS AND OBJECTIVES**

The company found that too many accidents were occurring, despite existing safety and quality programmes. In some parts of the organisation, there was a target for 50% reduction of accidents. The safety performance and safety culture needed special attention, e.g. the use of personal protective equipment, more safety knowledge, less risk taking, more commitment of management in safety and better communication on safety issues. Reporting of accidents and dangerous situations also had to be improved. In other words, the focus was on safe behaviour by the employees. Measures to improve safety behaviour require the involvement of everyone from management to the shop floor and need to be connected to the actual work processes in order to last. The Safety@corebusiness© model gives an assessment of the organisational processes that are crucial to connect safety to the core business.

### **SCOPE OF THE PROJECT**

The company is a world-class manufacturing company that produces high-quality products in metals and synthetics. It is part of a Canadian group and has about 4,600 employees. In 2003 the number of accidents with leave was 99 and without leave 503. This is about 0.02 accident per employee. The main risks are noise, physical load and machine safety risks.

First the company was assessed using the Safety@corebusiness model (1). Based on the results of the assessment an improvement plan was made to narrow the link between safety and core business (2). Then the intervention was executed (3). Finally, the first step was taken to evaluate the outcome of the intervention (4).

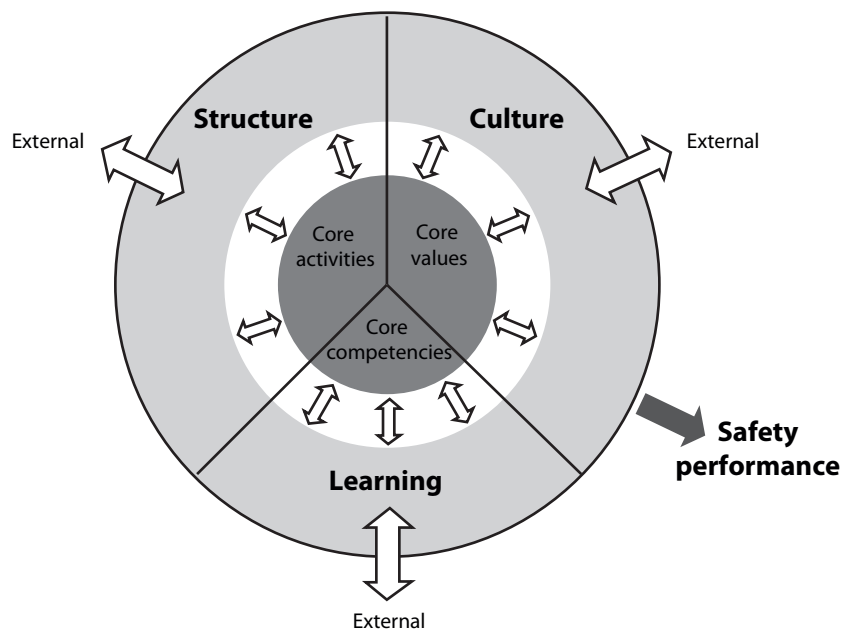
#### **(1) The assessment tool**

The Model Safety@core business© consists of structural, cultural, learning and external factors that are potential links between safety and the core business process (see Figure 18). The result is an overview of the gaps between safety and core business – these are the potentials for improvement.

<sup>38</sup> The study described was carried out within the framework of a financing programme 'Arbeidsveiligheid' (Occupational Safety) of TNO Work & Employment in dialogue with the Dutch Ministry of Social Affairs and Employment.



Figure 18: TNO Model Safety@core business©



Core business characteristics are described as:

- core activities: the activities which the company defines as core business, i.e. activities that are vital and seen as strategically significant;
- core values: the values shared among management and all employees;
- core competencies: the competencies necessary for the core business activities including individual and collective learning;
- external factors that influence the management of the core business.

Safety characteristics are described in terms of:

- safety structure (all structures, systems and processes, relations between departments and employees and pattern of interactions, installed to ensure production in a safe manner);
- safety culture (all shared values, norms, perceptions and assumptions about safety and risks);
- safety learning (how the organisation and individual employees learn from earlier experiences);
- external factors that influence the management of safety.

TNO has used this model to develop research protocols that enable the characteristics of the core business and the characteristics of the safety activities in an organisation to be defined. This scheme is translated into protocols for interviews and visits, and an audit tool to assess the company. It is used to describe the different ways in which companies describe their own core business and, at the same time, it describes the different approaches they use to deal with safety. The next step was to describe in a qualitative way the similarities and discrepancies between the two.

Besides this company, five other companies were assessed using the Model Safety@core business©. The members of the four-man project team from TNO were divided into various combinations of two, so that each researcher worked on several companies with a different colleague. Each company was visited for full days two or three times, but not on consecutive days. Documents regarding the core business and safety



management systems were studied, observations were made by walking around and interviews were held with management, supervisors, employees and employee representatives.

The interview with the general manager focused on aspects of the core business. The main question was: 'what is the company's reason for existing?' Other specific questions related to the cultural, structural, learning and external aspects of the core business model. The other interviews dealt primarily with the structural, cultural and learning aspects of safety in relation to the core business.

The results of all 5 cases were discussed in the project team and each company was scored on a 5-point scale (1=not coupled, 2=hardly coupled, 3=sometimes coupled, 4=coupled, 5=completely coupled).

## (2) The results of the assessment

Table 18 gives the summarised results of case company A and the four other case companies. The higher the score, the more safety activities are embedded in core activities.

**Table 18: Summary of semi-quantified company scores for the level of coupling of safety and core business (five-point scale)**

	A	B	C	D	E
Structure	3.7	2.9	4.3	1.7	2.4
Culture	2.7	3.7	4.7	1.7	3.4
Learning	3.5	3.3	4	1.5	2.8
External	2.8	3.5	3	3	2.5

Some examples are:

- a structural connection: in the management meetings quality figures (e.g. regarding supply liability) are dealt with next to occupational safety figures;
- a cultural gap: there is a tension between profitability and abstract values such as safety. Safety investments are not seen as issues that can be related to financial benefits. The negative consequences of safety are also not seen as potential strategic assets;
- a cultural gap: the safety aspects of the end product are more valued than the safety aspects in the production process of the product. In addition, environmental issues get more attention because of their relation to the end product;
- a cultural/structural gap: production targets are evaluated at the end of each day; OSH indicators on the other hand are evaluated once a month and are thus less pressing;
- a connection in the learning mechanisms: safety incidents and accidents are also seen as process failures and thus as a potential for process optimisation (efficiency);
- a gap in the learning mechanism: the company wants to be 'top of class' from a technological point of view, but this is focused on the production processes and not on safety knowledge;
- an external connection: a 'noise issue' has already shown that occupational issues can be a risk for the image of the company equal to product-related risks.

The general results of company A were moderate to good. The weak spot in the safety and core business level was found in the cultural aspects. The company showed more discrepancies between its safety culture and core values than other companies with similar management systems.

Primarily, this seemed attributable to the strong focus on production and product safety, and on a lack of knowledge about the possible consequences of a lack of safety in the work process. The direct supervisors



appeared to be the strategic links in the system: all lines for production and other fields come together in their function. Because of this, they suffered from task overload and time pressure.

### **(3) The intervention**

Conclusions and examples of good and poor relationships between safety and core business were presented by TNO to the company's representative, and discussed. This diagnosis showed that there was a discrepancy in the way safety on the one hand and product quality on the other were valued (and prioritised). Although supervisors had the intention of giving safety the same priority as quality issues, time pressure prevented them from taking the necessary safety action. In an attempt to come up with successful improvement measures, the following question was asked: 'what really motivates management and supervisors?' The answer was that company X is famous for its quality programme. Everybody, including top management, was very proud of the company's quality achievements. If a connection between safety and these successful quality programmes could be made, safety could profit from this success.

The intervention plan was drawn up in a meeting with the safety and quality representatives of the company and the TNO representatives. In this meeting the history of the company's quality culture and the possible connections to safety management were discussed.

In this business there is a historical high attention to efficiency. Efficiency programmes such as Lean Manufacturing and World Class Manufacturing (WCM) are a 'must' for companies in this sector to survive. The successful WCM programme in company X was of strategic importance.

### **(4) Results**

The meeting with the safety representative and quality representatives led to the understanding that safety and quality have more in common than was previously thought. Quality losses and safety incidents have the same 'precursors', such as communication failures, suboptimal organisation, problems in man-machine interfaces, etc. It actually appeared to be a simple step to embed safety in the existing quality circles: adding safety standards to quality standards and topics.

Moreover, the insight that safety and quality are connected meant the beginning of a positive development of the safety image. Safety is no longer an issue relating to unsafe working places, but the importance of safe behaviour is now valued. The idea that safety should be a part of the core business has now been absorbed into the general management philosophy of the organisation.

## **RESULTS AND EVALUATION OF THE PROJECT**

This project has led to a new inspiring cooperation between the safety and quality department, and to more effective and efficient safety activities. The expectation is that this initiative will also relieve the workload of supervisors.

Other results are that:

- managers have a more advisory role and are fully responsible for safety;
- employees now recognise when something has gone wrong and there is a sense that something has to be done. The extent of self-direction has increased;
- culture and behaviour are crucial and evolve along with these developments. Success generates success. Also for safety, there need to be successes that can be celebrated. In the past, companies tended to forget this;
- employees on the shop floor are more involved in safety. It has now become a matter of 'craftsmanship'.

At present the time frame is too short to verify whether the number of accidents within the company has fallen, or whether employees are wearing more personal protective equipment. That is why an impact measurement was performed based on employee behaviour, as the described improvement approach is focused on this behaviour. Behaviour is difficult to measure, however. A questionnaire was developed for this purpose (as a measurement tool) based on the intention to behave safely, combined with the measurement





of environmental factors that shed light on the likelihood that this intention will lead to safer action. In social science it is customary to find out people's intentions. This means that people are asked whether they plan to behave in a certain way when a certain situation arises. This intention is a good indicator for the effective behaviour.<sup>39</sup> For example, an employee might have the intention of wearing safety gloves. He will not wear them, however, if they are not available or difficult to obtain. A questionnaire was developed to measure intention, based on social norms, attitude and intention. A checklist based on the Tripod model<sup>40</sup> was used to measure factors concerning the organisational environment

The Tripod model measures the environmental factors that influence safe behaviour. The starting point is that human actions are most effectively improved by improving the quality of the individual's environment. The focus is on organisation factors, also known as latent failures. There are 11 clusters of organisation factors or Basic Risk Factors (BRFs). The 11 BRFs are: Design, Hardware, Maintenance, Housekeeping, Error Enforcing Conditions, Procedures, Training, Communication, Incompatible Goals, Organisation and Defences.

The instrument that was developed to measure the safety effects was applied to the improvement approaches in company A. The questionnaire was submitted to two temporary improvement groups (TIG) in the company. One of the TIGs had focused explicitly on safety, while the other had not. Unfortunately the environmental factors in this company had not been measured using the Tripod model.

Results showed that the intention to act safely was higher in the group that focused explicitly on safety, compared with the group that did not. Introducing a safety improvement group thus seems to lead to safe action. The effect on the number of accidents has yet not been felt. This could, however be due to the short time-frame of the measurement. Effects might only become visible after some time.

### PROBLEMS FACED

When responsibility for safety improvement is placed at a low level on the shop floor, there will be questions and requests from that same shop floor which need to be answered or met. It is important that the people on the floor receive sufficient support in order to be able to really change something, while not being hampered by executives. Consequently, an important focus of the new method is the presence of sufficient possibilities for making adjustments. People now learn by themselves to recognise situations that are not safe and that need to be remedied. Employees are given the opportunity to find solutions themselves, in order to implement improvement. But in so doing, they depend on the time and the will of others, i.e. the availability of executive expertise. The example has been mentioned of a 45-year-old man, who worked in a standing position and who had indicated that he wanted to work with a PC mat. The answer from Facilities was: 'If I do this for you, I will shortly be ordering another 100 of these mats.' This type of practice works as an obstacle. Improvements need to be picked up and implemented quickly. The new approach thus requires a different type of (executive) employee, with a higher (internal) customer orientation.

### SUCCESS FACTORS

The key to this success lies in the relationship between the world of quality managers and that of the safety manager. It has already been mentioned that the causes of safety and quality problems overlap. It has also been shown that the success factors of improvement approaches are similar. In the field of quality problems as well as in the field of safety, it is necessary that:

1. the situation is made visible, for example with photos that are easily recognised;
2. the issue is brought closer to the people;
3. people can change something themselves (ownership).

39 Fishbein M. & Ajzen I. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Addison Wesley, MA, Reading, 1975.

40 Reason JT, Shotton R, Hudson, PTW, Groeneweg J and Wagenaar WA. *Tripod: A principle approach to Safety Management*. Shell International Petroleum Mij Report EP 89-0310, 1988.



This approach, combined with WCM, will increase employee involvement as regards safety and quality.

The functional approach of safety is outmoded. Safety also has to be attractive. In this company quality means 'success'. When safety is included in this equation, people are stimulated by safety and enjoy paying attention to safety. It is important to effectively celebrate successes, especially at a low level.

In this company Lean & Mean was initially seen as a 'must', but that has now changed into a shared experience. By experiencing/feeling you can include employees in your efforts to improve. Safety now follows this stream. The first ISO initiatives at one time were imposed by the customer. Legislation and potential image problems enforce environmental measures. The necessity to act is less clear for safety.

In this company the anchoring of safety in Improvement Teams has led to the realisation that learning from accidents is a value-added activity. When the emphasis is on productivity and the reduction of disruptions in a company, safety becomes part of the company's value stream.

### **TRANSFERABILITY OF THE PROJECT**

There is a Safety@corebusiness assessment tool that can, in principle, be applied in all branches. The method has been tested in several sectors of the economy, in large companies and in companies with fewer than 100 employees. The diagnosis of the weak embedding of safety in core business does yield different types of improvement approaches, depending on the type of company. At present, this still requires an expert approach. The development of a self-assessment method is currently ongoing. It is currently necessary to enlist the support of safety and health professionals in this approach or vision. It is not currently possible to use this instrument without expert support.

The improvement approach, i.e. the embedding of safety in quality programmes, has already been applied in a different manner within this company and another company. The underlying concept is that safety standards are included, next to quality standards, thus realising involvement and self-direction throughout the organisation as far as the shopfloor. Many companies have implemented quality programmes such as WCM or TPM. The exact form depends on the quality system.

### **CONTACT INFORMATION**

Annick Starren  
TNO Work & Employment  
Polarisavenue 151  
NL-2132 JJ Hoofddorp  
PO Box 718  
NL-2130 AS Hoofddorp  
Email: annick.starren@tno.nl

## **4.4.5. Corporate Social Responsibility and Total Quality Management in an SME (Finland)**

### **KEY POINTS**

- Occupational and safety issues as a part of corporate responsibility and total quality management
- Minimising risk to environment and employees

### **LEAD ORGANISATION**

Kiilto Oy is a Finnish chemical company that was founded in 1919. The company develops, manufactures and markets adhesives and related products. Kiilto's strong point is its total adhesive expertise, providing comprehensive solutions to customers' material bonding problems. This involves not only adhesives but also



related stages in the work process such as priming, waterproofing, sealing, finishing, protection and care. Besides the products themselves, Kiilto provides support services: information, technical support and training.

### AIMS AND OBJECTIVES

Environmental and safety responsibility at Kiilto means

- Protection of water, air and soil
- Efficient and sparing use of natural resources
- Safety of products, materials and equipment
- Safety of work
- General safety
- Fires: to maintain zero level
- Hazardous material transport accidents: to maintain zero level
- Bringing Kiilto's figures down to below reference levels (Responsible Care companies) for the number of personal injuries and the number of working hours lost as a result.

### KEY ELEMENTS

Total quality, where every phase and component of the work process influences the end result, the quality produced and the image perceived by the customer, is the key concept in Kiilto's business. The achievement of total quality at Kiilto is monitored through a quality system. The Kiilto quality system received ISO 9001 certification in 1993. It covers product development, manufacturing, marketing, distribution, customer service, storage and materials functions. The quality system describes Kiilto's practices at the company, department and work phase level. It places obligations not only on the entire staff but on raw material suppliers and subcontractors as well.

The quality system incorporates systematic awareness and management of environmental and safety aspects. It includes an environmental system conforming to ISO 14001, a safety system conforming to BS 8800, an application of European quality award criteria of the European Foundation for Quality Management (EFQM), and the principles of Responsible Care (RC) – the environmental, health and safety programme of the chemical industry. All these systems provide Kiilto with a framework and tools for the systematic evaluation of its total performance. The principle of systematic improvement is carried out with the help of multiple indicators, audits, evaluations and self assessments based on Quality Award criteria. Customer satisfaction is tested by regular customer surveys.

Operations during the review period 2003-2005 included:

- Risk analysis and reviews covering the entire operation including individual workstations
- Safety aspects were more closely integrated into inductions
- Organised training in work and packaging cards' safety equipment markings and the functions of safety equipment
- Updated safety equipment rules at workstations
- Updated the updating and distribution method for safety information for raw materials
- Forklift training and operators' cards were introduced to staff using forklifts
- Occupational safety cards were introduced and training given to all staff; the cards are now mandatory for all workers
- Composition of the first aid team amended and first aid training updated
- Publication of a Safety Guide and Kiilto Oy's working area rules for new staff and for outside contractors.



**RESULTS AND EVALUATION OF THE PROJECT**

During the review period, the measurement processes were also updated. Kiilto is recording

- all incidents happening to Kiilto staff (numbers);
- work incidents that cause the loss of at least one day's work in addition to the day of the incident (numbers);
- accidents at work that cause the minimum loss of 3 days' work in addition to the day of the incident (number of incidents as well as number of incidents/million working hours) (nationwide RC-comparison control); and
- incidents during the commute to work (numbers).

With the exception of incidents during the commute, all incidents are logged in the incident report and are dealt with by the safety at work group.

**Table 19: Improvement of the situation at Kiilto regarding lost days/working hours**

	2003	2004	2005
Incidents leading to staff missing work (3+ days after day of the incident) in numbers per million working hours	17.5	8.6	18.4
Comparison of lost working hours over total working hours (for incidents causing loss of 3+ days in addition to date of incident)	877	343	1301

**CONTACT INFORMATION**

Mr Antti Nieminen

Kiilto Oy

Environment and Safety Officer

Deputy Managing Director

Tel: +358 (0) 207 710227

Email: antti.nieminen@kiilto.com

Web: <http://www.kiilto.com/en/>



# 4.5. EXAMPLES OF CASES AND SNAPSHOTS FOCUSED ON INTEGRATION OF EMPLOYEES' HEALTH MANAGEMENT INTO GENERAL MANAGEMENT

## 4.5.1. Project AddHealth (Austria)

### KEY POINTS

- Analysing mental health of workers
- Introducing 'Teams of Health' to improve mental health of employees

### INTRODUCTION

The employees of addIT suffered from severe stress caused by work to tight deadlines, high customer expectations and intense competition in the ICT sector. In a first step the stressors were identified. Secondly an OSH management system was designed which fitted exactly the needs of the company, including ongoing workstation evaluation, health circles, and individual workplace health promotion.

### BACKGROUND

AddIT is an IT company with about 80 employees that provides IT business solutions and services for the industrial, public and health care sector.

The employees of the IT company suffered from severe stress and overload. The fact that three companies merged in 2000 to form AddIT made the situation for the employees worse, because it brought changes to well established teams and resulted in the creation of new teams, and led to staff taking over new areas of responsibilities, serving new and major clients. The period immediately after the merger was characterised by heavy stress, considerable employee turnover and an increase in psychological problems such as burnout syndrome.

To help retain the loyalty of employees, to reduce/remove psychological barriers and to promote good relations between employees the management decided to implement addHEALTH, a company cultural project with the focus on health.

The project was supported by the Fund for a Healthy Austria (Fonds Gesundes Österreich) and developed with help from the ARC Seibersdorf Research. ARC Seibersdorf Research created the S3 – workplace health circle (schlank, schnell, salutogen = slim, fast, salutogenic<sup>41</sup>): a concept which is based on a salutogenic equilibrium model.

### AIMS AND OBJECTIVES

The main aim of the project was:

- To implement an OSH management system that is integrated into the corporate culture in an active and sustainable way to ensure healthy and content employees as well as smooth-running work processes.
- To develop a team spirit within the company to improve performance and profitability.

<sup>41</sup> The term 'salutogenesis' means 'the process of healing, recovery, and repair'. The term was first used by Aaron Antonovsky to contrast with pathogenesis (*Mosby's Dictionary of Complementary and Alternative Medicine*, Elsevier, 2005).



### SCOPE OF THE PROJECT

A special approach was developed according to the principle of 'expeditions management'. It is called this because the project was seen as an 'expedition' that could not be planned or predicted and was expected to give rise to unexpected events. For this reason expeditions management is based on very good teamwork, flexibility, creativity and the willingness to act unconventionally. The expedition (project) started with an initial survey (Ersterhebung) to help determine which actions should be taken as a first step. Then a second 'mini' survey was held to assess the actions and to decide on further actions. This process was carried out repeatedly, a procedure known as 'survey/action swing' (Erhebungs/Maßnahmen Schaukel).

#### **Initial phase**

At the beginning of the project a 'project management board' was created. It consists of members of the company management and executive staff. The task of this board was to implement project steps, monitor the milestones and budget and assess the quality of the project.

The following goals were set to be achieved within three months:

- fixing the priority value of health in relation to the business strategy
- surveying data to prepare a health and cultural profile of the company
- hiring and training of promoters
- developing a concept for evaluation
- implementing a structure for organising and communicating addHEALTH.

Promoters were chosen from all organisation units to ensure that the health circles would have a wide effect within the company, and they were trained in special workshops. The management board and the promoters met to agree on the goals and benefits of the project.

#### **Circle phase**

In this phase the circle of promoters analysed which factors were affecting the mental health of the workers and how they could be eliminated.

Specially trained employees carried out a survey to detect and analyse stress factors such as emotional distress. Actions to improve the health of the employees and to reduce mental barriers were developed and a salutogenic company process management was implemented.

To reach this goal the following questions were highlighted:

- What factors affect the mental health of the employees?
- What cultural factors are present?
- What measures can help to eliminate these factors?
- How can the elimination/reduction of these factors be assessed?
- How can the quality of the process be assessed?
- Relevant questions from the fields of health, 'soft skills', soft facts', corporate culture and company process management.



### **Methods of collecting data**

Two main methods were used:

- Interviews with employees. The circle promoters developed a guideline for the interviews, to guarantee an uniform approach. Each interviewer interviewed a number of employees, but never employees from their own bureau (unit). The interviews were treated anonymously. They were recorded, transcribed and then analysed. About 49 interviews were carried out. The task of the promoters was to pinpoint typical company processes as well as barriers to innovation. 82 different cases were detected.
- Data collection in a newly developed so-called 'mishaps, missteps and misfortune database' (Pleiten-Pannen-Pech Datenbank). Employees and members of management entered the following information in the database:
  - Basic description of the problem (case): What happened, why and in what situation?
  - Is it typical for the company?
  - Examples?
  - Description of the situation.
  - Which type of barrier exists (property, process or culture barrier?)?
  - Indicator to measure the changes?

About 112 cases were collected

Two different methods were used to analyse the information gathered:

- Self-management model: this is a goal-oriented model to solve problems according to the principle 'Help for Self-Help'. Self-management skills include, among others, self-monitoring, self-control and self-motivation (Wikipedia, 2007).
- Pattern analysis to detect similarities between the different cases (problems) and interviews.

Twelve types of barriers were detected and analysed as case studies. The analysis of the barriers incorporated analyses of the employees such as typical situation, reactions and consequences; the cultural background from the employee's point of view; and finally proposed measures to break down barriers (problems). At the end of this phase addIT started to create a salutogenic company process management.

### **Implementation phase**

In the implementation phase 'Health Teams' carried out small projects aimed at providing continuous improvement in employee welfare and staff communications. A top priority of the projects was the development of 'soft' strategies such as communication strategies in dealing with criticism or delegating tasks. This phase included work on improving interpersonal relationships, strategies for dealing with criticism and successfully delegating work, and an assessment of the atmosphere at the workplace.

'Realtime strategic change conferences' (RTSC) were also organised. In these conferences, participants interact with the management team or the group that has presented a proposal for the future, together with outside experts and anyone else who will be affected by the strategic change. This ensures an effective, goal-oriented exchange of opinions. The proposals and points raised are analysed and any new strategies are revised and formulated. RTSC is a method for larger groups of participants (Großgruppenmethode) that is especially effective in handling new ideas or strategic changes.

The project was developed in close cooperation with the ARC Seibersdorf Research GmbH which specialises in process-oriented OSH management and has developed innovative tools and methods to improve the health of employees in the field of New Economy.

The project was supported financially by the 'Fund for a Healthy Austria'.



### RESULTS AND EVALUATION

The project has been evaluated right from the start and documented half-yearly. Internal communication and teamwork in particular improved greatly and the training in 'soft skills/facts' was effective.

Some 90% of the company's employees were actively involved in the project, which ran from 2004 to 2006. The company is divided in different units, each of which was evaluated separately. This is why the results are given in a range rather than a single figure. The main achievements are:

- 14-28% reduction in stress factors
- 10-24% improvement in team spirit
- 8-27% health improvement.

The project received the seal of quality awarded by the Fund for a Healthy Austria in 2006.

### PROBLEMS FACED

At the beginning of the project there was some opposition and it required considerable effort to persuade the employees of its benefits.

At the beginning of the training phase the promoters experienced difficulties in learning and using the methods and tools of health promotion, and transferring their knowledge to the other employees.

The training was held outside the company. This guaranteed that the promoters could concentrate on the special training without being distracted by day-to-day business (e.g. phone-calls, emails, meetings).

There was a risk that parts of the target group would be missed, because they felt excluded and not embedded in the project. To ensure that all employees felt involved, they were informed and integrated right from the beginning of the project. Meetings/forums for employees still take place regularly to guarantee the flow of information, and communication also takes place via intranet and special marketing activities. The Kaizen training and the sustainable continuous improvement process (NKVP) actively involved the employees.

Initially the employees were very suspicious about the interviews and surveys, so agreement was made to anonymise the data. To provide transparency the data were published in the database for 'misshape-missteps-misfortune'.

### SUCCESS FACTORS

The following factors made this project successful:

- Introducing the database for 'misshape-missteps-misfortune'. This transparency showed that all concerns and wishes of the employees were taken seriously.
- The project was supported by the management during the entire running period.
- External support by the ARC Seibersdorf. Health and safety projects can only be successful with competent expert advice.
- Measurable improvements during the project gave a boost to the project.
- Training such as Kaizen, the RTSC conferences and the sustainable continuous improvement processes.
- Publication of the results in the company.
- Reports to the Fund for a Healthy Austria: all reports (3 progress reports, 1 final report) were regarded as excellent.
- Very positive evaluation from the FB+ E (research, consulting and evaluation) Institute in Berlin (<http://www.fb-e.de/>)
- The award of the seal of quality ('Betriebliche Gesundheitsförderung') from the Fund for a Healthy Austria in 2006





**TRANSFERABILITY OF THE PROJECT**

The addHealth project itself is not easily transferable to other companies, because it is an individual programme set up especially for addIT. During the entire running period the special requirements of the company and the employees were taken into consideration and a very specific project area was created.

However, the idea and the approach of the project are transferable to other enterprises, as well as the tools and methods developed. For example, the sustainable continuous improvement process (NKVP) is transferable to other companies with appropriately trained moderators. This method is now even used by addIT to identify problems and barriers between the company and clients at an early stage.

**CONTACT INFORMATION**

AddIT Dienstleistungen GmbH & Co KG  
Robert Oberguggenberger  
Lakeside B09  
A-6020 Klagenfurt  
Email: Robert.oberguggenberger@addit.at

Fonds Gesundes Österreich  
Dr Klaus Ropin  
Aspernbrückengasse 2  
1020 Wien  
Email: klaus.ropin@fgoe.org

*Sources and further information:*

AddIT, *Verantwortung zeigen 2007 – good practice*, addIT Dienstleistungen GmbH Co KG, 2007 [http://www.verantwortung-zeigen.at/fileadmin/templates/vz/download/ubgp/addit\\_addhealth.pdf](http://www.verantwortung-zeigen.at/fileadmin/templates/vz/download/ubgp/addit_addhealth.pdf)

Fonds Gesundes Österreich, 2006, *AddHEALTH*, [http://www.fgoe.org/projektfoerderung/gefoerderte-projekte/FgoeProject\\_126597](http://www.fgoe.org/projektfoerderung/gefoerderte-projekte/FgoeProject_126597)

Wikipedia, *Selbstmanagement-Therapie*, 2007 <http://de.wikipedia.org/wiki/Selbstmanagement-Therapie>

**4.5.2. Workplace health promotion at Česká rafinérská (oil refinery) (Czech Republic)****KEY POINTS**

- Ensuring general health of employees (general health protection, promotion of sporting activities)
- Targeted health campaigns (smoking cessation, weight reduction etc.)

**LEAD ORGANISATION**

Česká rafinérská is the largest producer of oil products in the Czech Republic, with a staff of 700 people. It operates refineries in Litvínov and Kralupy nad Vltavou. The company holds the following certificates for quality, environmental and OSH management: ISO 9001, ISO 14001 and OHSAS 18001. Česká rafinérská has also implemented an Integrated Management System that includes a Health and Safety Management System, an Environmental Management System, a Quality Assurance System and Asset Protection. The oil company observes the principles of social responsibility and has been given the right to use the titles 'Safe Company' and 'Responsible Care'. The company is also a holder of the Social Responsible Company Standard covering corporate donations, philanthropy, NGO and community support.



### **AIMS AND OBJECTIVES**

The main objectives of this workplace health promotion programme were: minimising risk factors relating to work and lifestyle and reducing the amount of sick leave taken by employees; improving the health status and increasing the job satisfaction and general well-being of employees.

### **KEY ELEMENTS**

The programme was carried out in several stages and included such activities as:

- permanent supervision of working conditions and safety;
- permanent improvement of working conditions and safety;
- evaluation and monitoring of the current state of the health of employees – over and above standard preventive check ups;
- informational campaigns on special health topics and risk factors;
- support of sport and physical activities – swimming, skating, squash, tennis, aerobics, organising matches, sport competitions, tournaments;
- implementation of better ergonomics at the workplace – project health and safety in the office;
- smoking cessation – project PROBETA: competition Stop and win (cooperation with Czech coalition against tobacco);
- weight reduction – project NEVA: information campaign, weight reduction under medical supervision, competition;
- stress reduction – training in stress management;
- osteoporosis screening;
- screening for cardiovascular risk factors; and
- flu immunisation.

### **RESULTS AND EVALUATION OF THE PROJECT**

As a result of the activities implemented in the company there was a significant fall in sick leave between 1998 and 2004. The company introduced a 'Smoke Free' tobacco policy. Employees participated actively in all programmes. In 2005 the company won first place in a national competition for 'Health Promoting Enterprise of the year 2005'.

### **CONTACT INFORMATION**

Česká rafinérská, a.s.

Záluží 2

436 70 Litvínov

Tel: +420 476161111

Email: info@crc.cz

Web: [www.ceskarafinerska.cz/en/index.aspx](http://www.ceskarafinerska.cz/en/index.aspx)



# 4.6. EXAMPLES OF CASES FOCUSED ON SAFETY CULTURE AND HUMAN RESOURCES MANAGEMENT

## 4.6.1. Partners in Safety at Corus Htd<sup>42</sup> (the Netherlands)

### KEY POINTS

- Increasing occupational safety through a change in safety culture
- Linking the vision on safety to the company's values and translating these values into measurable key performance indicators
- Deploying a communication structure (cascade) and communication tools with regard to occupational safety

### INTRODUCTION

The largest Netherlands plant of steel company Corus is located in IJmuiden. Although the company had previously taken steps to improve occupational safety within the maintenance and service department, the level of occupational accident-related absenteeism did not fall significantly. To try to get absentee rates down, in 2003 the plant launched a project called 'Partners in Safety', with the support of the 'Versterking Arbeidsveiligheid' (Increasing Occupational Safety) programme set up by the Dutch Ministry of Social Affairs and Employment.<sup>43</sup> The objective was to change the culture as regards safety and leadership through interventions in the labour process and the organisational structure. Thanks to this project the number of accidents resulting in sick leave decreased from 97 per million hours worked in 2001 to 7 in 2006.

### BACKGROUND

Corus (formerly Hoogovens) is an Anglo/Dutch company and the largest steel company in Europe. It is a subsidiary of the Tata Group. The Corus Group has production plants in 17 countries, employing a total of 48,000 employees (2005). The largest Corus company in The Netherlands is the integrated steel company in IJmuiden. The Corus IJmuiden site is the largest continuous industrial site in the Netherlands and is located in the municipalities of Heemskerk, Beverwijk and Velsen. The safety action plan described in this case study was implemented in Corus's (HTD) maintenance and service department in IJmuiden.

Between 2001 and 2004, the number of (near) accidents without absenteeism at Corus HTD decreased from 97 to 63 a year. This trend levelled off in 2004, although the number of cases rose for certain departments. The effect of a previous project on occupational safety was apparently insufficiently strong and durable. During this same period a branch of Corus in Delfzijl managed to achieve an impressive reduction in the number of accidents resulting in sick leave. The success of the Delfzijl project was associated with huge commitment from workers, executives and the management team alike.

### AIMS AND OBJECTIVES

The objective of the 'Partners in Safety' project set up by Corus HTD (IJmuiden) was to build and install a real, durable 'safety culture'. To this end the company used the experience gained from the successful project in Delfzijl.

42 Based on: [http://www.arbonieuwestijl.nl/docs/pdf/niet\\_kopierensvp\\_deel\\_2.pdf](http://www.arbonieuwestijl.nl/docs/pdf/niet_kopierensvp_deel_2.pdf), pp. 71-75.

43 <http://www.arbonieuwestijl.nl/8/Arbeidsveiligheid.html>



### SCOPE OF THE PROJECT

The project manager of the Delfzijl project was asked to translate the Delfzijl approach to the situation in IJmuiden in April of 2003. Preparations were finalised in November 2004: three improvement teams had adapted the basic concept as used in Delfzijl. Employees from all levels and departments within Corus were involved in this process. In January 2005 the project was further developed in the largest business unit in IJmuiden: the maintenance and service department (HTD Maintenance).

The project had the following characteristics:

1. The safety approach tied in with the most important values in Corus HTD's mission and vision. In the case of this project Respect, Care, Involvement and Dialogue, for example, were important values.
2. These values were the foundation on which the standards were based, which were then translated into Key Performance Indicators (KPIs). What was remarkable about this approach was that efforts were deemed to be more important than the final outcome in the assessment. The underlying philosophy was that investment and attention would determine the final outcome. This resulted in a highly proactive approach. Corus was mainly trying to prevent accidents, partly because efforts made to prevent these accidents played a greater part in determining the reward for departments and management than the actual number of accidents.
3. The KPI scores were used in every department to determine the level of awareness and the practice of occupational safety among staff. Line management was able to compare results with the agreed target standards.

During meetings (Time-outs for safety) the top 200 executives were challenged to start up a dialogue with employees about occupational safety. They were mainly asked to listen to people, to ask a lot of questions and to explain as much as they could. The executives were shown a film to give them a more detailed grasp of the issues. The meeting brought about a change in many executives' views on the issue.

Corus developed a training programme for the 200 executives. Topics included: accident investigations, task risk analysis, how do I approach someone, observation techniques, working with safety themes, etc.

A communication structure (communication cascade) was developed, enabling employees to deal with notifications of dangerous situations in a quick, transparent and respectful manner themselves (and, where needed, with the help of managers higher up). The employees now know that notifications are taken seriously. As a result the number of notifications has increased considerably.

A number of simple but intelligent communication tools were developed, which facilitate the dialogue between executives and employees concerning safety. One example is the STOP! & GO! Card, which employees have to carry with them at all times. The card contains all the key points of the programme and can be used in any situation as a checklist for safety. If anyone notices an unsafe situation or behaviour, he/she asks for the card, runs through the questions on it and thus institutes a discussion that allows the other party to refocus on safety.

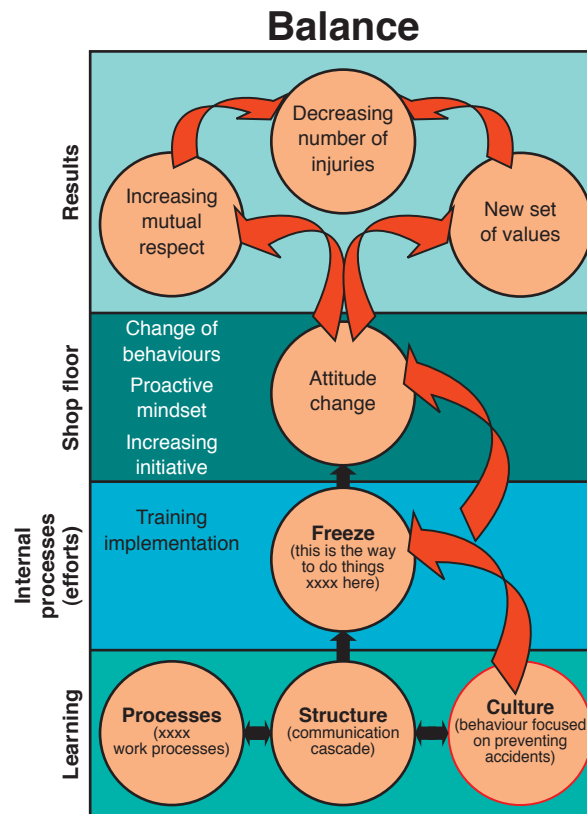
### RESULTS AND EVALUATION OF THE PROJECT

Corus HTD has succeeded in developing and implementing an active safety approach through the 'Partners in Safety' project. Furthermore, the process required to improve safety has been clearly described in terms of tasks, responsibilities and opportunities for communication. Based on the management tools and the clear work process executives (and employees amongst themselves) can always start up a dialogue with one another about undesirable situations and behaviour. This has improved the safety culture and encouraged staff to take greater responsibility for OSH. As a result the number of accidents has decreased considerably (from 97 a year in 2001 to 7 in 2006). The number of preventive notifications of hazardous situations within the company also rose sharply (from 231 per million hours worked in 2001 to 823 per million hours worked in 2006).



The 'Partners in Safety' project resulted in the development of the HTD Safety Behaviour System (Balance). The Balance model has four levels. By working through these four levels a reduction in accidents can be attained.

Figure 19: The Balance model



### PROBLEMS FACED

An important lesson learned from the 'Partners in Safety' project is that attention must not slacken for a single moment, and people must be motivated constantly to maintain their interest. For example, at one point the project manager was absent, so attendance at the training sessions for the product groups fell significantly.

### SUCCESS FACTORS

- Using experience from a project that was proven to be successful. The approach developed in Delfzijl with its impressive results was an excellent reason for the HTD manager to use this as a launch pad for the programme in IJmuiden. The fact that this was a Corus-developed project contributed to acceptance.
- Involvement and visibility of top management level, not only in directing policy but also when it came to implementation (e.g. during board meetings and the distribution of the STOP! & GO! cards).
- Involvement and positive critical attitude on behalf of the works council. The works council was involved from the very beginning and also endorsed less popular measures that are a result of compliance with agreements to improve safety.
- Communication cascade: this is a transparent way of dealing with notifications of unsafe situations. Every notification is dealt with by the department(s) concerned. In the first instance the employees themselves, who are faced with the hazardous situation, try to find ways to solve the problem. If they need the help of management or other departments to do this, then the notification is 'passed on'. The communication



cascade always highlights the status of the notification and determines who has to take the next step. Deadlines are visible for everyone. A notification is thus taken seriously by management as well as workers.

- A simple communication tool to support the dialogue. Corus developed a number of simple cards that summarise the essence of 'Partners in Safety' with a number of questions. Everyone is given this card, so if they notice unsafe situations or unsafe behaviour they can use it to initiate a discussion about safety.
- The project manager was the key to the project's success. His infectious enthusiasm, inspiration, responsibility and challenging but respectful style helped win everyone's support for the project and approach.
- Link to KPIs. By linking the vision on safety to the company's values and by translating these values into measurable key performance indicators, management developed an information and control tool. As a result, safety became a visible part of management responsibility. This guarantees the continuous improvement of occupational safety.
- Links between safety and personal experience. Unsafe behaviour is now discussed in such a way the consequences of unsafe behaviour are linked to the employees' family and private life. This has eliminated the tendency for certain staff to complain that attention to health and safety is just for 'softies'.

### TRANSFERABILITY OF THE PROJECT

The Corus HTD 'Partners in Safety' concept will certainly be of use for other companies. Key points learned from this approach include:

- It is better to copy a good idea properly than to make up your own bad version. Use good ideas and approaches that have been devised elsewhere (within your own company). At IJmuiden the company had previously used a method devised by an external agency, which generated insufficient results. By translating an approach used at Corus Delfzijl to IJmuiden, the company's own employees managed to achieve a great deal more.
- Choose the right project manager. For projects that are aimed at changing behaviour, it is crucially important to appoint a manager who exemplifies the desired culture and the desired behaviour and who is able to convey this with sufficient enthusiasm.
- Ensure a connection with the company's directing principles. Connecting a project's *modus operandi* with the directing principles, as used by the company's management, makes it more likely to succeed than if a separate reporting structure is developed for the project.
- The personal touch. Express the desired behaviour in ways that employees and executives can relate to personally. Safety will only become a reality if you point out the personal consequences of unsafe behaviour.

The Ministry of Social Affairs and Employment helped introduce the STOP/GO card systems devised by Corus HTD at Mitsubishi Caterpillar Forklift Europe BV (MCFE) in 2006. Each employee has a card listing eight questions about the workplace, tools, instruction/training, etc. Once a day the employee has to ask all the questions to determine whether it is safe to commence work. If this is not the case, the employee has to show a STOP and talk to the foreman about the measures that must be taken to ensure that work is safe. Proposals for improvement are written out and placed on a central noticeboard, and both the foreman and the employee have to sign off the completed measures.

### CONTACT INFORMATION

Peter Booster  
Corus HTD Maintenance Services  
Postbus 10000 1970 CA IJmuiden  
Email: peter.booster@corusgroup.com



## 4.6.2. A joint vision for Human Resources Management and Welfare at Work (Belgium)

### KEY POINTS

- Human Resources Management (HRM)
- Welfare and well-being at work
- Provincial government

### INTRODUCTION

The changing labour market and new trends in human resources (HR) policy led the Personnel Department of the Provincial Government of Antwerp to change its operations and to formulate a new vision and new objectives. The social awareness of human capital within an organisation needed to be translated into a policy, in this case an HR policy. During discussions regarding the transformation from a classic personnel department into an HR department and the drafting of the strategic memo for 2007-2012, the joint objective 'the welfare of employees at work' kept on cropping up, thus creating the foundation for an excellent working goal.

### BACKGROUND

When the HR department was implementing its new policy and drawing up its strategy for 2007-2012, it decided that it should strengthen its ties with the Internal Service for Prevention and Protection. After all, both departments have the same goal: the welfare of the employee at work. Since the introduction of the Belgian Welfare Act of 4 August 1996, prevention is no longer restricted to technical and material measures, but also covers the organisation of work, labour conditions, social relations and environmental factors. There is no doubt that employees work best in an environment where they feel 'materially and spiritually happy'. In addition, since the mid-1990s human resources management (HRM) has regarded a company's human capital as the production factor par excellence, which can offer a company or organisation a competitive advantage. HRM is thus becoming increasingly important in a company's strategy. A close involvement and the translation of the general organisational strategy into an HR strategy is thus essential.

### AIMS AND OBJECTIVES

The most important objective in the long term is to increase the employees' welfare and motivation. This will be achieved indirectly by bringing about better (daily) cooperation between both departments and to strengthen HRM as well as Prevention & Protection.

### SCOPE OF THE PROJECT

The joint vision as mentioned above targets three domains:

1. competence management;
2. balance between supply and demand of employees; and
3. safe and motivating labour conditions.

Thus the province's HRM policy ensures that:

- employees are sufficiently competent and motivated to contribute to the targets of the Provincial Government in an effective and efficient manner;
- the number of available employees and requirements are balanced in a proactive manner;
- provincial employees work under safe circumstances, for a salary that corresponds with the expected performance and in a working atmosphere that contributes to the employee's personal development and welfare.



A joint vision for HRM and Prevention & Protection required the reworking and rewriting of the strategic and operational objectives, which mainly focus on:

- implementation of the principles of competence management and the reevaluation of the role of the line manager/HR manager, through a specific training course for (new) executives, among other measures;
- striving towards the best possible approach to staffing requirements, recruitment and career planning by recruiting the right person for the right job, by stimulating the principle of internal mobility and by rationalising the number of holiday schemes;
- strengthening team spirit by organising activities such as an annual family day ('Provant Plezant'), a monthly 'happy hour', group activities for each department, the 'Vermeylefonds' and many activities by the personnel association, Prova;
- reactive and proactive improvement of working conditions through a constructive approach to absenteeism, a specific policy targeting older employees, etc.

A bi-weekly consultation was held between both departments and the Internal Department for Prevention and Protection was embedded in the organisational structure and moved to the same work floor as the HRM Department. This greatly strengthened collaboration between the two departments.

With the aim of reducing the number of working days lost due to occupational accidents by 50%, the Department for Prevention and Protection launched, in consultation with the HRM Department, a project known as 'Van Lijden naar Leiden' ('from suffering to leading'). The objective was to increase the safety of working conditions, to reduce absenteeism related to occupational accidents and to accelerate the return to work. The project was initially launched in only a few locations, such as the Zilvermeer Provincial Recreational area (Mol), and consisted of 4 phases:

In the first phase, the project was presented to the management of the Zilvermeer. After some modifications done, the project was formalised and submitted for approval to the Committee for Prevention and Protection at the Workplace.<sup>44</sup> The Committee in turn put together an ad hoc working group consisting of line managers from the different function groups.

In the second phase, the ad hoc working group drafted a scenario for the realisation of the project. 'Order and cleanliness' was chosen as the main theme. The scenario envisioned the following steps:

- drafting and distribution of an introductory note on the project to the staff. This note was signed by the management and all line managers;
- inviting the staff to an information session on the project, its actions and goals;
- training for all line managers on their tasks and responsibilities, provided by the External Service for Prevention and Protection (IDEWE);
- a poster campaign in collaboration with a company known as Fullmark, containing the following monthly themes:

'Veiligheid kent geen vakantie' (safety doesn't take holidays)

'Orde en netheid elke dag opnieuw' (clean and tidy every day)

'Laten we opruimen wanneer dat nodig is' (out of sight, out of mind)

'Ik hou mijn werkplaats en materiaal proper' (I keep my workplace spick and span)

'Een plaats voor alles en alles op zijn plaats' (a place for everything and everything in its place).

<sup>44</sup> A Committee for Prevention and Protection at the Workplace (Comité voor Preventie en Bescherming op het Werk/Comité pour la Prévention et Protection au Travail, CPBW/CPPT) is obligatory in companies with 50 employees or more and is a joint body. The committee looks after safety, health and the protection of the living and working environment, as well as the application of legislation relevant to this matter.





These posters were put in every department and workplace. Each theme was linked to specific actions for that month – these actions were planned in consultation between the line manager and his staff;

- a visualisation and follow-up of the targets throughout the year by means of a barometer (accident pillar) placed in the refectory. This accident pillar is a transparent tube 2 metres high, divided up into number of days. This tube is filled with white sand (symbolising the Zilvermeer recreation area) as lost working days occur. In one of the forested recreational areas of the Province a 'story-stick' is used instead to mark the number of lost working days.

In phase 3 the scenario was implemented. In the meantime, recording of the number of days lost to sick leave began.

In the fourth phase of the project, a final evaluation was made and some further actions were taken over personal protective equipment.

Following on from the 'Van Lijden naar Leiden' project, the next target was a constructive approach to absenteeism. The Antwerp Provincial Government chose to mainly pursue a preventive/proactive policy encouraging attendance at work, without ignoring unauthorised absenteeism. The role and responsibility of the people manager is essential, as is the support of the HRM department for line managers, such as training, involvement of social services, personal advice and guidance by the HR account manager as regards people management, etc.

### RESULTS AND EVALUATION OF THE PROJECT

Many of the results of the new joint strategic choices and related projects are visible in the daily cooperation between the two departments. Collaboration is increasing spontaneously, and more attention is being paid to the employees' welfare. There are, however, no quantitative figures to illustrate this.

Figures on occupational accidents can reveal something about (un)safe working conditions. The accident frequency rate (number of accidents resulting in at least one lost day per one million working hours) and accident severity rate (number of real lost calendar days per thousand working hours) can therefore be used. The number of lost working days (number of days' sick leave) may also be an indicator for the satisfaction, motivation and involvement of workers in their job.

Table 20 shows the accident frequency and severity rates of the Antwerp Provincial Government, which has around 2,600 employees, between 2002 and 2006.

**Table 20: Accident frequency and severity rates, 2002-2006**

Year	2002	2003	2004	2005	2006
Frequency rate	55	62	61	56	65
Severity rate	730	887	772	1275	1588

Table 21 shows the accident frequency and severity rate at the Zilvermeer site for 2005 to 2007. The 'Van Lijden naar Leiden' project was launched in 2006 as a pilot in this recreation area (see above). The objective was to halve the number of accidents and lost working days by 2007 compared to 2005.



**Table 21: Zilvermeer accident frequency and severity rate, 2005-2007**

Domain Zilvermeer	2005 (reference)	2006	2007 (1 August)
Frequency rate	8	4	2
Severity rate	202	189	11

The pilot project at Zilvermeer achieved its objectives, and the cost-benefit analysis appears to be positive as well. The only costs were the posters (produced by an external company), the time spent by all parties (meetings, information sessions – about 350 man-hours in total) and the visualisation of the results (see above). This goes to show that good results are not always dependent on big budgets.

The effect in terms of changing attitudes within the organisation to safety, welfare, prevention and protection is difficult to measure. A new employee satisfaction survey has been scheduled to take place during the 2007-2012 legislature and will provide a more detailed picture of the effect and results.

### PROBLEMS FACED

Periodic checks carried out by the Department for Prevention and Protection in the various departments focus mainly on technical and material aspects. Labour relations and work organisation are barely covered during these company visits, which is understandable. The HR account managers, who bridge the gap between the HRM Department and other departments within Antwerp's Provincial Administration, have a better understanding of labour relations and work organisation, insofar as the executives involved discuss these themes with their HR account manager.

Because the theme of prevention and protection is not a typical HR process like recruitment and selection, training, etc. the involvement and concrete collaboration between the HRM Department and the Department for Prevention and Protection remains limited.

### SUCCESS FACTORS

Before 2000 the theme of OSH did not have a high priority within the organisation. People did not feel that they had much influence on the issue, or that they might be able to reduce risks in their own right. The 'Van Lijden naar Leiden' project, as well as targeting absenteeism, was aimed at highlighting this issue and emphasising the responsibilities of both ordinary workers and management in this area. By making the project concrete, involving all employees, and carrying out specific actions, the employees gained a greater sense of involvement. Both projects are still running.

The success of the projects was largely due to spirit of cooperation between the two departments concerned and a joint effort to achieve the same objectives, i.e. the best interests of the employee and the organisation. Collaboration is only possible when colleagues think of one another as allies with the same objectives, instead of as enemies with competing interests.

### TRANSFERABILITY OF THE PROJECT

This kind of project would be hard to integrate in other organisations, as it requires an assessment and a review of the vision and strategic objectives of the organisation concerned. This is likely to vary widely because each organisation has its own characteristics and its own specific culture.

Projects such as 'Van Lijden naar Leiden', tailored to the requirements of the particular company, would require the involvement of the management, a considerable focus on people management and a high level of cooperation between employees on the work floor. How this is achieved would depend on the company culture, but it definitely implies a top-down approach.



**CONTACT INFORMATION**

Provincie Antwerpen  
 Departement HRM  
 Koningin Elisabethlei 22  
 2018 Antwerpen

Peter Sommen  
 Tel: +32 3240 5417  
 Email: peter.sommen@admin.provant.be

Kerstin Van Bulck  
 Email: kerstin.vanbulck@admin.provant.be  
 Tel: +32 3240 5353  
 Web: www.provant.be

**4.6.3. 'OurTime' – a work-life balance project, Inland Revenue (UK)****KEY POINTS**

- Management and unions working together
- The joint management-union group oversees the process
- The widest possible involvement of staff, including managers

**INTRODUCTION**

The Inland Revenue needed to extend its opening hours to the public to provide a more accessible service. The Revenue also wanted their staff to have a better balance between work and personal life. The answer was 'OurTime' – a partnership between the Revenue and the Public and Commercial Services (PCS) Union, which gives staff options about their working hours and allows Revenue offices to open outside conventional business hours and at weekends.

**BACKGROUND**

The 2000 Modernisation Agreement committed PCS and the Inland Revenue to finding ways of working together to deliver better public services whilst safeguarding members' jobs.

Work arrangements have changed over recent years and there is a need to find imaginative ways to organise work to meet business and customer requirements as well as to give people choice and flexibility. This is essential for an increasingly diverse workforce and customer base. Increased flexibility can:

- provide practical (and possibly financial) help with childcare or other care responsibilities;
- help with the cost or difficulty of travelling to work e.g. by avoiding peak time travel or by homeworking;
- give people more control over their working life (instead of feeling controlled by it);
- provide opportunities to vary working patterns to meet social, educational or lifestyle choices – or simply to have more time to yourself.



In 2001 PCS and the Inland Revenue launched a partnership pilot project in Sussex to promote work-life balance – the OurTime project. OurTime project was a response to the challenge of delivering a more accessible service and extending opening hours to the public, whilst at the same time helping staff to balance work and personal life. Stakeholders include employees, their families, managers, Inland Revenue, PCS Union and customers.

### **AIMS AND OBJECTIVES**

The project aimed to provide benefits for:

- all staff: by providing greater choice in when and how people work to ensure work-life balance and to reduce work-related stress;
- all business: by organising work in different ways to improve efficiency; and
- all customers: by improving accessibility; offering a better level of public service at times convenient to all customers.

One of the main objectives of the project was to improve the morale and motivation of staff, and to make the Inland Revenue in Sussex an attractive employer to work for.

The intention was that the lessons learned in the Sussex Area would benefit the whole of Inland Revenue.

### **SCOPE OF THE PROJECT**

The idea was:

1. to give staff greater choices about their patterns of working and
2. to increase public access to the Inland Revenue's services through more flexible opening hours.

A key element of the project was to develop partnership working at a local level on practical issues of immediate relevance to both staff and management. PCS, the Inland Revenue and the Trades Union Congress (TUC) ran the project in partnership. PCS representatives were part of the project team and were key players in communicating the benefits of the scheme to their colleagues. A project director was appointed from the TUC.

First, Inland Revenue and PCS investigated staff needs through surveys and focus groups. They also identified and tested customer needs. Then, they developed and piloted new ways of working at three different offices. The piloted actions included compressed working weeks, variable core time and 'banking' time. Training packages were also developed and piloted. Inland Revenue trained managers and staff in organising work for flexibility and security, and team members to work together more effectively.

A typical flexible working hours scheme contained the following components as part of flexi-time: core-time, bandwidth, lunch breaks, accounting period, and flexi-leave. Other contractual working pattern options included: part-time working, job-sharing, part year appointments, term-time working, distance working and homeworking, and annualised hours.

It was important that the arrangements follow Working Time Regulations in UK and that a risk assessment was carried out. An assessment should be reviewed if any significant change occurs – this can include changes to when or where people work. The Revenue still has the same duties under health and safety legislation if employees work at home. This means that managers must consider health and safety aspects before approving homeworking.

Homeworkers also need risk assessments and are expected to take reasonable care over their health and safety.



Security of staff, especially in relation to extended opening hours, needs to be considered carefully. Similarly, it is important that employees and managers look at ways to make sure that employees are kept fully in touch with the rest of the office if their working pattern means that they are not there at peak times.

It was decided early in the project that learning would be an important element. The development of new learning opportunities for staff was a key area. It provided union and management with an ideal opportunity to develop a joint approach on an issue of interest to both sides. It also helped contribute to one of the key aims of the project: to improve the morale and motivation of staff, and to make the Inland Revenue in Sussex an attractive employer to work for.

The project involved the introduction of learning centres, which provide free on-line learning opportunities through the PCS Learning Services and learndirect (<http://www.learndirect.co.uk/>). Staff have free access to computers during the working day for both vocational and non-vocational courses. There are agreed guidelines on courses that staff can access during work time.

Other courses were available during the working day but access was part of the flexi-time agreement – so, for example, staff could learn a language or even do a course on bee-keeping at any time during the day, subject to service needs.

More open communication with the management was a central part of the project. It means letting the team know what the business aims are and involving them in organising work and resources to achieve the best results. The manager has an important role in setting the direction and monitoring progress. The manager's role is to:

- Ensure all team members have clear business objectives;
- Be aware of the range of working patterns available and, with the team, explore ways to have greater flexibility to improve work efficiency and individual work-life balance;
- Consider requests to change working patterns in the light of the department's policy and to base operational decisions on:
  - the requirements to deliver work and meet targets efficiently and improve customer service standards
  - the needs of other people working in the office or section
  - the department's diversity and equal opportunities policies.

The manager also has to balance the needs of individual members of a team, being as fair as possible to everyone. Team working, particularly in teams which take on a degree of self-management, can enhance individual commitment and accountability and can give greater flexibility to achieve better results. This is especially true if team working is combined with imaginative use of different working patterns. Finally, managers need work-life balance too, and when teams are working effectively everyone benefits, including the business.

## **RESULTS AND EVALUATION OF THE PROJECT**

The action had several health and safety benefits. Staff were better able to balance their work and personal commitments, leading to better stress management. The action has also improved management and staff morale. Further benefits include increased trust between the Revenue, the union and its workforce as well as wider potential for recruiting high calibre staff by becoming a more flexible employer. Better use of IT systems and accommodation led to lower unit costs. The project gave more opportunities for learning or other activities. The three-office pilot provided a process model for the rest of the Inland Revenue and other organisations. Finally, customers benefited from longer opening hours, with increased coverage at peak times.

By developing a greater choice of working patterns the OurTime project supports the department's business direction and diversity policies, with the underlying aim of helping staff to have a more satisfying and productive work-life balance.



Successful implementation of flexible working arrangements depends on people's willingness to make it work in a way which benefits the whole team. Business outputs and customer service must be delivered but there is usually scope for managers to meet people's reasonable needs for flexibility in the way they work.

Staff clearly benefited from the project. Some benefits – such as better use of office accommodation – might not be immediately visible. The staff benefits have rejuvenated expectations around working patterns within the organisation acknowledging that 'one size doesn't fit all'. The Revenue has not been able to quantify these intangible benefits. The main financial outlay was £60,000 (EUR 54,400) for the salary, travel and subsistence costs of the project manager.

The PCS and TUC do not see OurTime as a definitive model, but hope that the experiences and lessons of the project will help others to develop their own innovative approaches. Their websites give assistance to others who are planning to run similar projects. Among other things, they provide a useful checklist of possible problems ('watch out for') in the areas of partnership working, planning and control, funding, staff, communication, customers, pilots, learning/training, learning centres or zones. They also provide some solutions ('how to').

The project had both local and national impact. On a local scale, the PCS and TUC are examining how it affected the offices and people involved. Nationally, they are exploring the wider impact of the project as an adaptable model for flexible working.

Finally, there were important lessons learnt from this project. The results showed that the process of achieving agreement on work-life balance and the re-organisation of work requires:

- Commitment to improving the organisation of work by each level of management, from supervisor to chief executive, union representatives and all grades of staff
- Understanding what it means for management, unions and workforce: productivity and profitability, job security, job satisfaction and working time
- Trust which is built by working in partnership to identify and solve problems jointly
- Representation from all groups of staff who will be affected
- Involvement through the widest possible consultation so that staff have the opportunity to contribute to solutions
- Listening to aspirations and expectations
- Considering ideas seriously – recognising that every idea, including the ones you don't like, needs to be examined
- Transparency by keeping staff fully informed
- Testing solutions – it is usually best to test new practices through a voluntary pilot study where staff are able to revert to existing terms and conditions if they wish
- Action on possible solutions rather than shelving the issue until it's too late
- Confidence in a positive outcome.

### **PROBLEMS FACED**

The Inland Revenue and PCS acknowledged that there were some problems in their partnership. These problems were related to the following factors:

- An adversarial culture
- Response to Government modernisation agenda
- Changes in traditional management structures and lines of communication
- Differences between national and local concerns
- Divergent aspirations of management and workforce
- New ways of working together.



In recent years the Inland Revenue has encouraged staff to be involved in the change process. Creating a genuine partnership with PCS, at both national and local level, was a greater challenge because there were no guidelines and because historically industrial relations were often based on adversarial structures and attitudes.

In Sussex, the changes brought about by new Area Management had fractured existing channels of communication. As a result, the project started at a difficult time when both sides were responding to fundamental change and were facing many conflicting demands.

### **SUCCESS FACTORS**

To be effective, the project team needs to work together on an equal basis. There was considerable wariness at the initial meetings. There was still a traditional expectation of disagreements and conflict between employers and trade unions, particularly as a result of re-organisation. However, this gradually changed into a high degree of mutual trust and respect in the team.

It was established very early on how crucial the question of trust was going to be. A day of 'getting to know you' was arranged for union reps and management to discuss expectations and concerns. Ironically, there seemed to be greater affinity between management and union at local level than between local and national levels of the union itself. Trust had to be strengthened within PCS itself.

Senior management acknowledged that their commitment and involvement was essential to the success of the project. The project needed a business focus that matched benefits to staff with business benefits.

Local PCS representatives knew that management wanted to extend opening hours but in a way that provided benefits to staff as well. It was therefore vital to achieve an early 'win' for staff in order to overcome any initial hostility to the project. This would also help to increase confidence and support for new ways of working with management and representing their members. A major problem for the union at local level was to keep sceptical members on-side. Some union scepticism was overcome by Inland Revenue's agreement to support learning access points that were run by the PCS in local offices as part of the project.

### **TRANSFERABILITY OF THE PROJECT**

In industrialised countries, high quality goods and services are often demanded outside of normal working or opening hours. Competitiveness, flexibility and quality services are key concepts in the organisation of work today, as are job security, job satisfaction and fairness.

The successful employer, private or public, has to deliver on all these. This means:

- involving staff in decisions about change
- making sure their needs and aspirations are considered
- winning their commitment to new ways of working.

This initiative can easily be applied in other countries and other sectors of public service. However, many companies/public services might not accept learning activities that are not relevant for the job.

Employers are free to adapt the TUC 'changing times' process to their own circumstances, but they should always credit the TUC when they do so.

In sum, this is a good example of a public sector initiative that benefits a large number of people and also has clear business benefits: 'A decent quality of working life, where people have some choice and autonomy over their working hours, is an essential prerequisite for any effective, modern organisation.' (Jo Morris, Project Director)



### CONTACT INFORMATION

TUC

Jo Morris

Email: [jmorris@tuc.org.uk](mailto:jmorris@tuc.org.uk)

*Sources and further information:*

<http://m.hse.gov.uk/business/casestudy/irpcsu.htm>

## 4.7. ANALYSIS AND DISCUSSION OF THE CASES

### ***Different approaches to incorporating OSH management into general business***

The cases and snapshots quoted in this chapter present different approaches to OSH management and its place in the overall management system in the institution. Most of the companies featured have implemented formalised OSH management systems based on national or sectoral requirements and recommendations. Examples include Teofilów textiles, Bayer CropScience Villefranche (BCSF), and Saint Gobain Rigips.

The core objective of the standards related to OSH management systems is to support actions aimed at improving OSH through the specification of requirements for an efficient OSH management system. The standards may be applied by any organisation irrespective of business line and size. By analogy to the ISO 14001 and the ISO 9001 standards, the OSH management system is based on the continual improvement concept. However it is necessary to remember that in each company a management system already exists and can be integrated in other management systems whether or not it employs the same terminology as these management systems, and whether or not it is based on formal requirements.

In some of the companies featured in this report OSH management has been integrated within quality and/or environment management system (e.g. at Apinor or in Vienna's Municipal Department). In other cases OSH management is implemented as an element of quality management (e.g. in the REWE Group), 'lean management' or Kaizen (e.g. ArcelorMittal Steel Poland).

Some companies place a special focus on integrating work health management into overall management (AddIT's AddHealth project, Ceska Rafinerska). The aim is to ensure the health and well-being of people at work by improving the work organisation and the working environment, promoting the active participation of employees in health activities and encouraging the individual's personal development.

Sometimes OSH management becomes an integral part of HR management and it is not treated any longer as a technical problem (e.g. in Corus Steel, and the Provincial Government of Antwerp). Most of the cases presented are aimed at shaping and strengthening safety culture, including changing top management's attitude to OSH problems.

However, regardless of the company's philosophy, increasing the effectiveness of OSH-related actions should improve the quality of the management system that includes OSH and consequently improve the effectiveness of the general business.





### **Effectiveness of different approaches**

The nature and scope of measures taken to incorporate OSH management into general business depend on numerous factors such as the size of a company, its type of activity, types of occupational hazards at the workplace, organisational culture, structure and start point of integrating OSH management in general business.

Thus it is not methodologically appropriate to compare the effectiveness of the approaches featured here on the basis of the case studies alone. Further comparative research is needed in companies to assess the effectiveness of different approaches and to identify key factors influencing effectiveness. However, an analysis of the cases reveals that most of them resulted in:

- Improvement of the working conditions and well-being of workers that resulted in a fall in accident rates and number of days lost due to sickness and occupational accidents. This therefore also results in a fall in the costs of work-related accidents and diseases.
- Better communication between individuals, employers and employees and organisational units and better coordination of activities carried out within different management systems; these improvements help increase the effectiveness of the organisation as a whole.
- Clarification regarding the role and responsibilities of the management and the workers.
- Increasing workers' motivation and participation in OSH activities.
- Better risk assessment.
- Better monitoring of OSH performance.

### **Key success factors**

Certain success factors are common to the majority of cases featured in this report. These include:

A high level of management commitment; e.g.

- 'The high commitment of the management at the head office and at the regional offices is one of the main success factors' (VESTAS, Portugal).
- Commitment and support from non-OSH management is crucial. 'OSH targets have to compete with other business objectives in day-to-day business, so only when management demonstrates its belief in health and safety will it be possible to mainstream the issue at all levels of the company' (Rigips, Germany).
- It is crucial to try to change staff attitudes by showing that health and safety are a priority. 'The fact that management has adopted this position and continues to regard safety as a strategic issue means that safety practices have become permanently established'; 'the radical change in the employees' attitude is significant' (SITA, France).
- 'The first key success factor was the interest and the support of the project by the whole management. The head of Municipal Department 48 was directly involved and the implementation process was high on the agenda at management meetings.' (Vienna Municipal Department, Austria).
- 'The project was supported by the management during the entire running period of the project' (AddIT, Austria).
- 'This mobilisation of senior management was decisive in achieving the objectives: it made it possible to confirm the options, encourage everyone to take part in the project and, finally, meet the required implementation deadlines' (Apinor, France).

There must be clear management drive and leadership from the top of the organisation to implement change, with a clear management structure in place that identifies who is responsible for what, and with structured planning and communication taking place.

This management commitment and support is important at various levels: support with training, documentation and material resources, changes at organisational level (different units working together, talking to one another).



The active participation and motivation of workers was identified as another important success factor:

- 'The employees' contribution to safety appears decisive for the effectiveness of the management system. Not only are the staff consulted, but they are also involved in risk assessment. This staff involvement ensures that measures adopted will be pragmatic and appropriate to the workstation concerned' (Apinor, France).
- 'Motivation and awareness have to be communicated from the top to the bottom' (Rigips, Germany).
- 'The active participation of all employees has contributed to the success of the project' (Teofilow, Poland).
- 'The second key success factor was the involvement of the employees. To ensure that the project was as transparent as possible, workers were informed via intranet, in-house newspaper and noticeboard. A feedback chain was implemented that allowed workers to express criticisms and suggestions concerning the IMS, find out information about the IMS, and communicate with the IMS management' (Vienna Municipal Department, Austria).

A key success factor in drawing up and implementing such management systems is ensuring good cooperation between departments and professionals, e.g. the HR and OSH departments or among management, employees and external consultants. The cases show how a steering group or core group can be effective in ensuring implementation.

Adequate training is necessary to support appropriate implementation of OSH management. This is clearly expressed in the following cases:

- 'Management supported the establishment of this safety management system (MASE) with training, documentation and material resources which enabled safety practices to become established permanently' (SITA, France).
- 'Education or training requirements related to the established procedures for operational control and maintenance are identified and the necessary training and education is planned and performed.' (VESTAS, Portugal).
- 'The OSH management approach has pedagogic virtues; it has encouraged learning by staff in this area. The risks are clearly named and evaluated more precisely. The established procedures, systematic information, training and checks on site have helped everyone to take into account risks and the necessary precautions' (Apinor, France).

The cases confirm the importance of shaping a safety culture for successful OSH management:

- 'Safety will be most effectively realised when the safety culture among the management can be strengthened in parallel with the safety culture of the workers' (Rigips, Germany).
- 'The development of the OSH management system has also changed the value assigned to safety, giving rise to a thorough change in attitudes towards risks and personal responsibility in general' (Apinor, France).

The cases confirm that OSH should be on the same level of importance as quality and other production requirements; it should be part of the core business. In other words, the health and safety culture should be part of the enterprise culture. There has to be ownership of OSH by all groups, and without this ownership there is unlikely to be a focus on the process of doing a job safely and well, so improving safety and health and other performance areas.

Ensuring correct communication in the organisation and increasing employees' awareness of both OSH objectives and strategic objectives of the company, its mission and vision are equally important. Thus the company cases have confirmed that the system's worth is that of the people who develop it and work in it.



**Challenges / problems faced**

Some of the main problems raised include:

- Bridging the gap between management's and workers' attitudes about health and safety issues.
- Bridging the gap between antagonistic safety cultures: 'safety versus hygiene/health'. Very often 'health issues' are still assigned less importance in the management system than 'technical' and 'safety' aspects'.
- Bridging the gap between those who think safety is a priority and those who do not. For instance, for some, once the goal of certification has been achieved, investment in safety can be relaxed. For others safety remains a priority, as they see certification as merely an indicator of the system's operation.
- Ensuring OSH policy is fully enforced in practice. This means ensuring proper monitoring to avoid shortcomings in compliance.
- When training is carried out and instructions are circulated (noticeboards, meetings, etc.), it is important to check that the information has been understood correctly. It is always a challenge to find a proper balance between comprehensive and comprehensible OSH management.
- Very often, it is difficult to communicate the IMS in its complexity to the staff. A lot of effort is needed to make sure the implementation process is as transparent as possible.
- OSH targets have to compete in with other business objectives during day-to-day routines.

**Role of external expertise and assistance**

In many cases presented in this chapter external assistance and expertise was very important. Some projects were carried out by research institutions, or within voluntary programmes conducted by researchers or inspectors, or just with the help of consulting companies. Even if an enterprise maintains a high level of in-house expertise in OSH, internal capacity is likely to be limited and external expertise will be required to ensure the project is carried out properly without overburdening employees. Thus it is essential to ensure access to expert knowledge to allow for the exchange of experiences. However it must always be remembered that employees know their enterprises best and external expertise cannot replace internal expertise.

Often the problem is how to continue the initiative without external support and motivation. To ensure that activities aimed at improving OSH management are carried on in the company, there needs to be a deep commitment on the part of employees, as well as involvement in activities related to such management systems. Ongoing access to OSH-related expertise is also very often needed.

**Reasons for developing an OSH management system or an IMS**

From the cases described in this report, it can be seen that companies decide to develop such systems for different reasons:

- With the aim of improving OSH issues:
  - To keep the accident rate as low as possible
  - To protect the health and safety of employees
  - To become a leader in the field of OSH among companies from a specific sector or region
  - To bundle all management processes into a single steering unit
  - To improve the management of risk assessment, which is central to the OSH management strategy.
- With the aim of improving their image as socially responsible companies.
- With the aim of gaining certification in order to get access to new markets and to distinguish themselves from competitors.

**Transferability**

Some of the cases can be transferred directly to other companies because the methods and tools used are universal. In some other cases, more specific methods and tools are used, so they will need to be properly adapted to the needs of a particular company – but the ideas and the approaches are transferable. Each company can choose the approach to OSH management that fits its needs and current situation.



## 4.8. CONCLUSIONS

Many organisations are interested in making ongoing efforts to improve OSH conditions. Some companies place such a high priority on OSH that they move beyond merely obeying the regulations in force and try to create a safety culture that is an integral part of their corporate culture. In these companies OSH management is, as a rule, part of the overall management and OSH-related issues are incorporated into general management processes.

These enterprises are aware that, to be effective, OSH-related actions should be carried out within the framework of previously implemented management systems (e.g. quality or environmental ones). The integration of OSH management systems at all levels is thus increasingly perceived as an effective way of building strong and sustained corporate OSH cultures. This is because effective management is the best way of ensuring the high level of OSH required to comply with regulations and social expectations, as well as gaining economic benefits both within the organisation and on a national scale.

The cases presented in this chapter show how OSH issues can be incorporated into the general business. They reflect the policies and national programmes presented in the previous section of this report (Section 3) to a large extent. Their successful implementation in day-to-day practices demands, first of all, access to information and knowledge in this field.

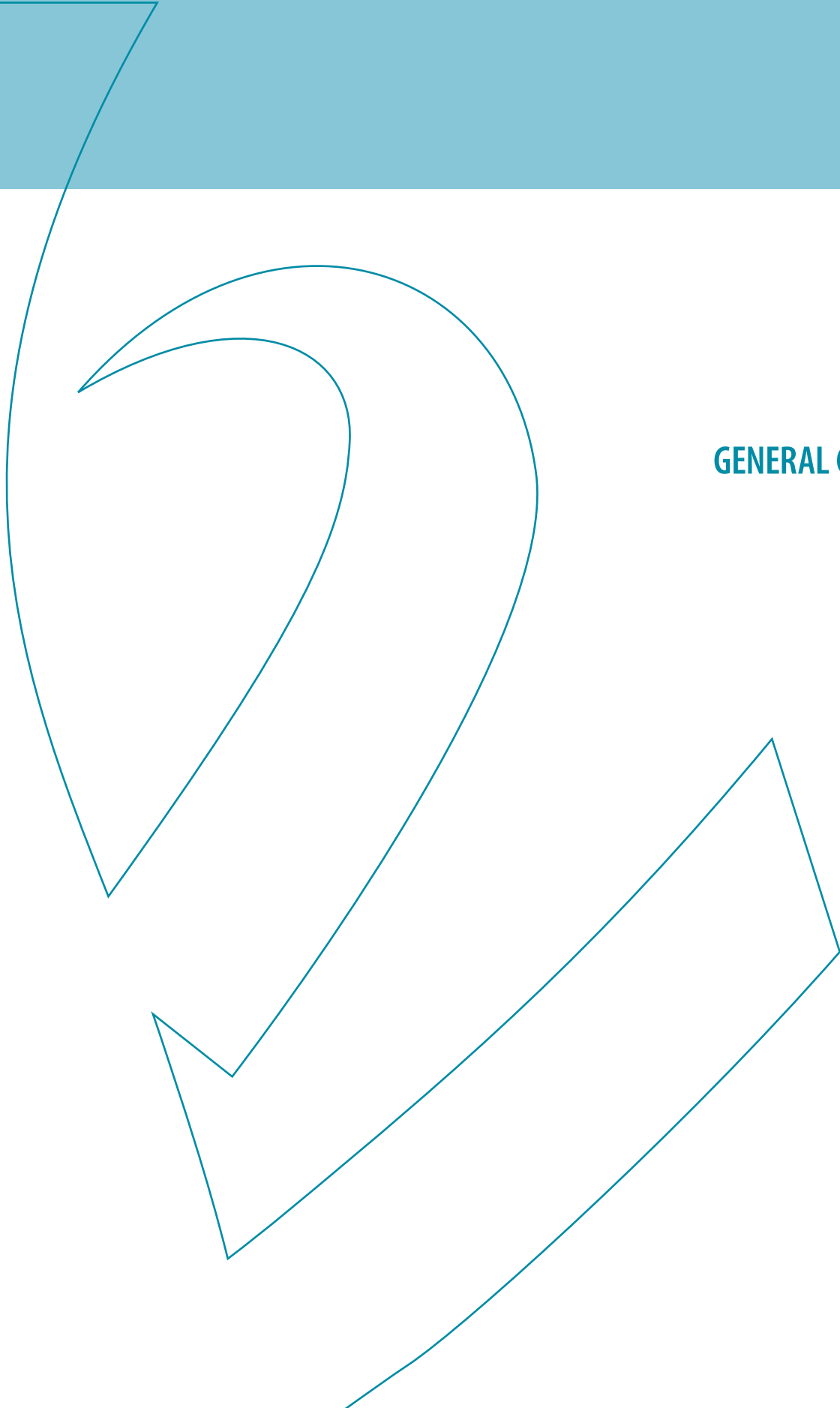
National competent authorities and employers' and workers' organisations should cooperate in their efforts to create new types and channels of OSH-related assistance and information, especially to support small and medium-sized enterprises. It is also important to provide information on practical solutions and the experience of enterprises that have already implemented the policies and programmes.

Greater emphasis is being placed on more effective communication and consultation between competent authorities, employers and workers, and the establishment of periodic review and benchmarking systems for proper monitoring of progress towards the reduction of accidents and disease. The cases presented provide examples of this type of communication. On the one hand they have proved that the same methods and tools can be used for OSH management as for quality, cost or production management. On the other hand, the cases show that OSH issues can be seen as a critical element of all relevant processes and activities in the company, including routine decision-making processes, investments, purchasing, management of employees and work practices.



# 5.

## GENERAL CONCLUSIONS



Organisations deal with OSH in different ways: some organisations have little expertise in OSH and react to problems such as occupational accidents, work-related diseases and absenteeism in an ad hoc way, while others strive to manage OSH more systematically, and even proactively, by implementing OSH into the organisation's overall management. This report aims to provide evidence and information on how OSH can be incorporated into general management and business, thereby achieving safer and healthier working environments, and better general organisational performance.

This report comprises three main parts, each with a different specific focus: (1) a literature review, (2) an overview of related policies, and (3) a report of case studies and good practice. Readers should refer to the appropriate sections of the report for more detailed discussions and further information about each area.

# 5.1. LITERATURE REVIEW SUMMARY

The review in Section 2 of this report provides an overview of evidence from literature on how OSH can be most effectively managed in an organisation, and to what extent it should be integrated into an organisation's overall management and business structure.

The literature review focuses first of all on structural issues pertaining to the incorporation of OSH into management. The difference between traditional and systematic OSH management is discussed, as well as the application and effectiveness of OSH management systems and related system standards (OHSAS 18000, ILO-OSH 2001, etc.). Attention is also paid to the way OSH can be linked to quality management programmes (e.g. Total Quality Management, Lean Production, Business Excellence Models, Balanced Scorecard, and Six Sigma), and occupational health programmes (e.g. workplace health promotion). As organisations may adopt multiple management systems and/or management system standards at the same time (with regard to quality, environment and OSH), the need for an integration of the management systems might emerge. Hence, the issue of 'integrated management systems' (IMS) is also examined in the review.

There is an overall consensus in the research that the management of OSH should be seen as part of the overall management structure and not as a separate business process (Frick et al., 2000). It is believed that the more closely OSH management becomes linked to the core activities of an organisation, the better OSH performance will be in times of organisational change – OSH is usually not the major concern of management during changes due, for example, to economic problems, mergers, downsizing or rapid technological innovation.

One possible problem related to full integration is that OSH may receive lower priority than other issues: in many cases matters perceived as urgent are likely to be handled first, and production issues are, on balance, usually much more pressing (Nielsen, 2000). Some experts therefore stress the importance of considering OSH as a 'political agenda' that has to be actively promoted, as it sometimes competes against other agendas (such as production). Promoting OSH as a political agenda means discussing and attempting to resolve conflicts, and striving for compromises.

In order to achieve positive results in the field of OSH, much more is required than installing and focusing on a well thought-out structure, i.e. an OSH management system that is well integrated with existing management programmes and systems. Organisations also need to address cultural and political aspects of the workplace, a subject that is discussed in the second part of the literature review. Fostering a culture of continuous improvement and aiming for the involvement of all employees is believed to improve OSH performance. The embedding of OSH into the organisational culture depends on overall governance, including factors such as corporate social responsibility, social accountability and corporate sustainability. And corporate governance in turn influences the development of OSH management systems and/or the integration of OSH into the overall management.



Cultural change can be forced on an organisation, in which case it may not necessarily work, or it can be allowed to develop within the organisation. An awareness of 'best practice' will encourage the culture to evolve naturally and adapt so it changes as the organisation changes. An explicitly demonstrated commitment by the management, properly organised seminars, a proper flow of information and mutual trust between employees and senior executives as well as employees' commitment to monitoring the work environment are conducive to an effective safety and health culture that will have a much greater impact than even the most perfect formal structures that are not familiar to or accepted by people. A management system which does not motivate all employees and change the OSH culture will have little impact on improving the standard of OSH in the enterprise, and its effectiveness and improvement potential will be questionable.

Hence, the structural as well as cultural aspects are important when incorporating OSH into the management procedures and processes of an organisation. OSH management systems should be viewed not only as 'functional systems' but also as 'social systems' in which people can play an effective role (Zwetsloot, 2000). Here, organisational learning processes are a critical factor. They should become part of the OSH management approach in order to bring about cultural change and encourage a proactive attitude to safety and health in an organisation.

The results from this literature review confirm that there is a great deal of interest in, and research on, the topics of managing OSH and the incorporation of OSH into the overall business. However, descriptions and examples of – especially voluntary – OSH management systems show that the focus of these systems is mainly on safety (the prevention of accidents) and not on the prevention of work-related negative health effects, despite the fact that they officially claim to manage both (safety and health) (Frick, 2007). In particular, there seem to be few OSH management systems focusing on organisational risks and psychosocial health effects (e.g. violence and conflict at the workplace, the problems of shift work or long working hours, etc.). Precarious employment (temporary and part-time employment, telework, etc.) and employment in small and medium-sized enterprises are two important fields which present major challenges to the management of OSH (see e.g. Bluff, 2003). Another challenge for research is to further investigate the effectiveness and quality of OSH management strategies/processes and how these match with the requirements of the Framework Directive. Research into the effectiveness of OSH management is still in its infancy and has to deal with several methodological difficulties (Bluff, 2003, p. 46). With regard to OSH management and its learning aspect, there is a challenge to better understand the dynamics and processes of collectively creating and learning OSH (Zwetsloot, 2006).

## 5.2. POLICY OVERVIEW SUMMARY

The literature review (see sections 2 and 6 of this report) revealed that sound OSH management, integrated into an organisation's overall management and business, is one of the main success factors in improving workers' safety and health. The formulation, implementation and promotion of an integrated, proactive approach towards OSH management is supported by policies and practices established at international, European and national levels. These policies and practices, which aim at promoting and supporting the incorporation of OSH issues into management, are presented in Section 3 of this report. It discusses strategies, legal provisions, standards, guidelines, programmes and campaigns, initiated and undertaken by different stakeholders such as international organisations, EU bodies, governments, employer and employee associations, labour inspectorates, insurance institutions, etc.

Policies related to OSH management include obligatory as well as voluntary measures. Obligatory measures result from the legislation adopted by all the EU countries which fully reflects the provisions of the EU Framework Directive. The Directive defines the basic goals of OSH management and measures necessary to





achieve these goals and indicates the need to strengthen prevention by, among other things, incorporating risk assessment into all company activities, and ensuring the involvement of both employer and employees in OSH issues. Moreover, the Directive's provisions require the adoption of preventive measures in the changing working environment, and the striving for continuous improvement. The implementation of legislation is supported by various voluntary initiatives directed at OSH improvement.

The International Labour Organisation plays an important role in promoting voluntary OSH management systems. The ILO Global Strategy and ILO Promotional Framework Convention and Recommendation underline the importance of the integrated approach to OSH management laid down in *ILO-OSH 2001 Guidance on OSH Management*. The guidelines define the elements of an effective OSH management system in companies; a system that should be integrated with the overall management system. Implementation of this system is perceived as an effective way of building a safety culture in the company. This approach is supported by numerous national practices including national guidelines and programmes of promotion.

As a rule, developing and establishing policies related to OSH management requires cooperation between different actors, including governments, insurance institutions, employers' organisations and trade unions. This cooperation is one of the key success factors in effective implementation.

When implementing these policies, the willingness of companies to introduce changes plays a crucial role. Different incentives, including providing free seminars, tools and training, can be used to increase the motivation to change. The involvement of the labour inspectorate and social partners is very important, especially in the case of policies directed at SMEs.

Different indicators can serve to assess the impact of policies. The most commonly used are indicators related to the implementation of actions resulting from the policy, such as number of participants, amount of training provided, tools produced, etc. In some cases changes in safety level (including changes in accident and disease rates) and in OSH costs are also recorded and used to assess the impact of a policy. It should, however, be noted that there are limitations when using these indicators because they can be affected by a number of different factors which are not directly related to the policy.

One of the main factors influencing the long-term impact of policies is their sustainability. This can be achieved by, among other things, encouraging people to become involved in the relevant organisations and to use these organisations for networking.

Different examples of successful actions implemented in various EU countries confirm that the policies and practices play an important role in motivating and supporting companies to introduce OSH management. Their further development is needed to ensure better integration of all OSH-related issues with overall company management.

## 5.3. CASE STUDIES REPORT SUMMARY

Many organisations are interested in making ongoing efforts to improve OSH conditions. Some companies place such a high priority on OSH that they move beyond merely obeying the regulations in force and try to create a safety culture that is an integral part of their corporate culture. In these companies OSH management is, as a rule, part of the overall management and OSH-related issues are incorporated into general management processes. The case studies presented in Section 4 of this report include examples and good practice advice on how OSH can be incorporated into general management and business processes. It has a selection of 20 cases and snapshots from 12 EU countries. All case studies include an analysis of the background, the involvement, motivation, and targets of the parties concerned as well as the results, side effects, success factors, and problems faced. The case descriptions are grouped into the following categories:





- cases and snapshots on the improvement of OSH management as a whole as well as its particular elements (e.g. employees' participation and involvement, OSH awareness and knowledge, communication), against the background of general business;
- cases and snapshots on the integration of OSH management with environmental and/or quality programmes;
- cases on the management and integration of work health promotion (WHP);
- cases on the implementation of OSH into the corporate culture, and cases on the linkage of OSH with Human Resources Management.

The organisations presented in the different case studies have implemented formalised OSH management systems based on national or sectoral requirements and recommendations. In some of these organisations, OSH management has been integrated into the existing quality and/or environment management systems, while in others OSH management is treated as an element of quality management (e.g. Total Quality Management, Lean Production). OSH management can also be linked more closely to Human Resources Management (HRM), by stimulating cooperation between the organisation's OSH and HRM departments.

The main factors contributing to the success of these different approaches include greater management involvement in OSH and the improvement of workers' motivation, as well as an enhanced risk assessment process and measurement of OSH performance. In each case study, the incorporation of OSH into general management processes resulted in an improvement of the working conditions and well-being of the workers and, consequently, in a decrease of occupational accident rates, number of days lost due to accidents and work-related diseases and related costs. Moreover, better communication between individuals, and organisational units, and better coordination of activities carried out within different management systems, were achieved. These factors have helped increase the efficiency of the organisation as a whole.

Effective OSH management should reflect the importance of identifying, evaluating and preventing occupational risks and the proportionate application of human, material and financial resources related to these risks. Improvements in working conditions and the reduction or elimination of occupational accidents and diseases are due to actions within the workplace and result from the implementation of risk prevention and control measures. However, success may only be visible months or years later and may require interventions that have to be maintained over prolonged periods. This demands continuous, coordinated efforts to ensure the sustainability of diverse OSH programmes and relevant management systems.

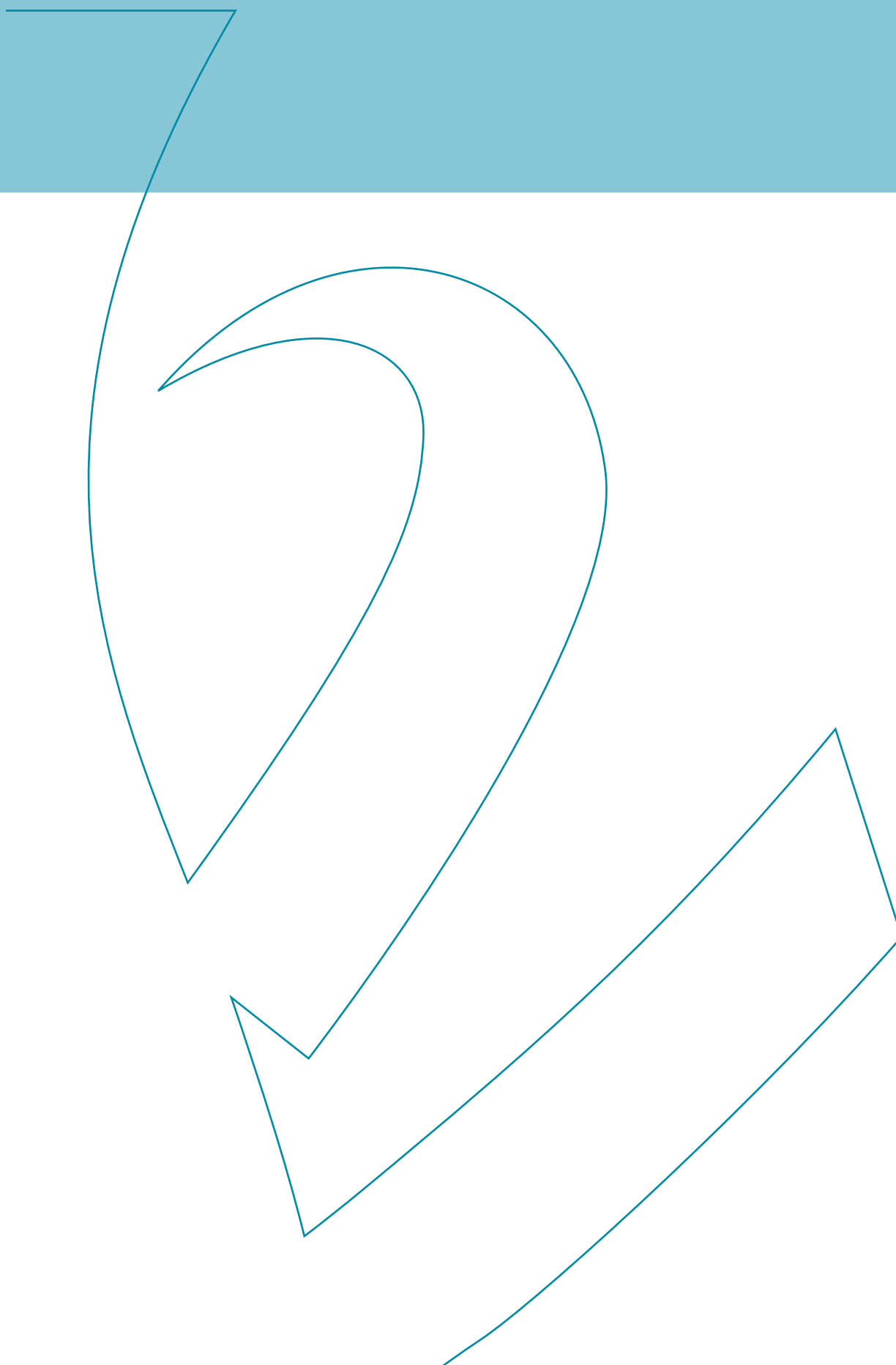
Many examples in this report show organisations that are interested in making ongoing efforts to improve working conditions and their workers' safety and health. This is not only for moral reasons but also because they believe that the creation of a safe and healthy working environment leads to the limitation of losses and improvements in productivity and competitiveness. Efficient OSH management is believed to be closely related to strategic activities aimed at enhancing the organisation's overall performance.





# 6.

## REFERENCES



Abad J, Mondelo PR and Llimona J. Towards an International Standard on Occupational Health and Safety Management. *International Journal of Occupational Safety and Ergonomics (JOSE)*, 2002, Vol. 3, pp. 309-319.

AENOR (Spanish Association of Standardisation and Certification). *Guidelines for the Implementation of an Occupational Safety and Health Management System* (Standard No. UNE 81900:1996 EX). Madrid, 1996a.

AENOR (Spanish Association of Standardisation and Certification). *Prevention of occupational risks. General rules for the assessment of an occupational health and safety management system. Audit process* (Standard No. UNE 81901:1996 EX). Madrid, 1996b.

Association for Manufacturing Technology (AMT). ANSI B11 Technical Report 7-2007: Designing for Safety and Lean Manufacturing. McLean (VA, US), 2007.

Beaumont P. Leading the way. *Occupational Safety and Health*, Vol. 30, No. 1, Jan. 2000, pp. 42-43.

Behm M, Veltri A and Kleinsorge IK. The cost of safety: cost analysis model helps build business case for safety. *Professional Safety*, Vol. 49, No. 4, 2004, pp. 22-29.

Bieker T. Managing Corporate Sustainability with the Balanced Score Card: Developing a Balanced Score Card for Integrity Management. Institute for Economy and the Environment (IWOe-HSG), University of St Gallen, 2002.

Bieker T and Waxenberger B. Sustainability Balanced Scorecard and Business Ethics – using the BSC for integrity management. Paper presented at the 10th International Conference of the Greening of Industry Network, Göteborg, Sweden, 2002. Available in English at: <http://www.iwe.unisg.ch/org/iwe/web.nsf/wwwPubLiteraturTypE/0BB0A05D5E2C13A6C1256BED002E17CD>

Biondi V and Doria L. Economic Instruments for Sustainable Development: Improving the External and Working Environments Part 2. European Foundation for the Improvement of Living and Working Conditions, 2000. Available in English at: <http://www.fr.eurofound.europa.eu/pubdocs/1999/56/en/1/ef9956en.pdf>

Birkner LR and Birkner RK. Measuring the value of occupational hygiene and safety. *Occupational Hazards*, Vol. 61, No. 4, April 1999, pp. 23-24.

Blanco J, Lewko JH and Gillingham D. Fallible decisions in management: learning from errors. *Disaster Prevention and Management*, Vol. 5, No. 2, 1996, pp. 5-11.

Bluff L. Working Paper 20 – Systematic Management of Occupational Health and Safety. National Research Centre for Occupational Health and Safety Regulation, Regulatory Institutions Network, Research School of Social Sciences, Australian National University, September 2003. Available in English at: <http://dspace.anu.edu.au/bitstream/1885/39967/2/OHSMS.wp20.pdf>

Boardman J and Lyon A. Defining Best Practice in Corporate Occupational Health and Safety Governance. RR506, Suffolk, Health and Safety Executive (HSE), 2006.

British Standards Institution (BSI). BS 8800: 1996. *Guide to occupational health and safety management systems*. 1996.

British Standards Institution (BSI). OHSAS 18001:1999. *Occupational health and safety management systems – Specification*. 1999.

British Standards Institution (BSI). OHSAS 18002:2000. *Occupational Health and Safety Management Systems Guidelines for the implementation of OHSAS 18001*. 2000.

British Standards Institution (BSI). *IMS: Risk Management for Good Governance*. IMS Risk Solutions, 2003.

British Standards Institution (BSI). PAS 99:2006 *Specification of common management system requirements as a framework for integration*. 2006.

Byron WJ and Byron SJ. In defense of social responsibility. *Journal of Economics and Business*, Vol. 34, Issue 2, 1982, pp. 189-192.



Cramer J, van der Heijden A and Jonker J. Corporate social responsibility: making sense through thinking and acting. *Business Ethics: A European Review*, Vol. 15, No. 4, October 2006, pp. 380-389.

Cummings R. Expert Views on the Evidence Base for Effective Health and Safety Management (Phase 1). HSL/2006/67, Buxton, Health & Safety Laboratory, 2006. Available in English at: [http://www.hse.gov.uk/research/hsl\\_pdf/2006/hsl06109.pdf](http://www.hse.gov.uk/research/hsl_pdf/2006/hsl06109.pdf)

Dawson LH. Basic OSHA-Proofing: Implementing the OSHA safety and health program management guidelines. *Professional Safety*, Vol. 40, No. 10, October 1995, pp. 30-35.

Dawson LH. 'Trust me! It's safe!'. *Professional Safety*, Vol. 47, No. 2, February 2002, pp. 35-41.

Deacon S. The value of health and safety to a successful business. *Health and Safety Bulletin*, No. 272, October 1998, pp. 9-15.

De Boer J and van Drunen M. Occupational safety from a behavioural perspective. E-03/12, Amsterdam: Institute for Environmental Studies, 2003. Available in English at: <http://dare.uvu.nl/bitstream/1871/1739/2/ivmvu0766.pdf>

Deming WE. *Quality, Productivity, and Competitive Position*. Cambridge, MA: MIT Center for Advanced Engineering Study, 1982.

Earnest RE. Making safety a basic value. *Professional Safety*, Vol. 45, No. 8, August 2000, pp. 33-38.

European Agency for Safety and Health at Work (EASHW). *New trends in accident prevention due to the changing world of work*. Luxembourg, Office for Official Publications of the European Communities, 2002. Available in English at: [http://osha.europa.eu/publications/reports/208/newtrends\\_en.pdf](http://osha.europa.eu/publications/reports/208/newtrends_en.pdf)

European Agency for Safety and Health at Work (EASHW). *The use of occupational safety and health management systems in the Member States of the European Union*. Luxembourg, Office for Official Publications of the European Communities, 2002. Available in English at: <http://osha.europa.eu/publications/reports/307>

European Agency for Safety and Health at Work (EASHW). *Corporate social responsibility and safety and health at work*. Luxembourg, Office for Official Publications of the European Communities, 2004. Available in English at: [http://osha.europa.eu/publications/reports?b\\_start:int=10](http://osha.europa.eu/publications/reports?b_start:int=10)

European Agency for Safety and Health at Work (EASHW). *Expert forecast on emerging physical risks related to occupational safety and health*. Luxembourg, Office for Official Publications of the European Communities, 2005. Available in English at: [http://riskobservatory.osha.europa.eu/risks/forecasts/physical\\_risks/](http://riskobservatory.osha.europa.eu/risks/forecasts/physical_risks/)

European Agency for Safety and Health at Work (EASHW). *Report – Priorities for occupational safety and health research in the EU-25*. Luxembourg, Office for Official Publications of the European Communities, 2005. Available in English at: <http://osha.europa.eu/publications/reports/6805648>

European Commission (EC). Promoting a European framework for corporate social responsibility –Green Paper. Luxembourg, Office for Official Publications of the European Communities, 2001. Available in English at: [http://www.bsdglobal.com/issues/eu\\_green\\_paper.asp](http://www.bsdglobal.com/issues/eu_green_paper.asp)

European Commission (COM). *Improving quality and productivity at work. Community strategy 2007-2012 on health and safety at work*. Brussels, 62 final, 2007. Available in English at: [http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007\\_0062en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0062en01.pdf)

European Foundation for Quality Management (EFQM), <http://www.efqm.org>

European Union. Council Directive of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (89/391/EEC). *Official Journal of the European Communities*, No. L 183, 29 June 1989.

Falck O and Heblich S. 'Corporate Social Responsibility: Doing well by doing good'. *Business Horizons*, Vol. 50, No. 3, May-June 2007, pp. 247-254.



Frick K, Jensen PL, Quinlan M and Wilthagen T. *Systematic Occupational Health and Safety Management – Perspectives on an International Development*, Pergamon, Amsterdam, 2000.

Frick K, Jensen PL, Quinlan M and Wilthagen T. An Introduction to a New Strategy for OHS. In: Frick K, Jensen P, Quinlan M and Wilthagen T (eds). *Systematic Occupational Health and Safety Management. Perspectives on an International Development*, Pergamon, Amsterdam, 2000.

Frick K and Wren J. Reviewing Occupational Health And Safety Management: Multiple Roots and Ambiguous Outcomes. In: Frick K, Jensen P, Quinlan M and Wilthagen T (eds). *Systematic Occupational Health and Safety Management. Perspectives on an International Development*, Pergamon, Amsterdam, 2000.

Frick K. Organisational Development for Occupational Health and Safety Management. In: Bluff, Gunningham and Johnstone (eds). *OHS Regulation for the 21st Century*. Federation Press, Sydney, 2004.

Frick K. European Union's Legal Standard on Risk Assessment. In: *Handbook of Standards and Guidelines in Ergonomics and Human Factors*, New Jersey/London, 2006.

Frick K. Occupational Health & Safety Management Systems – When are they good for your health? II Simpósio Internacional em Gestão Ambiental e Saúde – SIGAS 2007, São Paulo, Brazil, October 2007.

Gallagher C. *Health and Safety Management Systems: An Analysis of System Types and Effectiveness*. National Key Centre in Industrial Relations, Melbourne, 1997.

Gervais RL, Williamson J, Sanders V and Hopkinson J. Evaluation of the Success in Britain of the Directive on Minimum Safety and Health Requirements for Work with Display Screen Equipment (90/270/EEC). 2007, Health & Safety Laboratory, HSL Report RSU/07/12.

Glendon AI and Stanton NA. Perspectives on safety culture. *Safety Science*, Vol. 34, No. 1-3, February 2000, pp. 193-214.

Gort J, Starren A, Zwetsloot GIJM. Embedding safety in the company's core business – case studies. Paper presented at the 3rd Working in Safety Conference, September 2006, Delft.

Gregory JW, Lukes E and Gregory CA. Using financial metrics to prove and communicate value to management: occupational health nurses as key players on the management team. *AAOHN Journal*, Vol. 50, No. 9, 2002, pp. 400-405.

Haimes YY. Total risk management. *Risk Analysis*, 1991, Vol. 11, No. 2, pp. 169-171.

Hale A and Hovden J. Management and Culture: The Third Age of Safety. A review of approaches to organisational aspects of safety, health and environment. In: Feyer A and Williamson A. *Occupational Injury: Risk Prevention and Intervention*. Taylor & Francis, London, 1998.

Hämäläinen Riitta-Maija. Workplace Health Promotion – State of the art in some European countries. In: *Health in the World of Work: Workplace Health Promotion as a Tool for Improving and Extending Work Life*. Ministry of Social Affairs and Health. Finnish Institute for Occupational Health. Helsinki, Finland, 2006.

Hämäläinen Riitta-Maija. *Workplace Health Promotion in Europe – The role of national health policies and strategies*. Finnish Institute for Occupational Health. Helsinki, Finland, 2007. Available in English at: <http://www.ttl.fi/NR/rdonlyres/704361A6-ED27-4D2F-B822-F6401E79CE45/0/WHPinEurope.pdf>

Hansen MD. Environmental safety and health compliance in the 1990s. *Professional Safety*, Vol. 39, 1994, No. 2, pp. 29-32.

Hansen MD. Management Systems: Integrating safety, health, environmental and quality programs. *Professional Safety*, Vol. 51, No. 10, October 2006, pp. 34-41.

Harnesk R. Leadership for Co-Worker Commitment – A TQM Approach. Luleå University of Technology, Department of Business Administration and Social Sciences, Division of Quality and Environmental Management, Licenciate Thesis, 2004:33. Available in English at: <http://epubl.ltu.se/1402-1757/2004/33/LTU-LIC-0433-SE.pdf>



- Health Communication Unit (THCU). *An Introduction to Comprehensive Workplace Health Promotion*. Centre for Health Promotion, University of Toronto, 2004.
- Health and Safety Executive (HSE). *Successful Health and Safety Management*. HSG 65, Suffolk, Health and Safety Executive, 1997.
- Health and Safety Executive (HSE). *Directors' Responsibilities for Health and Safety*. INDG343, 02/02 HSE 2001, Suffolk, Health and Safety Executive, 2001.
- Hollnagel E. *Barriers and Accident Prevention*. Aldershot, UK: Ashgate, 2004.
- Hollnagel E, Woods D, Levenson N. *Resilience Engineering: Concepts and Precepts*. Aldershot, UK: Ashgate, 2006.
- Höpfl H. Safety culture, corporate culture. Organisational transformation and the commitment to safety. *Disaster Prevention and Management*, Vol. 3, No. 3, 1994, pp. 49-58.
- International Labour Organisation (ILO) – C155 Occupational Safety and Health Convention, 1981. Available in English at: <http://www.ilo.org/public/english/protection/safework/cis/oshworld/ilostd/c155.htm>
- International Labour Organisation (ILO) – C161 Occupational Health Services Convention, 1985. Available in English at: <http://actrav.itcilo.org/actrav-english/telearn/osh/legis/c161.htm>
- International Labour Organisation (ILO). *Guidelines on Occupational Safety and Health Management Systems*. ILO-OSH 2001. Geneva, Switzerland: International Labour Office, 2001.
- International Labour Organisation (ILO). Working Document 'Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)'. Thirteenth Session of the Joint ILO/WHO Committee on Occupational Health, Geneva, 9-12 December 2003a. Available in English at: [http://www.ilo.org/public/english/protection/safework/health/session13/working\\_paper\\_2.pdf](http://www.ilo.org/public/english/protection/safework/health/session13/working_paper_2.pdf)
- International Labour Organisation (ILO) *Global Strategy on Occupational Safety and Health*. Conclusions adopted by the International Labour Conference at its 91st Session, 2003b. Available in English at: [http://www.ilo.org/public/english/protection/safework/globstrat\\_e.pdf](http://www.ilo.org/public/english/protection/safework/globstrat_e.pdf)
- International Labour Organisation (ILO) – C187 Promotional Framework for Occupational Safety and Health Convention, 2006a. Available in English at: <http://www.oit.org/public/english/protection/safework/promoframe.htm>
- International Labour Organisation (ILO) – R197 Promotional Framework for Occupational Safety and Health Recommendation, 2006b. Available in English at: <http://www.oit.org/public/english/protection/safework/promoframe.htm>
- Institution of Occupational Safety and Health (IOSH). *Integration of management systems for OSH, environmental protection and quality*. February 1998.
- International Standardisation Organisation (ISO). *ISO Guide 72. Guidelines for the justification and development of management system standards*. 2001.
- Isaksson R. *Total Quality Management for Sustainable Development – Focus on Processes*. Luleå University of Technology, Department of Business Administration and Social Sciences, Division of Quality and Environmental Management, Doctoral Thesis No. 10, 2004. Available in English at: [http://ies.ltu.se/kml/Publikationer/Doctoral/Raine\\_Isaksson.pdf](http://ies.ltu.se/kml/Publikationer/Doctoral/Raine_Isaksson.pdf)
- Jacobsson A. *OECD Workshop on Integrated Management of Safety, Health, Environment and Quality – Discussion Document*. Seoul, Korea, 26-29 June 2002. Available in English at: [http://www.olis.oecd.org/olis/2002doc.nsf/LinkTo/NT00000E32/\\$FILE/JT03213466.PDF](http://www.olis.oecd.org/olis/2002doc.nsf/LinkTo/NT00000E32/$FILE/JT03213466.PDF)
- Jørgensen TH, Remmen A and Mellado MD. Integrated management systems: three different levels of integration. *Journal of Cleaner Production*, 2006, Vol. 14, No. 8, pp. 713-722.





Kamp A and LeBansch K. Integrating management of OHS and the environment – participation, prevention and control. In: Frick K, Jensen P, Quinlan M and Wilthagen T (eds). *Systematic Occupational Health and Safety Management. Perspectives on an International Development*, Pergamon, Amsterdam, 2000.

Kempa V. Report of the HESA seminar on OHSM(S). Rome, Italy, 25 and 26 March 2007.

Ketola JM, Liuhamo M, Mattila M. Application of Performance-Excellence criteria to improvement of occupational safety and health performance. *Human Factors and Ergonomics in Manufacturing*, 2002, Vol. 12, No. 4, pp. 407-426.

Kincaid WH. OSHA vs. excellence in safety management. *Occupational Hazards*, Vol. 64, No. 12, December 2002, pp. 34-36.

Lamberg M, Partinen R and Leppo K. Workplace health promotion and the main challenges. In: *Health in the World of Work: Workplace Health Promotion as a Tool for Improving and Extending Work Life*. Ministry of Social Affairs and Health. Finnish Institute for Occupational Health. Helsinki, Finland, 2006.

Lewchuk W, Roberts B, McDonald C and Robertson D. *Working conditions study: Benchmarking auto assembly plants*. Willowdale, Ontario: Canadian Auto Workers, 1996.

Lovelock CJ. Corporate HR Service – Balanced Scorecard 2006/7. Reading Borough Council, UK, 2007. Available in English at: [http://www.reading.gov.uk/Documents/Committee\\_Services/Personnel\\_Committee/-2007-2008/071003/BalancedScorecard.pdf](http://www.reading.gov.uk/Documents/Committee_Services/Personnel_Committee/-2007-2008/071003/BalancedScorecard.pdf)

Main B, Taubitz M and Wood W. You cannot get lean without safety. *Professional Safety*, January 2008, pp. 38-42.

Marsden S. Raising the business profile of occupational health. *Occupational Health Review*, No. 108, March-April 2004, pp. 17-20.

Mearns K and Håvold JI. Occupational health and safety and the balanced scorecard. *The TQM Magazine*, Vol. 15, No. 6, 2003, pp. 408-423.

Michael JH, Evans DD, Jansen KJ, Haight JM. Management commitment to safety as organisational support: Relationships with non-safety outcomes in wood manufacturing employees. *Journal of Safety Research*, Vol. 36, No. 2, 2005, pp. 171-179.

Mikkelsen A and Saksvik PO. The impact of learning opportunities and decision authority on occupational health. *Work and Stress*, Vol. 13, No. 1, January/March 1999, pp. 20-31.

Naveh E and Marcus A. Financial performance, ISO 9000 standard and safe driving practices effects on accident rate in the US motor carrier industry. *Accident Analysis & Prevention*, Vol. 39, No. 4, July 2007, pp. 731-742.

Nederlands Normalisatie Instituut (NEN). NPR 5001: *Richtlijn Arbomanagementsysteem*. 1996.

Nielsen K. Organisation theories implicit in various approaches to OHS management. In: Frick K, Jensen P, Quinlan M and Wilthagen T. *Systematic Occupational Health and Safety Management. Perspectives on an International Development*. 2000, Pergamon, Amsterdam, p. 99-123.

Organisation for Economic Cooperation and Development. OECD Workshop on Integrated Management of Safety, Health, Environment and Quality. Seoul, Korea, 26-29 June 2001. Report available in English at: [http://www.oilis.oecd.org/oilis/2002doc.nsf/LinkTo/NT00000E32/\\$FILE/JT03213466.PDF](http://www.oilis.oecd.org/oilis/2002doc.nsf/LinkTo/NT00000E32/$FILE/JT03213466.PDF)

O'Rourke P. *Using Six Sigma in Safety Metrics*. Motorola, US.

Osborne J and Zairi M. Total Quality Management and the Management of Health and Safety. Health and Safety Executive (HSE), Contract Research Report 153/1997.

O'Toole M. The relationship between employees' perceptions of safety and organisational culture. *Journal of Safety Research*, Vol. 33, No. 2, 2002, pp. 231-243.





Podgórski D. Development of OSH MS standardisation. From British Standard to PN-N-18001:2003. In: *Fundamentals of systematic OSH management*. CIOP-PIB, 2004.

Quinlan M and Mayhew C. Precarious Employment, Work Re-Organisation and the Fracturing of OHS Management. In: Frick K, Jensen P, Quinlan M and Wilthagen T. *Systematic Occupational Health and Safety Management. Perspectives on an International Development*. 2000, Pergamon, Amsterdam.

Rahimi M. Merging strategic safety, health and environment into total quality management. *International Journal of Industrial Ergonomics*, 1995, 16, pp. 83-94.

Rancour TP. SH&E Management Systems & Business Integration: The Malcolm Baldrige Performance Excellence Framework. Professional Safety, October 2005, pp. 25-30. Available in English at: <http://www.asse.org/practicespecialties/bosc/docs/bosc25-30Oct2005.pdf>

Rao S. Safety culture and accident analysis – A socio-management approach based on organisational safety social capital. *Journal of Hazardous Materials*, Vol. 142, No. 3, 11 April 2007, pp. 730-740.

Rasmussen J. Risk management in a dynamic society: a modelling problem. *Safety Science*, Vol. 27, 1997, pp. 183-213.

Renzi MF and Cappelli L. Integration between ISO 9000 and ISO 14000: opportunities and limits. *Total Quality Management*, 2000, Vol. 11, No. 4-5-6, pp. 849-856.

Robson L, Clarke J, Cullen K, Bielecky A, Severin C, Bigelow P, Irvin E, Culyer A and Mahood Q. *The effectiveness of Occupational Health and Safety Management Systems: A Systematic Review*. Institute for Work and Health, Toronto, 2005.

Rydlewska-Liszkowska I. Cost-benefit analysis of safety and health at the workplace. *Medycyna Pracy*, Vol. 49, No. 2, 1998, pp. 201-207.

Saldaña N. The Use of Safety Dashboards in a Six Sigma Culture: The Johnson & Johnson Journey for Excellence Continues. *Paper for American Society of Safety Engineers*, 2004.

Salem O, Lothlikar H, Genaidy A and Abdelhamid T. A behaviour-based safety approach for construction projects. Proceedings IGLC-15, Michigan, USA, July 2007. Available in English at: [http://www.iglc.net/conferences/2007/folder.2007-06-29.2095743756/Salem%20Lothlikar%20Genaidy%20Abdelhamid\\_A%20behavioour%20based%20safety%20approach%20for%20construction%20projects.pdf](http://www.iglc.net/conferences/2007/folder.2007-06-29.2095743756/Salem%20Lothlikar%20Genaidy%20Abdelhamid_A%20behavioour%20based%20safety%20approach%20for%20construction%20projects.pdf)

Shaw A and Blewett V. What Works? The Strategies which Help to Integrate OHS Management within Business Development and the Role of the Outsider. In: Frick K, Jensen P, Quinlan M and Wilthagen T. *Systematic Occupational Health and Safety Management. Perspectives on an International Development*. 2000, Pergamon, Amsterdam, pp. 457-473.

Simard M and Marchand A. Workgroups' propensity to comply with safety rules: the influence of micro-macro organisational factors. *Ergonomics*, Vol. 40, No. 2, 1997, pp. 172-188.

Smallman C and John G. British directors' perspectives on the impact of health and safety on corporate performance. *Safety Science*, Vol. 38, 2001, pp. 227-239.

Smith D. IMS: The Framework. British Standards Institution, IMS Risk Solutions, 2001.

Smith D. IMS: Implementing and Operating. British Standards Institution, IMS Risk Solutions, 2002, 114 p.

Smith T. Robens Revisited: *An examination of Health and Safety law 25 years after the Robens Report with particular emphasis on the Explosives Industry*. Available in English at: <http://www.eig.org.uk/eig2002/documents/robens.pdf>

Sorensen G and Barbeau E. *Integrating Occupational Health and Safety and Worksite Health Promotion: State of the Science*. The National Institute of Occupational Safety and Health, 2004.

Sowden P and Sinha S. Promoting health and safety as a key goal of the corporate social responsibility agenda. RR339, Suffolk, Health and Safety Executive, 2005.



Standards Australia (SAA). SAA HB53: *Management system for occupational health, safety and rehabilitation in the construction industry*. New South Wales, 1994.

Standards Australia/Standards New Zealand (SAA/SNZ). AS/NZS 4804 OH&S Management Systems. 1997/2001.

Steps to a Healthier US Workforce Symposium, October 26-28, 2004, Washington DC. Available in English at: [http://www.cdc.gov/niosh/worklife/steps/pdfs/NIOSH%20integration%20ms\\_post-symp%20revision\\_trckd%20done.pdf](http://www.cdc.gov/niosh/worklife/steps/pdfs/NIOSH%20integration%20ms_post-symp%20revision_trckd%20done.pdf)

Swuste P and Arnoldy F. The safety adviser/manager as agent of organisational change: a new challenge to expert training. *Safety Science*, Vol. 41, No. 1, February 2003, pp. 15-27.

Toffel MW and Birkner LR. Estimating and controlling workplace risk: an approach for occupational hygiene and safety professionals. *Applied Occupational and Environmental Hygiene*, Vol. 17, No. 7, July 2002, pp. 477-485.

Toomey S. Making safety part of the corporate culture: for every high-end timepiece awarded for impressive sales figures, one should also be presented for exceptional safe work practices. *Occupational Health and Safety*, Vol. 72, No. 1, January 2003, pp. 34-35.

Topf MD. Including leadership in the safety process. *Occupational Hazards*, Vol. 62, No. 3, March 2000, pp. 57-58.

Top WN. *Safety & Loss Control Management and the International Safety Rating System*. 1991. Available in English at: <http://www.topves.nl/Safety%20Management%20and%20ISRS.pdf>

Walters D. *Workplace Arrangements for OHS in the 21st Century*, July 2003. Available in English at: <http://ohs.anu.edu.au/publications/pdf/wp%2010%20-%20Walters.pdf>

Walton CC. Corporate social responsibility: The debate revisited. *Journal of Economics and Business*, Vol. 34, No. 2, 1982, pp. 173-187.

Waring A. Risk management and corporate governance. *Safety and Health Practitioner*, Vol. 18, No. 9, September 2000, pp. 20-22.

Whitfield MD. *Integrated Management Systems*. Wirral Metropolitan College, 2005.

Wilkinson G and Dale BG. Integrated management system standards: an examination of the concept and theory. *TQM Magazine*, 1999, Vol. 11, No. 3, pp. 95-104.

Wilkinson G and Dale BG. An examination of the ISO 9001:2000 standard and its influence on the integration of management systems. *Production Planning & Control*, 2002, Vol. 13, No. 3, pp. 284-297.

Williams J. Safety Systems and Lean Manufacturing: A Perfect Marriage. Paper for American Society of Safety Engineers, 2005.

Williamsen M. Six Sigma Safety: Established World-Class Continuous Improvement. CoreMedia. Paper for American Society of Safety Engineers, 2006.

Wokutch R and VanSandt C. OHS management in the United States and Japan: the DuPont and Toyota models. In: Frick K, Jensen PL, Quinlan M and Wilthagen T. *Systematic Occupational Health and Safety Management – Perspectives on an International Development*. Pergamon, Amsterdam, 2000, pp. 367-390.

Wright M, Marsden S and Holmes J. Health and safety responsibilities of company directors and management board members. Suffolk, Health and Safety Executive (HSE), RR141, 2003. Available in English at: <http://www.hse.gov.uk/research/rrpdf/rr414.pdf>

Yates GR, Bernd DL, Sayles SM, Stockmeier CA, Burke G and Merti GE. Building and sustaining a systemwide culture of safety. *Journal on Quality and Patient Safety*, Vol. 31, No. 12, December 2005, pp. 684-689.

Zohar D. Effects of leadership dimensions, safety climate, and assigned priorities on minor injuries in work groups. *Journal of Organizational Behavior*, Vol. 23, No. 1, Feb. 2002, pp. 75-92.



Zwetsloot GIJM. Improving Cleaner Production by integration into the management of quality, environment and working conditions. *Journal of Cleaner Production*, 1995, Vol. 3, Nos 1-2, pp. 61-66.

Zwetsloot GIJM. Developments and debates on OHSM system standardisation and certification. In: Frick K, Jensen PL, Quinlan M and Wilthagen T. *Systematic Occupational Health and Safety Management – Perspectives on an International Development*. Pergamon, Amsterdam, 2000, pp. 392-393.

Zwetsloot G, Gründemann R and Vaandrager L. *Integraal Gezondheids Management (IGM): eindrapportage*. TNO Arbeid, Hoofddorp, 2003.

Zwetsloot GIJM and Pot F. The business value of health management. *Journal of Business Ethics*, 2004, Vol. 55, No. 2, pp. 115–124.

Zwetsloot GIJM. Integral Health Management. The National Institute of Occupational Safety and Health Steps to a Healthier US Workforce Symposium, October 26-28, 2004, Washington DC. available in English at: <http://www.cdc.gov/niosh/worklife/steps/pdfs/P4ZwetslootIHM.pdf>

Zwetsloot GIJM, Gort J, Zwanikken S, Steijger N, van der Vorm J, Gallis R and Starren A. Safety in a complex world as the result of co-creation and co-learning by key agents – Towards a vision on living safety in organisations. Paper presented at the 3rd Working in Safety Conference, September 2006, Delft.

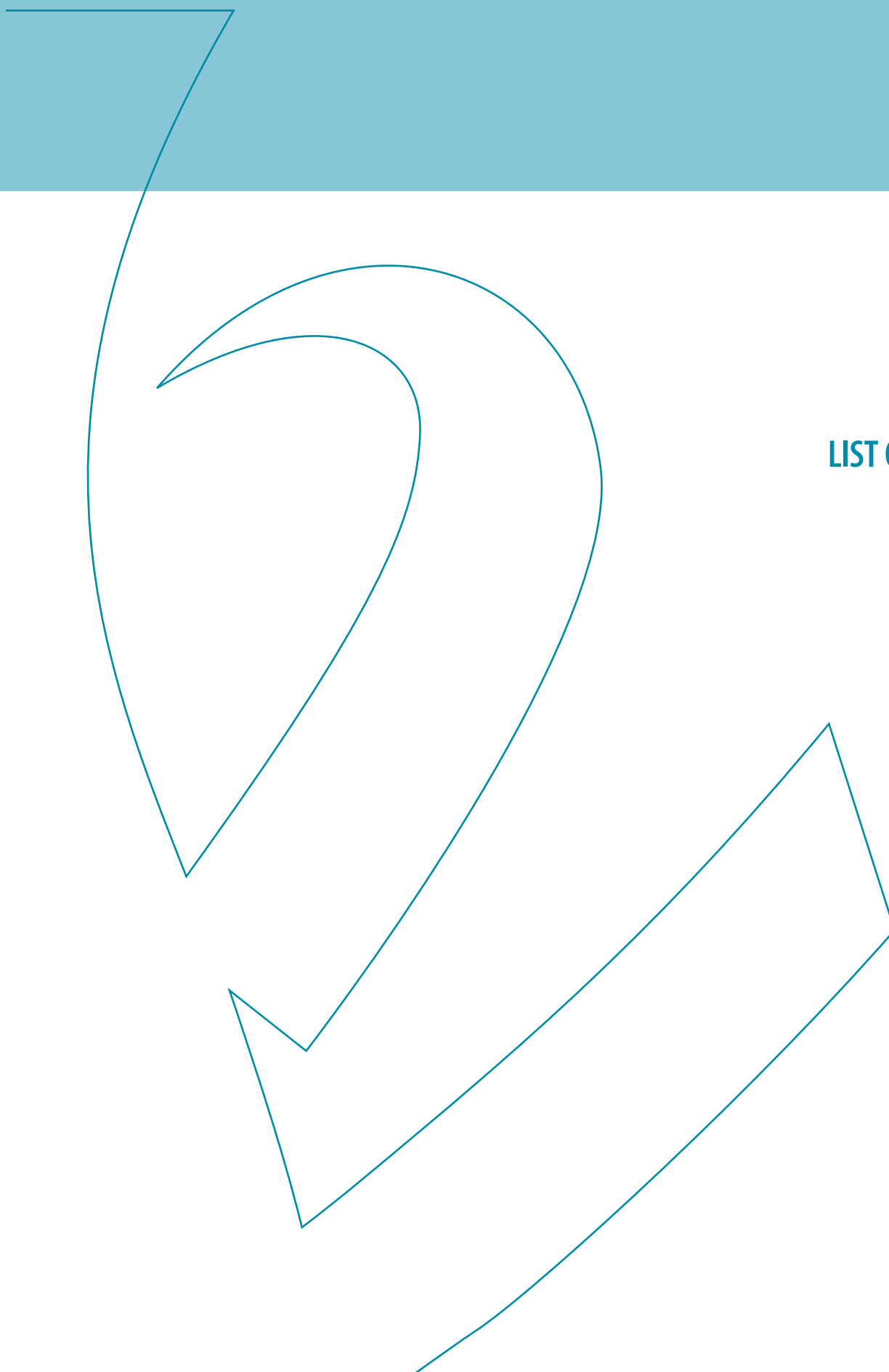
Zwetsloot GIJM and van Scheppingen A. Towards a strategic business case for health management. In: Johansson U, Ahonen G and Roslander R. (eds) *Work Health and Management Control*. 2007, pp. 183-213.





# 7.

## LIST OF ACRONYMS



AAA	Statutory Accident Insurance of Luxembourg
AENOR	Spanish Association of Standardisation and Certification
AFNOR	Association Française de Normalisation
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute
APaChE	A partnership for construction health, UK
ASET	Atmosphere-Systems-Exposure-Targets
AUVA	Austrian Social Accident Insurance
BITC	Business in the Community
BBS	Behavioural-Based Safety
BGW	German statutory accident and disease insurance
BS	Behavioural Safety
BSC	Balanced Scorecard
BSI	British Standardisation Institution
CC.00	Comisiones Obreras, Spain
Cefic	European Chemical Industry Council
CIOP-PIB	Central Institute for Labour Protection – National Research Institute, Poland
CNAMTS	Caisse Nationale d'Assurance Maladie des Travailleurs Salariés, France
CRAM	Caisse Régionale d'Assurance Maladie
CS	Corporate Sustainability
CSD	Comprehensive Safety Dashboard
CSR	Corporate Social Responsibility
DSE	Displayed Screen Equipment
EASHW	European Agency for Safety and Health at Work
EFQM	European Foundation for Quality Management
ENWHP	European Network for Workplace Health Promotion
EU	European Union
FIOH	Finnish Institute for Occupational Health
HESA	Health and Safety Department of the European Trade Union Institute – Research, Education, Health and Safety (ETUI-REHS)
HR	Human Resources
HRM	Human Resources Management
HSE	Health and Safety Executive, UK
HSL	Health and Safety Laboratory, UK
IAD	Darmstadt University of Technology, Institute of Ergonomics, Germany
IALI	International Association of Labour Inspection
ICCA	International Council of Chemical Associations
ILO	International Labour Organisation
IMS	Integrated Management System
INERIS	Institut National de l'Environnement Industriel et des Risques
INRS	Institut National de Recherche et de Sécurité
IOSH	Institution of Occupational Safety and Health, UK
ILO	International Labour Organisation



ISO	International Standardisation Organisation
ISRS	International Safety Rating System
ISTAS	Instituto Sindical de Trabajo, Ambiente y Salud, Spain
JIT	Just-In-Time
MAARS	Management Awareness and Action Rating System
MES	Metatechnical Evaluation System, Belgium
OECD	Organisation for Economic Cooperation and Development
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PDCA	Plan-Do-Check-Act
PPE	Personal Protective Equipment
QSE	Quality, Safety and Environment
QHSE	Quality, Health, Safety and Environment
QMS	Quality Management System
RC	Responsible care
SA	Social Accountability
SA	Standards Australia
SAM	Systematic Work Environment Management, Sweden
SEP	Safety Enterprise Programme, Slovakia
SGM	Safety and Health management system, Austria (AUVA)
SMAT	Safety Management Audit Training
SMEs	Small and Medium sized Enterprises
SMS	Safety Management System
SNZ	Standards New Zealand
SSM	Strategic Safety Management
STER	Computer System for Hazard Registration and Risk Assessment, Poland
STI	Service de Santé au Travail de l'Industrie, Luxembourg
THCU	The Health Communication Unit
TPM	Total Productive Maintenance
TPS	Toyota Production System
TQM	Total Quality Management
TUC	Technical University of Crete
VCA	Veiligheid Checklist Aannemers
VPP	Voluntary Protection Programmes
VSM	Value Stream Mapping
VTT	Technical Research Centre, Finland
VÚBP	Occupational Safety Research Institute, Czech Republic
WCM	World Class Manufacturing







European Agency for Safety and Health at Work

**Mainstreaming OSH into business management**

Luxembourg: Publications Office of the European Union

2010 — 189 pp. — 21 x 29.7 cm

ISBN 978-92-9191-298-8

doi:10.2802/2138

Price (excluding VAT) in Luxembourg: EUR 15



## How to obtain EU publications

### Free publications:

- via EU Bookshop (<http://bookshop.europa.eu>);
- at the European Commission's representations or delegations.  
You can obtain their contact details by linking <http://ec.europa.eu> or by sending a fax to +352 2929-42758.

### Publications for sale:

- via EU Bookshop (<http://bookshop.europa.eu>);
- Priced subscriptions (Official Journal of the EU, Legal cases of the Court of Justice as well as certain periodicals edited by the European Commission) can be ordered from one of our sales agents.  
You can obtain their contact details by linking <http://bookshop.europa.eu>, or by sending a fax to +352 2929-42758.



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.

European Agency for Safety and Health at Work

<http://osha.europa.eu>



European Agency  
for Safety and Health  
at Work

Gran Vía 33, E-48009 Bilbao  
Tel.: +34 944794360  
Fax: + 34 944794383  
E-mail: [information@osha.europa.eu](mailto:information@osha.europa.eu)  
Price (excluding VAT) in Luxembourg: EUR 15



Publications Office

ISBN 978-929191298-8



9 789291 912988