Managing Safety the Systems Way
Managing Safety the Systems Way
Implementing BS OHSAS 18001:2007

David Smith, Geoff Hunt and Clive Green
## Contents

**Foreword**  
ii

1. **Introduction**  
1

2. **Getting started – Initial status review**  
21

3. **Defining an OH&S policy**  
62

4. **Creating a climate for effective OH&S management**  
69

5. **Planning**  
79

6. **Risk assessment and control**  
102

7. **Implementing and operating**  
134

8. **Checking**  
157

9. **Auditing**  
182

10. **Reviewing**  
193

11. **Integrating your management systems**  
203

**Appendix 1** Common elements of quality, environmental and OH&S systems  
209

**Appendix 2** Self-assessment questionnaire  
211

**Appendix 3** Legal requirements for health and safety  
222

**Appendix 4** British standards publications relating to health and safety  
226

**Bibliography**  
237
Foreword

Employees and society at large expect to be protected from any harm arising from the activities of organizations. Moreover, there is a good business case for effective management of occupational health and safety (OH&S) across all aspects of business activity, whether in the office, the workshop, the work site or as part of the general delivery of an organization’s services. Quite apart from the regulatory and ethical issues, there are sound economic and commercial reasons for providing positive improvements to the overall quality of the work environment and for reducing work-related accidents, ill health and accidental damage to an organization’s infrastructure, all of which can affect productivity.

Historically OH&S has been managed on a compliance basis – meeting the requirements of regulations and standards which, for the most part, have been introduced after a problem has reached significant levels. This approach will not succeed in the 21st century, particularly when dealing in global markets where different regulations and standards apply and working practices are ever-evolving to meet societal demands. It is also increasingly recognized that the compliance approach to managing OH&S does not, by itself, encourage continual improvement, which is the key driver for effectively managing OH&S in the workplace. The expectations of stakeholders are growing as innovation in the modern world allows us to create a safer workplace. The changing world also introduces new risks that make it hard for regulatory controls to keep pace. This is why the management system approach, using a risk base, is the soundest way to manage OH&S. While it is not possible to remove all risks in life, in the workplace these can be reduced to an acceptable level if not eliminated. The UK Health and Safety Executive (HSE) uses the approach described in its publication *Reducing Risks, Protecting People* [1]
and this is the key to effective OH&S management. The aim is to identify risk in the workplace in order to eliminate unnecessary risk or implement effective control measures to reduce any risk that remains to an acceptable level and this includes risks not necessarily covered by current, local health and safety legislation. The approach taken in this publication is consistent with the direction given by the UK Health and Safety Commission’s strategy, Revitalising Health and Safety, outlined in their free leaflet, *Leading health and safety at work – Leadership actions for directors and board members* [2].

With the new Corporate Manslaughter and Corporate Homicide Act 2007 being enacted in the UK, there is an even greater need for those directors and senior managers who were previously not committed to the effective implementation of OH&S systems to take note and act. The approach advocated within the two British standards described in the next paragraph, will help organizations meet the requirements placed upon them and enable them to show that they have put effective systems in place.

Organizations are now seeking ways of demonstrating to a wider audience that they are applying the principles of risk management to occupational health and safety. BS OHSAS 18001:2007 has been produced as a specification standard against which organizations can seek accredited certification. It is a consensus document supported by industry, commerce, practitioners, insurers and regulators. The standard is seen as one way of demonstrating the implementation of an effective OH&S management system as advocated originally by BS 8800:2004, the HSE’s HSG65 [3] and the International Labour Office’s *Guidelines on occupational health and safety management systems* [4]. BS OHSAS 18001, BS 8800, HSG65 and the ILO OSH guidelines are fundamentally the same in approach and the effective implementation of any one will also satisfy the other three.

The fourth edition of *Managing Safety the Systems Way* follows the publication of BS OHSAS 18001. Although the structure of previous editions is retained, it has been updated to include amendments and additional requirements from the new specification. It also includes a much improved approach in Chapter 2, ‘Getting started’ for those who are implementing a system with little formal arrangements currently in place. There have also been significant developments in the area of integrating management systems. The success of earlier editions
gives testament to the effectiveness of the methodology it uses. The examples of fictitious organizations across a number of business sectors have also proved particularly helpful to some when implementing a new OH&S management system or developing an existing one.

Managing Safety the Systems Way is intended for organizations seeking practical guidance in delivering a cost-effective OH&S management system. It provides a structured approach for any organization wishing to implement an OH&S management system and will be particularly useful to small and medium-sized organizations and business units within larger corporate bodies that wish to develop a formal OH&S management system. Those organizations with existing OH&S management systems in place may also benefit from its guidance, especially in taking a risk-based approach.

This publication is designed to be helpful to those organizations seeking to integrate OH&S within an overall formal management system covering quality and/or environmental management. It is based on a Plan, Do, Check, Act (PDCA) approach used in management system standards, such as BS EN ISO 14001:2004. For those seeking to integrate their management systems, Chapter 11, which focuses on PAS 99:2006, Specification of Common Management System Requirements as a Framework for Integration [5], may be particularly helpful.

Managing Safety the Systems Way builds on the basic framework and principles of BS OHSAS 18001 and BS 8800 by providing practical advice, examples and sources of further information. It is not, however, intended to be a comprehensive guide to all aspects of OH&S and does not in any way alter or amend limitations on the use of BS OHSAS 18001. Readers are advised to consult both these documents for further background. Any definitions used also apply in this publication.

Adopting BS OHSAS 18001 and BS 8800 is not a legal requirement, nor will compliance with them confer immunity from legal obligation. BS 8800 is, however, identified in the Management of Health and Safety at Work Regulations 1999. Approved Code of Practice and guidance [6], Regulation 5, as one way of implementing an effective OH&S system.

The following model is based on the one used in BS OHSAS 18001 with the additional element, ‘Initial status review’, as found in BS 8800. The PDCA
Continual improvement

Management review

Checking and corrective action

Initial status review

OH&S policy

Planning

Implementation and operation

BS OHSAS 18001:2007 Model for a successful health and safety management system
Since the Industrial Revolution in the UK over 200 years ago there has been an ever-increasing drive to improve the occupational health and safety arrangements of organizations. The approach in the past has mainly been through regulation. The laws passed were based on the suffering experienced by many in specific industries that necessitated an Act of Parliament to be passed to prevent a continuance of the circumstance that led to the hardship. This retrospective approach was laudable in its way but serious accidents or ill health problems had to occur before such laws were formulated. Some of this regulation was so prescriptive it brought its own problems and created other OH&S issues. Nowadays, the proactive approach is obviously preferred – let’s prevent harm before it occurs to anyone.

Lord Robens, in his *Safety and Health at Work: Report of the Committee 1970–72* [7], published in 1972, recognized that the prescriptive regulatory approach could be a disincentive rather than being helpful in managing occupational health and safety:

Our present system encourages rather too much reliance on state regulation and rather too little on personal responsibility and voluntary, self-generating effort.
Regulations which lay down precise methods of compliance have an intrinsic rigidity and their details may be quickly overtaken by new technological developments. On the other hand, lack of precision creates uncertainty.

As a result, much of the legislation appears irrelevant to the real, underlying problems.

In many ways, the more recent regulations have followed this thinking, the most significant in Europe probably being the Framework Directive of 1989. This led the UK to produce The Management of Health and Safety at Work Regulations in 1992, amended in 1999, requiring, in effect, the identification and control of occupational health and safety risks. There is now a greater need than ever before to be proactive in identifying those activities that might give rise to harm rather than waiting for a prescriptive requirement to be made on how to manage the risk.

The HSE guidance document HSG65, first published in 1991, is much revered and has been an invaluable tool in moving the ‘management’ of safety forward. Since then there have been a number of other approaches that have brought success. BS 8800, first published in 1996, encompassed much of the thinking in HSG65 and embraced other good guidance within a management system framework similar to that used by industry to manage other disciplines, e.g. BS EN ISO 9004 for quality and BS EN ISO 14004 for the environment. BS 8800 was revised in 2004 and is now seen as a very useful guide to good practice with respect to a system for managing OH&S. Its content in many ways is an improvement on HSG65 as it has taken on developments that have occurred since HSG65 was first published. Moreover, BS 8800 was written by industry, regulators, trade unions and trade organizations. It is recognized as practical good practice which could be realistically implemented across most organizations.
The need for an effective system has been emphasized by the new Corporate Manslaughter and Corporate Homicide Act 2007, which states:

(1) An organisation to which this section applies is guilty of an offence if the way in which its activities are managed or organised –
   (a) causes a person’s death, and
   (b) amounts to a gross breach of a relevant duty of care owed by the organisation to the deceased.

The phrase ‘the way in which its activities are managed or organised’ points very much towards a management system for managing occupational health and safety. Top management and managers will need to demonstrate that they are meeting these requirements should they have to defend themselves against charges under this new Act.

BS 8800 was published as a ‘guide’ and as such it cannot be used for audit purposes. It also contained statements which were not applicable to all organizations. The pressure to have a standard that could be audited against, allowing accredited certification, led to the publication of OHSAS 18001 in 1999. The new version, BS OHSAS 18001:2007 has been adopted as a requirement standard. This specification is seen as providing a very good framework for implementing an effective and efficient system and allowing independent assessment of its effectiveness.

Managing Safety the Systems Way has been written to help those wishing to implement such a system. This approach will help those organizations wishing to demonstrate their commitment to preventing harm to workers and others who may be affected by the organization’s activities – in other words those interested in going beyond a mechanical approach to just complying with relevant regulations and instead actively seeking to promote a healthy
and safe working environment. The system being advocated here will show regulators, insurers and customers that the organization is managing OH&S in a way that encourages workers to work with management in being effective and productive, minimizing production loss and absenteeism. Obtaining ‘buy-in’ of the worker and the manager provides an opportunity to maintain the momentum of continual improvement in OH&S performance.

There have been other significant pressures on organizations, both large and small, from more unexpected sources. The London Stock Exchange published rules on corporate governance for listed companies called The Combined Code: Principles of good governance and code of best practice (now adopted by the Financial Reporting Council). This recognizes that the share value of a company is not only based on asset value but also on the success of the directors in managing all the strategic risks that the business faces, including OH&S. The UK government has extended this practice to the public sector, including higher education establishments.

- 140,000 reported workplace accidents
- 2.2 million people suffer work related illnesses resulting in 30 million lost working days
- 241 people killed at work

Source: Health & Safety Commission, October 2007

Any accident comes with a cost to the organization. The cost of occupational ill health is equally as important as accidents yet is often not given due recognition. Major accidents and claims for ill health and injury as well as damage to plant, equipment and property are costly both in the short term, due to production and delivery delays, and in the longer term through the loss of reputation caused by adverse publicity and the impact of legal enforcement. *The Combined Code on corporate governance* [8] affects other organizations besides listed companies because listed companies need to assure themselves that their suppliers, both in their trading practices and the supply of products and services, are not putting them at risk.
Governmental and stakeholder pressure has also led organizations in the private and public sector to focus on corporate social responsibility (CSR). OH&S is just one element but it is a key requirement that has to be addressed when delivering CSR. The pressure for CSR controls comes from the European Union. There are standards currently being developed by the International Organization for Standardization (ISO) and one has been produced by BSI. In the UK the ‘Revitalising Health and Safety’ initiative, a joint initiative by the UK government and the Health and Safety Commission, also sent a clear message to managers of organizations still not convinced about the need for an effective OH&S management system.

Finally, the UK Government announced in 2004 a new strategy that is a landmark in itself. This strategy is described in the HSE publication, Reducing risks, protecting people: HSE’s decision-making process. The following statements from that publication recognize that the workplace can never be totally safe and that the aim should be to control the risks to an acceptable level yet not be over-prescriptive:

Our goal is not to have a risk free society but one where risk is properly appreciated, understood and managed.

We will become more robust in defending the reputation of the health and safety system against its detractors, those who are over zealous in its application and those who cannot recognize the appropriate balance between risks and benefits.

Importance of occupational health and safety management in smaller businesses

There is evidence that in the UK those in small businesses, i.e. those employing fewer than 50 people, are 40 per cent more likely to have an accident than their counterparts in larger organizations (with more than 1,000 employees). This is even more disturbing when considered alongside the trend of large organizations developing their businesses as smaller, autonomous operating units.
In some countries this divide is much greater. There is a clear need for organizations to improve their ability to manage OH&S safely rather than trying to understand the detail and requirements of all the regulations that may apply. As only about 40 per cent of organizations in the UK seem to have any sort of OH&S management arrangements, adoption of this approach would obviously go a long way towards improving overall OH&S performance.

The compliance approach is often too burdensome for small businesses. It is, however, recognized that many small businesses have quality systems such as BS EN ISO 9001 working effectively. Risk-based OH&S systems are just as easy to implement. Effective implementation of a system based on BS OHSAS 18001, BS 8800 and the ILO OSH guide should enable an organization to meet and even exceed 99 per cent of their compliance requirements.

Having implemented such a system it is often easier to identify the missing 1 per cent should it have been overlooked. The appeal of this management system approach is that an organization can embrace it within its business (risk) management system. A successful organization will then integrate OH&S into its day-to-day management arrangements, recognizing that there should be only one management system and style providing the necessary procedures and instructions. It will then continuously maintain its OH&S management programme, updating it and, most importantly, communicating it to those who are directly affected – employees, contractors, customers, clients, visitors and the public. Not only is communication with those closest to the organization essential, but evidence of successful OH&S management is now increasingly sought by other groups important to the well-being of the organization, such as investors, insurance companies, financial institutions and potential customers. For instance, one large pension investment group responsible for 4 per cent of the total investment in the UK stock market has instigated procedures to ensure its investments are restricted to companies that manage OH&S arrangements as well as other ethical issues.

By demonstrating a sound track record, organizations are able to show their commitment and sense of responsibility towards managing OH&S issues on an evolving basis. OH&S can be perceived as a serious drain on resources, offering little in the way of financial return. In practice, however, it has been shown that reducing accidents, occupational illness, equipment and plant
damage, etc. will outweigh the costs of implementation, bringing additional benefits in the eyes of customers – for instance repeat orders in the knowledge that the organization is reliable. Improvements in performance indicators, such as the following, help to safeguard the welfare of employees and others, and at the same time benefit the financial performance of the organization:

- reduction in absenteeism;
- reductions in claims against the organization;
- improved insurance rating;
- absence of adverse publicity;
- improved production output;
- a positive response from existing and potential customers wanting to deal with an organization that has a successful OH&S track record and which is unlikely to be disrupted by costly accidents or plant shutdowns;
- lower risk of business interruptions.

The basic principles of management are common irrespective of the activity being managed. Many organizations have already achieved BS EN ISO 9001 status and are operating successful quality systems. With increasing awareness of the importance of managing environmental issues, organizations are also seeking certification to BS EN ISO 14001. BS OHSAS 18001 completes the trio of business management systems – quality, environmental and occupational health and safety.

Many organizations are now seeking to integrate their formal management systems. BS OHSAS 18001 and BS 8800 embody the principles upon which BS EN ISO 9001 and BS EN ISO 14001 are based and many commonalities exist between them. An OH&S management system based on BS OHSAS 18001/BS 8800 allows alignment or integration with these other systems. Comprehensive guidance is provided in Chapter 11 and Appendix 1 of this book on integrating such systems and organizations can choose for themselves the extent to which they wish to interface or integrate the three management systems. It is apparent that such an approach considerably reduces the duplication of paperwork and effort when three systems are operating within a single management system structure. It also avoids unnecessary bureaucracy, improves business focus and avoids potential conflicts.
Managing Safety the Systems Way explains how the various elements in developing an OH&S management system can be tackled, and how the system can be maintained as OH&S evolves, responding to internal and external influences.

Managing Safety the Systems Way uses six fictitious organizations to help readers with understanding – an office environment, an engineering workshop, a retail operation, a small construction company, a logistics operation and a company trading online. These very different work situations have been chosen to show the parallels that exist between them and how the same basic principles can be applied to all types of organizations and working environments. Clearly, effective OH&S management will not just simply happen. From the outset there needs to be commitment at the highest level and a proactive approach from the organization to addressing all OH&S issues. Management systems such as BS OHSAS 18001 and BS 8800 advance the challenge to organizations to attach the same level of importance to achieving high standards of OH&S as they do to other key business activities. There is only one guaranteed recipe for success: total commitment from managers and the organization by adopting a structured approach to identifying hazards in the workplace, evaluating and controlling work-related risks and developing a positive culture throughout the organization towards managing those risks.

How to use this book

For those wishing to build an OH&S management system, following this book through, page by page, allows a comprehensive system to be developed. To allow further flexibility for others with more particular needs, however, the book uses a combination of:

- key elements sections providing information on the key elements of BS OHSAS 18001;
- checklists giving a reference point to help organizations identify how their organization compares with BS OHSAS 18001 and BS 8800, and where they may need more detailed information;
• ‘in detail’ sections providing greater detail on what is needed to meet the guidance in BS OHSAS 18001 and BS 8800;
• ‘in practice’ sections showing how the system can be implemented in practice, mostly using the six fictitious organizations.

For those organizations with an OH&S system already in place

Many organizations will have an OH&S management system in place but they may either wish to check whether their existing system is adequate, or may already recognize that there are specific deficiencies that need to be addressed. In this case it may help to ‘fast track’ through the book by using the key elements sections and checklists to help identify how the organization compares and where more detailed information is needed. The ‘in detail’ sections can be referred to as necessary. (Note: Chapters 2 and 3 do not have separate ‘in detail’ sections but they do contain checklists; Chapter 2 also has ‘in practice’ sections.)

There is a self-assessment questionnaire in Appendix 2 that will help organizations to assess their present OH&S management system. It allows the benchmarking of current arrangements and charting of progress as their system becomes more effective.

For new starters who want to get the basics in place quickly

For those organizations with little or nothing in the way of an OH&S management system already in place, the process may seem daunting. There are no short cuts to success. The approach in this book, however, is such that it enables the new starter to identify the key elements that need to be addressed quickly. They can then proceed to the other elements later as the OH&S management system develops.
The key point to remember is that arrangements must be instituted to control the risks that are present. A good way to start is to address:

1. Getting started (see Chapter 2);
2. Risk assessment (see Chapter 6);
3. Planning (see Chapter 5);
4. Defining an OH&S policy (see Chapter 3);
5. Planning in detail (see Chapter 5).

For small organizations

The whole process of establishing an OH&S management system may appear overwhelming for a small organization, particularly when there are few obvious risks associated with its activities. The aim should be to address those OH&S issues present, managing them appropriately for the size and nature of the organization and the level of risk that exists.

Following a risk-based approach will help identify the priority issues that the organization needs to address. The initial status review and risk assessments are the key elements to concentrate on. It is, however, essential that the planning stage in this book is covered before a full risk assessment of the organization is carried out. The key elements sections in the other stages will then help in deciding the extent of the management system that will meet the organization’s needs. In this case the way to proceed is:

1. Getting started (see Chapter 2);
2. Risk assessment (see Chapter 6);
3. Planning (see Chapter 5);
4. Defining an OH&S policy (see Chapter 3);
5. Key elements sections of the remaining stages.
Background to the case studies

To show how implementing an OH&S management system might work in practice, six fictitious organizations have been used as case studies. Any resemblance to actual organizations is purely coincidental, though the issues identified may be common to many.

The background to each organization is given as follows and the examples relating to each case study throughout the book can be identified easily by the logo in the margin. The examples and the approach have many features that will be common to all organizations, although there will always be some uniqueness about an individual organization’s situation.

Floggitt & Leggit (F&L)

Introduction

F&L is a 17-strong firm of accountants, established in 1985 by four partners who previously practised separately. Throughout the late 1980s it expanded rapidly to become a firmly established business serving the UK and Europe. F&L have recently moved from old-fashioned offices to a modern, designer-built, two-storey office suite in a business development park.

F&L’s partners have travelled a long way since the early days when health and safety didn’t feature high on their agenda. Even as the new partnership developed, health and safety legislation was never thought to be particularly applicable. One partner had remarked, ‘Offices aren’t dangerous places and you don’t need a written safety policy if there are less than five employees, so where’s the harm?’
Implementing an OH&S management system

F&L’s move to new offices brought an immediate recognition that even small businesses have some OH&S responsibility. The day before the official hand-over took place, a window cleaner fell from a ladder and broke an ankle – not the best start in a new place of work for an organization with a dynamic image. It also raised the question of liability – if the accident had occurred while F&L were tenants in the building, they might have been faced with a potential claim for damages. F&L’s response to this event was to ask what precisely it should do as an organization taking responsibility for the health and safety of its staff, visitors and contractors.

Where does an organization in a relatively safe environment begin? The Health and Safety at Work etc. Act 1974 (HASWA) is the core of UK health and safety legislation and, as an enabling Act, has led to the development of new and modern regulations tailored to meet the needs of all industries. F&L clearly had to review its existing position with respect to OH&S. As there was no interest in seeking management system certification in the foreseeable future, BS 8800 provided the vehicle to establish effective arrangements to control its OH&S risks and to assure clients and insurers that it had a system in place meeting the requirements of BS OHSAS 18001.

In the 21st century, F&L is developing its international business, increasing working outside of the UK in the global marketplace. Hence F&L wants to ensure that its OH&S management principles adequately protect its staff when travelling and working overseas.

Unbespoke Engineering (UE)

Introduction

UE is an established engineering organization tracing its roots back to World War I when it began manufacturing rivets, nuts and bolts for war production. The early premises, two small wooden shacks, have since developed into a
five-hectare site with 83 employees, manufacturing precision gear mechanisms for the motor trade and high quality fasteners. Raw material is sent to the site for conversion into the finished product before being transported to a predominantly UK and European market.

The business activity is clearly divided into two categories: clerical/managerial support and manufacturing. The manufacturing side involves the use of precision engineering tooling and is undergoing a programme of replacement, modernization and computerization. The plant facilities are relatively modern and have been reasonably maintained.

OH&S matters are managed through a human resources manager who has received current training in fire and first aid safety and has a safety certificate issued by a local college. The duties are cascaded through middle management to three business managers with no OH&S background who are responsible for the manufacture and despatch of final products. The clerical function is managed through the HR Department. Basic OH&S compliance is clearly evident but is not organized or formally managed. UE’s OH&S record is good, as far as records indicate, and there has not been a visit by the Health and Safety Executive (HSE) for some eight years.

Implementing an OH&S management system

UE’s approach was initiated following the successful achievement of BS EN ISO 9001 compliance. UE was increasingly facing probing questions from its customers on every aspect of business performance – quality, health and safety and environmental policy. Pre-qualification tenders had exposed the lack of a robust occupational health and safety management system.

Some companies in its sector had already sought or were seeking certification to BS OHSAS 18001 for business credibility reasons and this provided the perfect vehicle for UE to look at how OH&S was being managed and how it could be improved. There was a solid foundation to build upon; clearly something was being done right, which was evident in the attention to detail UE instilled throughout its operations. Precision engineering requires attention to detail, slowly learnt, with pride in the finished product. The inherent
discipline of the workforce would enable UE to quickly grasp the requirements of BS OHSAS 18001 and maintain them in practice.

UE’s management was initially reluctant to embrace BS OHSAS 18001, which it saw as another expensive, time-consuming exercise that would distract from production. The review of their existing arrangements changed that view – it revealed what UE had to do to meet the plethora of modern health and safety legislation and to satisfy the demands of its customers.

The adoption of BS EN ISO 9001 had helped to formalize UE’s management system arrangements and had strengthened its procedures and documentation; it therefore seemed an ideal platform to build on. BS OHSAS 18001 would be a valuable tool in helping the organization move forward to meet the demands of the 21st century.

There was, however, an unexpected problem area. UE was very proud of its registration to BS EN ISO 9001, seeing it as a vehicle for improving the management of the business and not just a paperwork exercise to gain a certificate on the wall. It came as a surprise that their system was not robust enough to integrate OH&S as it stood. The main problem was that the scope of its registration to BS EN ISO 9001 was very narrow, focusing on the manufacturing element. UE realized it would have to expand the scope of the current system to all areas of its operations. It also became conscious that the management of OH&S was risk-based and needed a different emphasis to its current quality approach. Having recognized these important differences, UE found there were significant opportunities for using common systems and that the current arrangements for managing quality only needed expanding or modifying slightly in order to embrace the needs of BS OHSAS 18001.

As UE has expanded, it has embraced modern engineering technologies. This has brought new risks as previous engineering practice has evolved. In the 21st century, computerization has replaced a lot of the old methodologies and removed hazards completely but in their place has come the potential for repetitive strain injury and computer software speeds that can put an operator under stress trying to keep pace with production.
Low Cost Discount (LCD)

Introduction

LCD has been trading since 1979, supplying a full range of cut-price food and household products. It occupies a single-storey, 200,000 square metre store on a shopping estate, sharing a common car park with 18 other traders. It has 30 full-time employees supported by 25 part-time or temporary staff brought in as needed. Staff turnover is quite high and 80 per cent are female. LCD is very aware of its responsibility to customers but has a poor record of minor accidents amongst staff, particularly in the warehouse area.

OH&S is the Store Manager’s responsibility, supported by two assistants, none of whom has received any formal training. The local environmental health officer visits the store every four to five years. The most recent visit identified major failings and non-compliance with current OH&S legislation.

Implementing an OH&S management system

The organizational requirements of LCD are different from F&L and UE, demanding closer control and management.

Staffing arrangements involving significant numbers of temporary and part-time staff mean it is more difficult to ensure they are adequately trained and kept aware of OH&S issues. LCD’s trade also involves the public, which requires continual attention. The supply of food to the public is a further issue, requiring compliance with strict food safety and hygiene legislation. LCD realized that, in order to remain in business, immediate action was required. It appointed one assistant manager with full responsibility for OH&S and BS 8800 was chosen as the vehicle to embrace OH&S arrangements in a formal management system.

LCD saw opportunities and benefits in integrating its management of hygiene requirements and OH&S. Both issues were likely to impact on employees and the public, one way or another, and it was necessary to
manage this area of its business more effectively. With the continuing need for training, it was seen that OH&S could be conveniently accommodated within the general training arrangements already in place.

As LCD has developed, it has become increasingly aware of its responsibilities for ensuring the OH&S of its customers. It was recognized that injuries to customers could result in expensive litigation claims and loss of reputation, both of which could be expensive to LCD.

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**Bilt & Clapse (B&C)**

**Introduction**

B&C is a medium-sized construction company with 22 management and administrative staff, 173 tradesmen employees and a subcontract workforce of a further 220 permanent contractors who can be engaged as and when conditions dictate. This flexibility enables the company to be keenly competitive while at the same time undertaking significant construction projects. Throughout the 1990s B&C grew strongly and, being a construction organization, had come to accept that it would always have its share of accidents and incidents, the cost of which were written into tender fees.

In 1994 the HSE issued The Construction (Design and Management) Regulations (CDM) and followed this up in 1996 with the Construction (Health, Safety and Welfare) Regulations, both now incorporated into the CDM Regulations 2007. The impact on B&C came following a breach of the CDM Regulations with the collapse of a tower crane while the company was undertaking work to modify a power plant. Although eventually no blame was apportioned to B&C, the company was now unable to give positive answers in potential client pre-qualification questionnaires that would enable it to undertake the more prestigious construction contracts, particularly within the railway industry.

This incident was the catalyst that led to the Safety Officer and Commercial Director reporting to the board that B&C could soon begin to
have difficulty in getting the work it wanted. Further, unless the company
demonstrably improved its OH&S reputation, its traditional customer base
could also be reduced.

**Implementing an OH&S management system**

B&C had never addressed the requirements of quality assurance or considered
what environmental impact its activities might have. With the acceptance that
the absence of a robust OH&S management system could ultimately lead to
the failure of the company, however, the board made a commitment to ensure
that B&C would meet these new demands being placed on organizations to
become accountable for their actions.

The initial decision was to appoint a manager with experience in
implementing management systems and to set a target for achieving
BS EN ISO 9001 compliance within a six-month time frame. In addition, the
newly appointed Quality Assurance Manager would assist the Safety Officer
in implementing the various elements of BS OHSAS 18001 and to begin meet-
ing the environmental management requirements of BS EN ISO 14001. A
timescale for achieving full compliance and certification to BS OHSAS 18001
would be decided after the findings of an initial status review were reported
and the extent of the work required could be quantified. A further and
more far-reaching decision was that B&C would move towards a fully inte-
grated OH&S quality and environmental management system as the most
cost-effective way forward in the longer term.

In 2007, B&C had to face the challenge of the new Construction (Design
and Management) Regulations, which came into force in April of that year.
Now they also have a more multilingual workforce as the European Union
market has opened up. Consequently, as well as ensuring the OH&S of its
workforce and implementation of the 2007 regulations, B&C also has to ensure
that its employees have a clear understanding of the process of implementation.
Introduction

YYIMT was formed in 1999 with a workforce of 12 operating from new offices situated in a business park. It uses the Internet to trade in a wide and unique range of exclusive and exotic handmade sweets, cakes and other specialist confectionery made by a network of small independent manufacturers located around the UK. Its business is based on providing specialist shops and chain stores with supplies of fresh products through an independent delivery service. In addition, it provides a mail order service to home-based customers with all marketing and ordering carried out on the Internet.

YYIMT takes on the marketing and distribution roles for the manufacturers and has no direct manufacturing or storage facilities. From the outset it recognized an overall need to comply with all relevant OH&S and environmental legislation and realized that, as a food distributor, quality assurance would also be of prime importance. More specifically, however, the evidence among some of its IT operators of repetitive strain injury (RSI) from past employment, together with the general strength of food hygiene and health and safety legislation, meant there was a clear need for robust OH&S arrangements.

In addition, more investors representing pension investment portfolios were insistent on only dealing with companies that were operating sound, ethical, environmental and health and safety policies. This source of investment was seen as being important to YYIMT in the future and the company needed to be able to demonstrate its commitment to OH&S.

Implementing an OH&S management system

YYIMT decided to prepare for compliance before the organization was actually trading. This was achieved by identifying which operations would be carried out within the office complex to keep the operation functioning, as well as identifying the specific activities of the trading side. In addition, YYIMT
wanted to ensure that it was trading with like-minded organizations and under-
took to employ an ethical trading policy using only suppliers and contractors
who were as equally committed as YYIMT. Consequently, it was looking for
its confectionery suppliers and delivery organizations to be working towards
compliance with BS OHSAS 18001 and the requirements of BS EN ISO 9001
and BS EN ISO 14001, if they did not already have them in place.

As YYIMT has evolved it has moved increasingly to operate a home-
working regime for its teleworkers. While this has brought about improvements
to the work–life balance, it has necessitated the need to ensure that home-
workers have a suitable working environment which is OH&S compliant.

Heave and Haul (H&H)

Introduction

H&H was created from a family road haulage company transporting cattle to
abattoirs. It now operates with a fleet of fixed and articulated wheelbase vehi-
cles from five main hubs across the UK. In addition, H&H provides a network
of local delivery services for a distribution-only wholesaler supplying perish-
able foodstuff. The core road haulage business operates across the boundaries
of the extended European Union and familiarity and understanding of local
and national health and safety issues is essential to the smooth running of
the operation. In the UK, maintaining a reliable and prompt delivery service
during predominantly unsociable hours presents an ever-present major risk
challenge to H&H. The company therefore recognized that an effective OH&S
management system was essential to its developing business.

Implementing an OH&S management system

To establish compliance with BS OHSAS 18001, H&H set up separate
task forces to deliver it in the two distinct arms of its business, using the
sound guidance given in BS 8800. A management group was also set up
to monitor consistency across the two task forces as well as establish the BS 8800 approach in the business support areas – garaging, administration, etc. Although certification to BS OHSAS 18001 was an option, the company recognized the need to take on the principles given in the annexes of BS 8800, particularly with respect to culture and accident investigation. The latter was seen as being of particular importance in an industry that is high risk.

H&H’s longer-term aim is for eventual integration with BS EN ISO 9001 and BS EN ISO 14001. H&H recognizes that to achieve and maintain compliance with BS 8800, it needs to ensure its business partners and suppliers are equally committed.

For H&H the 21st century has brought new hazards to its agriculture industry activity, with the need for biohazard controls to ensure the potential spread of infection or transmitted disease in agricultural herds is minimized.
Risk assessment and control
In brief

Risk assessment and control is at the core of effective OH&S management. The process used for risk assessment and control need not be complex and should reflect the type of hazards that exist in the workplace. For instance, there are usually very few hazards in an office environment while there may be many in a chemical or engineering environment. No matter what type of workplace, there is no requirement to address every hazard. The aim should be to identify those hazards that pose a significant risk and therefore need to be addressed rather than trying to eliminate all hazards – a task that is unlikely. It is impracticable to make a workplace totally safe and also be able use it.

The identification of hazards and risk assessment are regulatory requirements throughout Europe and much of the world. Risk assessment is fundamental to the successful application of any health and safety management system. In most instances the process is based on simple principles which can be summarized as follows:

1. Classify work activities.
2. Identify hazards.
3. Identify existing risk controls.
4. Determine risk.
5. Determine acceptability.
6. Prepare risk control action plan to improve risk control as necessary.
8. Ensure risk assessment and controls are effective and up to date.

Key elements – Risk assessment and control

Risk assessment is the fundamental element required for the successful implementation of an OH&S management system. It embodies the key principle of proactive management: identifying the hazard and controlling the risk
before harm occurs and/or damage is sustained to plant, equipment or other operational conditions. The process of identifying hazards, assessing risks and implementing and reviewing risk controls should be the basis of the whole OH&S management system. It is impracticable to make the workplace free of risk but the aim should be to identify and manage all foreseeable risks. In the UK, there is a legal duty on all employers and self-employed people to assess the risks arising from the hazards that result from their work activities. The main purpose of risk assessment is to decide whether existing or planned controls are adequate. This is a proactive process, i.e. controlling risks before harm (or damage) can occur. It is not a one-off exercise, as the measures taken will need to be reviewed from time to time depending on the gravity of the risk and extent of any changes to circumstances. Whenever there is to be any organizational or operational changes a risk assessment should be carried out before the changes are implemented. To ensure that the risk assessment process works, it is essential to involve the workforce and gain commitment to this proactive approach. Risk management should be equally about identifying positive opportunities as it is about avoiding damage or injury.

Risk assessment looks at the risks to which each person is exposed, whether employee, contractor, visitor or anyone else who might suffer harm, and arrives at a judgment as to whether each risk is:

1. acceptable – very low risk where no action is necessary; or
2. low, medium risk – risks in this category should be reduced so that they are acceptable or tolerable, where this is practicable;
3. unacceptable – something needs to be done right away to reduce it (in extreme cases this may involve stopping an activity until new methods or controls can be introduced).

BS 8800, E.1.4 states the following:

The overall purpose of risk assessment and control is to understand the hazards that might arise in the course of the organization’s activities and ensure that any risks to people arising from the hazards are acceptable or tolerable. This is achieved by:
Risk assessment and control

- identifying hazards and making an estimate of the associated risk levels, on the basis of existing or proposed risk controls;
- determining whether these risks are tolerable;
- determining whether further analysis is required to establish whether the risks are, or are not, tolerable, for example noise levels might need to be measured to determine the more exact risk of hearing damage;
- devising improved risk controls where these are found to be necessary.

Risk assessment can also be used to make a systematic comparison of different risk control/reduction options. It aids the organization to prioritize any resulting actions to reduce risk.

It is important that the purpose of risk assessment remains clear in the minds of everyone involved in the process in order to avoid unnecessary work, which is not only wasteful but which might even obscure risks that require urgent attention.

Good judgment, rather than a mechanistic approach, must always be used in assessing a risk. The level of risk attached to almost any action is dependent on whether the relevant controls and safeguards are in place.

Of all the elements of a successful OH&S system, the terminology and understanding is least clear for risk assessment. Similar terminology can apply to the same definition and the difference between the terms ‘hazard’ and ‘risk’ is frequently misunderstood. BS OHSAS 18001 specifically defines the key terms:

**hazard**

source, situation, or act with a potential for harm in terms of human injury or ill health, or a combination of these

**hazard identification**

process of recognizing that a hazard exists and defining its characteristics

**acceptable risk**

risk that has been reduced to a level that can be tolerated by the organization having regard to its legal obligations and its own OH&S policy
risk
combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health that can be caused by the event or exposure(s)

risk assessment
process of evaluating the risk(s) arising from a hazard(s), taking into account the adequacy of any existing controls, and deciding whether or not the risk(s) is acceptable

Definitions of ‘risk controls’, ‘risk control systems’, ‘unacceptable risk’, and ‘acceptable risk’ are provided within BS 8800.

BS OHSAS 18001, 4.3.1 specifies that the methodology used shall:

a) be defined with respect to its scope, nature and timing to ensure it is proactive rather than reactive; and
b) provide for the identification, prioritization and documentation of risks, and the application of controls, as appropriate.

For the management of change, the organization shall identify the OH&S hazards and OH&S risks associated with changes in the organization, the OH&S management system, or its activities, prior to the introduction of such changes.

The success of any risk assessment process is based on a systematic approach being taken. Only then can effective control measures be identified.

Systematic risk assessment and control

This section addresses the fundamentals of managing risk. In order to do this it is necessary to systematically identify the hazards that are created, assess the risks and establish what controls (if any) need to be implemented to reduce the risk of harm to an acceptable level. The process needs to be systematic and consistently applied, considering all the areas, activities and processes undertaken, in order to avoid missing potential sources of harm.
All organizations differ and the risk assessment process used, whilst having the same eventual aim, will vary from organization to organization. In large, complex operations, the risk assessment may appear complex; in the office environment, the process can be simpler. They will normally be expressed in the form of a documented procedure, although BS 8800, E.1.3 states the following in relation to different risk assessment processes:

Not all of these will necessarily be documented, since there is often a case for managers and employees being trained to make a judgement before work begins or as a response to changing circumstances as to whether there are appropriate risk controls in place. This process is often referred to as dynamic risk assessment.

At the other extreme, there are some systematic documented methods which are complex, and appropriate only to the special circumstances of major hazard activities. For example, risk assessment of a chemical process plant might require complex mathematical calculations of the probabilities of events leading to major release of agents that might affect employees, contractors and others in the workplace, or the public. In many countries, sector-specific legislation specifies where this degree of complexity is required.

The process of risk assessment is based on making a judgment. This often frightens the untrained and inexperienced. The HSE in the UK provides extensive information and guidance to support organizations in their judgment process. The following approach is mainly based on that given in BS 8800 and can be seen as a stepwise, logical approach. There is no right or wrong way and the following methodology is seen as one that any organization can embrace.

1. **Classify work activities**
   List the work activities (including those covering premises, plant, people and procedures) and gather information about them, from start to finish, to include the people they cover, and how they work. The process of classifying work activities should include staff consultation where necessary, as it is often the case that a work activity is carried out differently in practice than it is in theory. It is important that the process includes not only employees
but also contractors, visitors and anyone else who might be harmed by the activities of the organization. This does not mean that every person needs to be considered individually. If there are 50 people working in a department, all doing the same thing on identical equipment and under the same conditions, e.g. in a call centre, the hazards are very likely to be the same and one assessment can cover the whole group. Care would, however, need to be taken where, for example, the group includes a new starter who has not been fully trained or someone who has a disability that might put them at greater risk if the premises have to be evacuated.

2. **Identify hazards**

Identify all significant hazards relating to each work activity, e.g. trapping, slipping, exposure to noise, inhalation of toxic fumes, etc. Consider who might be harmed and how in relation to the hazard controls that are in place. For each person, or group of people, the key questions to ask are: What could go wrong that could cause injury or damage? Who might be harmed and how? There are hazards in every workplace that will apply to everyone working there as well as visitors and contractors etc., in addition to specific hazards relating to each work activity. A prompt-list of questions relating to hazards is provided on pages 118–119.

3. **Identify existing risk controls**

Identify the risk controls that exist (or are proposed for planned activities), in order to reduce the risk associated with each hazard. These should be based on the principles of prevention through elimination, substitution, reduction, engineering and, as a final resort, the use of personal protective equipment (PPE) (in that order). Under some conditions, e.g. emergency maintenance, it may be necessary to use a combination of engineering controls and PPE.

4. **Determine the risk**

Make a subjective estimate of risk associated with each hazard, assuming that planned or existing controls are in place. The assessment should consider the effectiveness of the controls and the consequences of their failure. The style of the assessment should be chosen to best suit the organization and the hazard being assessed. Some organizations use a numerical process for risk assessment; others use descriptive categories
such as ‘highly unlikely’ or ‘very probable’. Whichever method is chosen, the aim is to assess the overall risk as being acceptable, minor or serious. Provide a written record where risks are determined to be significant. Defining ‘significant’ is often difficult. As a rule of thumb, if it takes longer to record a risk assessment than to complete the overall task then the risk is probably not ‘significant’ and does not need to be recorded.

5. **Determine acceptability**
   Decide if the risk is acceptable/tolerable, i.e. that it has been reduced to the lowest level that is reasonably practicable. Judge whether planned or existing OH&S precautions and control measures are sufficient to keep the hazard under control. In order to be able to assess the acceptability of any particular risk, the organization should establish criteria to provide a basis for consistency in all its risk assessments. See BS 8800, E.3.6.

6. **Prepare a risk control action plan**
   Deal with any issues that were found by the risk assessment to require attention. Organizations should ensure that new and existing controls remain in place, are effective, are communicated and, where necessary, are recorded. It should be recognized that in some cases, further control measures may not be required.

7. **Review the adequacy of the action plan**
   Reassess risks on the basis of the revised controls and check whether risks will be acceptable. This should be done on completion of the plan and periodically during the implementation process until completion. A final review on full implementation should be carried out to ensure suitability and good fit.

8. **Maintenance**
   As with the other steps in the process, this review should be documented and repeated periodically to ensure that the controls remain effective. The frequency of the review will be dependent on the risk – the higher the risk, the more frequent the review process. In most circumstances an annual review is recommended. Update and review risk assessments as necessary in order to maintain their validity.

The following checklist identifies the main steps in a risk assessment. A tick box is provided for identifying those procedures that are already in place (1) and those which need to be introduced (2).
### CHECKLIST: Risk assessment in the organization

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In practice – Risk assessment and control

In terms of risk assessment and control, the six case study organizations have a very similar approach to OH&S management because all of them need to adopt a risk assessment and control system in order to be effective.

The following publications, available from the HSE, provide advice on risk assessment that is applicable to all types of organization:

- The Health and Safety at Work etc. Act 1974, Section 2(2)(b) and Section 6;
- The Management of Health and Safety at Work Regulations 1999;
- INDG163 (rev2), *Five steps to risk assessment*;

There are some risks that affect most organizations. Some examples of these are listed as follows.

a) The reception, clerical and office support environment:
   - office chemicals (cleaning solutions) and IT equipment emissions, e.g. from printers, photocopiers;
   - electricity and electrical equipment;
   - display screen equipment;
• fire and emergencies;
• first aid provision;
• housekeeping and tidiness;
• visiting contractors and the work they undertake;
• manual handling;
• sources of stress, e.g. workload patterns.

b) The structure (all locations, offices, workshops, yards, etc.):
• contractor management, e.g. cleaning windows, servicing heating systems, major repairs and building works;
• workplace condition monitoring and maintenance – welfare facilities;
• security of personnel;
• asbestos and other hazardous materials;
• flammable materials;
• traffic routes;
• space availability;
• lighting levels;
• storage arrangements;
• heating and temperature control (hot and cold);
• site hazards from external sources, e.g. hypodermic needles;
• biological hazards.

c) The processes:
• use of plant and equipment;
• driving;
• planned preventive maintenance and repair;
• emergency maintenance and repair;
• process emissions and body/eye contacts, e.g. dust, fumes, gases, vapours, fibres, mists, liquids, etc.;
• working at height;
• falling objects;
• control measure management;
• electricity;
• ionizing radiation;
• vibration;
• non-ionizing radiation;
• working outdoors – weather effects, e.g. sunburn;
• biological, e.g. contact with rodents, faeces.

The examples described are not exhaustive. Although these key areas will apply in full or in part to every organization, those dealing with highly specialized risks resulting from major hazards like ionizing radiation will need to include these in their risk assessment.

Compliance with specific regulations should be prioritized according to the demands of the business. In the UK, the application of The Management of Health and Safety at Work Regulations 1999, The Electricity at Work Regulations 1989 and The Workplace (Health, Safety and Welfare) Regulations 1992 will assume significant priority in each of the case study organizations, although the risks and the controls that apply have a universal application throughout the world.

In detail – Risk assessment

1. Classify work activities
2. Identify hazards
3. Identify existing risk controls
4. Determine risk
5. Determine tolerability
6. Prepare risk control action plan to improve risk control, as necessary
7. Review adequacy of action plan – confirm risk acceptability/tolerability
8. Ensure risk assessment and controls are effective and up to date

The process of effective risk assessment

Organizations should tailor the approach described here to their own needs, taking into account the nature of their work and the seriousness and complexity
of the risks that are present. The full eight-point procedure is not necessary if a preliminary study shows either that the risks are trivial or that the risk controls already in place conform to well-established legal requirements and standards, are appropriate for the task and are understood and used by those involved.

An integrated approach to OH&S risk assessment can be more effective than carrying out separate assessments for, say, health hazards, manual handling hazards, machinery hazards and so on. Not only can separate assessments lead to needless duplication but ranking risk control priorities becomes more difficult if different methods are used.

It is also possible to extend this approach to other management disciplines such as quality assurance, environment, food safety and security. This enables a more encompassing, integrated approach to be adopted for the management system and day-to-day operation of the organization and its activities.

Who carries out the risk assessment?

The skill levels of those assessing the risk and the depth of the programme of risk assessment should reflect the needs of the organization. An office environment is comparatively a much safer place to work than a building site and the assessment should reflect the situation accordingly. In a high risk industry, the assessment of risks is a specialist subject in its own right.

The assessment process should only be undertaken by those persons competent and trained to do so. Knowledge of the process and the risk assessment methodology is essential and a team approach can often be beneficial. Specialist expertise may be required using external resources. The contributory approach requires all of the organization’s stakeholders, staff, managers and employee representatives to agree on the most effective way forward. This allows the OH&S procedures:

- to be based on shared perceptions of hazards and risks;
- to be necessary and workable;
- to succeed in preventing harm.
The joint ownership approach can then become part of the overall positive health and safety culture that the organization should be striving to achieve.

**Risk assessment requirements**

The following checklist shows the requirements necessary for a comprehensive risk assessment programme. A tick box is provided for identifying those procedures/actions that are already in place (1) and those that need to be introduced (2).

**CHECKLIST: Requirements for a risk assessment programme**

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<td>Appoint a senior member of the organization to promote and manage the process.</td>
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<td>Determine training needs for risk assessment personnel/teams and implement a suitable training programme.</td>
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<td>Consult everyone involved; discuss what is planned to be done, obtain their contributions and enable commitment.</td>
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<td>Agree the risk assessment process and methodology, including review and approval processes.</td>
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<td>Design a simple pro-forma (or use a commercially available version) to record the findings of an assessment appropriate to the organization and the risks involved, including details of the work activity; hazard(s); controls in place; personnel at risk; likelihood of harm; severity of harm; risk levels; action to be taken following the assessment and administrative details, e.g. name of assessor, date of review.</td>
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<td>Prepare a delivery plan, addressing significant and high risks as a priority.</td>
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<td>Review the adequacy of risk assessment: determine whether the assessment is ‘suitable and sufficient’ – that is to say, adequately detailed and rigorous.</td>
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<td>Document administrative details and significant findings of the assessment in hard copy or electronic form.</td>
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<td>Initiate the risk assessment review process periodically, for process change and to ensure that it is suitable.</td>
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The process of risk assessment

Stage 1. Classifying work activities

To make the list of activities manageable, the list items should be grouped in a convenient way, e.g. according to:

- a) geographical areas within/outside the organization’s premises;
- b) stages in a production process, or in the provision of a service;
- c) planned work, e.g. different operational stages of the process;
- d) reactive work, i.e. work carried out in response to an unplanned event;
- e) defined tasks, e.g. driving, window cleaning;
- f) any change in the management or organization;
- g) various identified working groups, e.g. employees, contractors;
- h) plant operation and maintenance works;
- i) tasks being carried out by contractors.

The following list, though not exhaustive, gives examples of the information required for each work activity. It can be used to prepare a pro-forma checklist tailored to the specific needs of the organization.

1. Tasks being carried out:
   - a. duration;
   - b. frequency;
   - c. external weather condition – wet, cold, hot.
2. Location(s) where the work is carried out.
3. Proximity to and scope of hazardous interaction with other workplace activities, i.e. how one process risk could affect another.
4. Who normally/occasionally carries out the tasks, e.g. operators, maintenance staff.
5. Others who may be affected by the work, e.g. maintenance staff, visitors, contractors, the public, neighbouring organizations.
6. Training that personnel have received in relation to their tasks.
7. Written, safe systems of work and/or permit-to-work procedures prepared for the tasks.
8. Plant, machinery and equipment that is used, e.g. suitability, ease of use.
9. Maintenance, condition, calibration and test condition of plant, machinery and equipment used.
10. Training for plant, equipment and tooling operators.
11. Powered hand tools that are used, e.g. company owned, privately owned.
12. Manufacturers’ or suppliers’ instructions for operation and maintenance of equipment, plant, machinery and powered hand tools.
13. Size, shape, surface character condition, e.g. sharpness of edges, temperature and weight (including centre of gravity) of materials that will be handled.
14. Physical capabilities of personnel to undertake tasks.
15. Distances and heights that materials have to be moved by hand (including accessibility to loads and environment of transfers).
16. Services used, e.g. electricity, compressed air, gas.
17. Substances used or encountered, e.g. created or given off during a process.
18. Physical form of substances used or encountered (fibre, fume, gas, vapour, liquid, dust/powder, solid).
19. Content and recommendations of safety data sheets relating to substances used or encountered (or formed during a process).
20. Requirements of relevant acts, regulations and standards relevant to the work being done, the plant and machinery used and the substances used or generated during the task.
21. Control measures believed to be in place (and actually in place).
22. Reactive monitoring data – incident, accident and ill health experience associated with the work being done and equipment and substances used, gained as a result of information from within and outside the organization.
23. Findings of any existing assessments relating to the work activity.
24. Other available information, benchmarks, regulatory guidance, professional bodies.
Stage 2. Identifying hazards

There are three key questions in identifying hazards associated with any work activity:

1. Is there a source of harm?
2. Who (or what) could be harmed?
3. How could harm occur?

There are different approaches that can be used to help identify hazards, two of which are given as follows.

Categorizing hazards into broad categories

Here is an example of categorizing hazards by topic:

- mechanical/physical (machinery, plant and equipment);
- electrical (shock, fire);
- substances (chemicals, emissions);
- fire (emergency evacuation, fire fighting equipment);
- explosion (gas, chemical, acts of terrorism);
- temperature/climate (internal/external hot and cold, high humidity);
- radiation (ionizing and non-ionizing, e.g. microwaves);
- biological;
- psychological (stress, work pressures).

Developing a prompt-list of questions

The following example of a hazard prompt-list is not exhaustive and is intended as a starting point for organizations to build up their own list.
During work activities could the following hazard/s exist?

- slips/falls on the level;
- falls of persons from heights;
- falls of tools, materials, etc., from heights;
- inadequate headroom;
- hazards associated with manual lifting/handling of tools, materials, etc.;
- hazards from plant and machinery associated with assembly, commissioning, operation, maintenance, modification, repair or dismantling;
- vehicle hazards, covering both site transport and travel by road (affecting personnel and other vehicles);
- fire, explosion and natural disasters, e.g. earthquakes;
- substances that may be inhaled;
- substances or agents that may damage the eye;
- substances that may cause harm by coming into contact with, or being absorbed by the skin;
- substances that may cause harm by being ingested, i.e. entering the body via the mouth;
- substances that may be injected by a needle or under pressure through broken skin;
- harmful energies, e.g. electricity, noise, vibration;
- radiation – radioactive sources, non-ionizing radiation, sunlight exposure;
- work-related upper limb disorders resulting from frequently repeated tasks;
- inadequate thermal environment, e.g. too hot, too cold, extreme variations in temperature;
- lighting levels (adequacy for tasks or emergencies);
- slippery, uneven ground/surfaces;
- inadequate guard rails or hand rails on stairs;
- contractors’ activities;
- violence to staff;
- terrorist activity.
A useful way of gaining the commitment of the workforce as well as ensuring that issues are not overlooked is to involve employees in identifying hazards. This will lead to information on how a task is actually carried out rather than how it should be done. It should be remembered that the OH&S management system is designed to help the employees and the organization and to establish a workplace where the risk of harm is minimized.

**Stage 3. Identify existing risk controls**

It is important to establish what controls are in place and how effective they are. The controls may be barriers, light curtains, safe systems of work, lock-out or tag-out procedures, warnings, etc. The evaluation needs to ascertain whether these measures are operating and whether it is possible to improve on them.

**Stage 4. Determining risk**

The risk from the hazard should be determined by assessing:

- the potential severity of harm; and
- the likelihood that harm will occur.

The assessment can be subjective; it is not essential to assign a numerical value. What is important is that the process enables a sound judgment to be made as to the comparative risk level of different hazards.

It is generally not necessary to make precise numerical calculations of the risks identified. Complex methods for quantified risk assessment are available and are in regular use in those industries where the consequence of failure could be catastrophic, for example nuclear installations. For most organizations, however, much simpler subjective methods are appropriate.
Potential severity of harm

When establishing potential severity of harm, information about the relevant work activity should be considered, together with:

a) part(s) of the body likely to be affected;
b) nature of the harm, ranging from slight to extremely harmful:
   1. slightly harmful, e.g.:
      - superficial injuries; minor cuts and bruises; eye irritation from dust;
      - nuisance and irritation; ill health leading to temporary discomfort;
   2. harmful, e.g.:
      - lacerations; burns; concussion; serious sprains; minor fractures;
      - deafness; dermatitis; asthma; work-related upper limb disorders;
      - ill health;
   3. extremely harmful, e.g.:
      - amputations; major fractures; poisonings; multiple injuries; fatal injuries;
      - occupational cancer; other severely life shortening diseases; acute fatal diseases.

Assigning harm categories will be based on previous experience, the task involved and the overall requirements of the organization. The following table, taken from BS 8800, Annex E, provides examples of harm categories. It emphasizes the ill health aspect with good reason. The number of people per year in the UK dying from ill health arising from exposure to asbestos many years ago, is some 10 times more than those killed in accidents at work. The table can be used as a model and extended to cover groups affected, e.g. contractors, visitors and members of the public. It can also include a welfare category.
Examples of harm categories

<table>
<thead>
<tr>
<th>Harm category(^a) (examples)</th>
<th>Slight harm</th>
<th>Moderate harm</th>
<th>Extreme harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Nuisance and irritation (e.g. headaches); temporary ill health leading to discomfort (e.g. diarrhoea).</td>
<td>Partial hearing loss; dermatitis; asthma; work related upper limb disorders; ill health leading to permanent minor disability.</td>
<td>Acute fatal diseases; severe life shortening diseases; permanent substantial disability.</td>
</tr>
<tr>
<td>Safety</td>
<td>Superficial injuries; minor cuts and bruises; eye irritation from dust.</td>
<td>Lacerations; burns; concussion; serious sprains; minor fractures.</td>
<td>Fatal injuries; amputations; multiple injuries; major fractures.</td>
</tr>
</tbody>
</table>

\(^a\) The health and safety harm categories are effectively defined by quoting examples and these lists are not exhaustive.

Likelihood of harm

When establishing the likelihood of harm, the existing risk controls need to be considered. For specific hazards the legal requirements, codes of practice and guidance from manufacturers/suppliers, etc. are helpful in the assessment. Information may also be available on the number of previous incidents. Further factors to consider are:

a) number of personnel exposed;
b) frequency and duration of exposure to the hazard;
c) failure of services, e.g. electricity and water;
d) failure of plant and machinery components and safety devices;
e) exposure to the elements;
f) protection afforded by personal protective equipment and usage rate of personal protective equipment;

g) unsafe acts (unintended errors or intentional violations of procedures) by persons, for example who:
   1. may not know what the hazards are;
   2. may not have the knowledge, physical capacity, or skills to do the work;
   3. underestimate risks to which they are exposed;
   4. underestimate the practicality and usefulness of safe working methods;
   5. indulge in horseplay;
   6. take short cuts to complete tasks.

It is important to take into account the consequences of all unplanned events. As with the severity of harm, the process of assigning and categorizing likelihood of harm will be designed to meet the organization’s needs and the method of doing this is down to each individual organization to decide upon. The following table, from BS 8800, Annex E, provides examples of categories for likelihood of harm, scaled so that the difference between each level alters by a factor of 10. The examples provided in this table can be helpful for maintaining consistency but again, judgment and common sense must be applied. Mechanical assessment must be avoided.

**Examples of categories for likelihood of harm**

<table>
<thead>
<tr>
<th>Categories for likelihood of harm</th>
<th>Very likely</th>
<th>Likely</th>
<th>Unlikely</th>
<th>Very unlikely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical occurrence</td>
<td>Typically experienced at least once every six months by an individual</td>
<td>Typically experienced once every five years by an individual</td>
<td>Typically experienced once during the working lifetime of an individual</td>
<td>Less than 1% chance of being experienced by an individual during their working lifetime</td>
</tr>
</tbody>
</table>
Stage 5. Deciding if the risk is acceptable

The following table, taken from BS 8800, Annex E, shows one simple method for estimating risk levels and for deciding whether risks are acceptable, i.e. whether the risk has been reduced to the lowest level that is reasonably practicable. In this table, risks are classified according to their estimated likelihood and potential severity of harm. Some organizations may wish to develop more sophisticated approaches, for instance by assigning values instead of terms, although this would not confer any greater accuracy to the estimates.

The matrix shown in the following table is just one approach to assessing risk. The organization can obviously choose a matrix that is larger than this and more accurately reflects the risks associated with its overall activities. Care should, however, be exercised, as a large matrix of, say, 10-by-10 does not imply greater accuracy or greater ability to discriminate between different risks. The approach taken in the table is subjective and, for those organizations with high risks, may be a useful tool in identifying risks that need more careful analytical investigation using sophisticated risk techniques.

A simple risk estimator

<table>
<thead>
<tr>
<th>Likelihood of harm (see table on page 123)</th>
<th>Severity of harm</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slight harm</td>
<td>Moderate harm</td>
<td>Extreme harm</td>
<td></td>
</tr>
<tr>
<td>Very unlikely</td>
<td>Very low risk</td>
<td>Very low risk</td>
<td>High risk</td>
<td></td>
</tr>
<tr>
<td>Unlikely</td>
<td>Very low risk</td>
<td>Medium risk</td>
<td>Very high risk</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>Low risk</td>
<td>High risk</td>
<td>Very high risk</td>
<td></td>
</tr>
<tr>
<td>Very likely</td>
<td>Low risk</td>
<td>Very high risk</td>
<td>Very high risk</td>
<td></td>
</tr>
</tbody>
</table>

NOTE These categorizations and the resulting asymmetry of the matrix arise from the examples of harm and likelihood illustrated within this British Standard. Organizations should adjust the design and size of the matrix to suit their needs.
Stage 6. Preparing a risk control action plan

The following table, taken from BS 8800, Annex E, provides a means of establishing a ranking order for risks in the workplace. The aim is to produce an inventory of actions in order of priority. Because the process of ranking is subjective, it is often best for a number of people to be involved in order to ensure the final judgment reflects a balanced view.

This table provides a starting point for deciding the action that should be taken in response to the findings of the risk assessment.

A simple risk-based control plan

<table>
<thead>
<tr>
<th>Risk level</th>
<th>Tolerability: Guidance on necessary action and timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>These risks are considered acceptable. No further action is necessary other than to ensure that the controls are maintained.</td>
</tr>
<tr>
<td>Low</td>
<td>No additional controls are required unless they can be implemented at very low cost (in terms of time, money and effort). Actions to further reduce these risks are assigned low priority. Arrangements should be made to ensure that the controls are maintained.</td>
</tr>
<tr>
<td>Medium</td>
<td>Consideration should be given as to whether the risks can be lowered, where applicable, to a tolerable level, and preferably to an acceptable level, but the costs of additional risk reduction measures should be taken into account. The risk reduction measures should be implemented within a defined time period. Arrangements should be made to ensure that the controls are maintained, particularly if the risk levels are associated with harmful consequences.</td>
</tr>
<tr>
<td>High</td>
<td>Substantial efforts should be made to reduce the risk. Risk reduction measures should be implemented urgently within a defined time period and it might be necessary to consider suspending or restricting the activity, or to apply interim risk control measures, until this has been completed. Considerable resources might have to be allocated to additional control measures. Arrangements should be made to ensure that the controls are maintained, particularly if the risk levels are associated with extremely harmful consequences and very harmful consequences.</td>
</tr>
</tbody>
</table>
Very high

These risks are unacceptable. Substantial improvements in risk controls are necessary, so that the risk is reduced to a tolerable or acceptable level. The work activity should be halted until risk controls are implemented that reduces the risk so that it is no longer very high. If it is not possible to reduce risk the work should remain prohibited.

NOTE Where the risk is associated with extremely harmful consequences, further assessment is necessary to increase confidence in the actual likelihood of harm.

The next step is to determine what controls need to be put in place for those risks that are not acceptable, taking into account the following:

a) eliminating hazards altogether, if possible, or combating risks at source;

b) substitution, e.g. using a safer substance instead of a dangerous one;

c) if elimination is not possible in trying to reduce the risk, for example by using a low voltage electrical appliance, remote operation from enclosures, or use of refuges to isolate the worker from the hazard rather than relying on PPE;

d) where possible, adapting work to the individual, for example to take account of individual mental and physical capabilities;

e) taking advantage of technical progress to improve controls, for example, by using robotics;

f) use of measures that protect everyone, e.g. having restricted entry areas and using authorized pass mechanisms;

g) using a blend of engineering, technical and procedural controls;

h) introducing planned maintenance such as regular extraction system inspection and maintenance;

i) adopting appropriate PPE, only as a last resort after all other control options have been considered or as a short-term contingency during maintenance or repair;

j) installing emergency arrangements such as alarm systems and back-up controls;

k) adopting proactive measurement indicators to monitor compliance with the controls.
Consideration needs to be given to the development of emergency and evacuation plans, and provision of emergency response equipment relevant to the organization’s hazards.

The hierarchy should always be to eliminate; remove by substitution; isolate a hazard; control by engineering means and, as a last resort, use appropriate PPE. Sometimes a combination of these measures can be necessary, e.g. in maintenance or emergency situations.

**Stage 7. Reviewing adequacy of action plan**

Before implementing the new controls, it is important to review the consequences of the proposed action. It is not uncommon to find that there may be new hazards arising from the controls:

- Will the revised controls lead to acceptable risk levels?
- Have new hazards been created?
- Has the most cost-effective solution been chosen?
- What do operators think of the practicality of the preventive measures?
- Will the revised controls be used in practice and not ignored in the face of, e.g. pressures to get the job done?
- How will the revised controls be affected if changes occur to, e.g. plant and machinery, production methods, or the layout of buildings and services?

**Stage 8. Ensure risk assessments and controls are effective**

A written record should be made where risks are significant. Where action needs to be taken, a record should be kept of the risk assessment and the controls installed. A review date should be included to ensure the corrective measures are reviewed with respect to their effectiveness.
Sample risk assessment form (blank)

<table>
<thead>
<tr>
<th>Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Site/activity:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazards identified</th>
<th>Persons and/or numbers at risk</th>
<th>Severity of harm</th>
<th>Likelihood of harm</th>
<th>Current control measures</th>
<th>Risk rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Please note that serious hazards or conditions of imminent danger must be supported with documented safe systems of work, health and safety plans, etc.)</td>
<td>(indicate numbers or tick where numbers vary)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employees</th>
<th>Contractors</th>
<th>Visitors</th>
<th>Others (specify)</th>
<th>Extreme harm</th>
<th>Moderate harm</th>
<th>Slight harm</th>
<th>Very likely</th>
<th>Likely</th>
<th>Unlikely</th>
<th>Very unlikely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

NOTES:

Assessor name(s): Date: Latest review date:
### Sample Risk Assessment Form (Completed)

<table>
<thead>
<tr>
<th>Location: Any Town</th>
<th>Work Site/activity: Room 101</th>
</tr>
</thead>
</table>

**Hazards Identified**

(Please note that serious hazards or conditions of imminent danger must be supported with documented safe systems of work, health and safety plans, etc.)

**Persons and/or numbers at risk** (indicate numbers or tick where numbers vary)

<table>
<thead>
<tr>
<th>Others (specify)</th>
<th>Visitors</th>
<th>Contractors</th>
<th>Employees</th>
</tr>
</thead>
</table>

**Severity of harm**

- Slight harm
- Moderate harm
- Extreme harm

**Likelihood of harm**

- Very unlikely
- Unlikely
- Likely
- Very likely

**Current control measures**

- Electrical equipment and building wiring tested in accordance with company procedures. Inspection records provided for equipment and electrical condition status of the building. Only persons trained, competent and authorized are allowed to work on or with electrical equipment systems.

**Risk rating**

- Very low
- Low
- High
- Very high

**Sample Risk Assessment Form (Blank)**

<table>
<thead>
<tr>
<th>Location:</th>
<th>Work Site/activity:</th>
</tr>
</thead>
</table>

**Hazards identified**

(Please note that serious hazards or conditions of imminent danger must be supported with documented safe systems of work, health and safety plans, etc.)

**Persons and/or numbers at risk** (indicate numbers or tick where numbers vary)

<table>
<thead>
<tr>
<th>Employees</th>
<th>Contractors</th>
<th>Visitors</th>
<th>Others (specify)</th>
</tr>
</thead>
</table>

**Severity of harm**

- Slight harm
- Moderate harm
- Extreme harm

**Likelihood of harm**

- Very unlikely
- Unlikely
- Likely
- Very likely

**Current control measures**

**Risk rating**

- Very low
- Low
- High
- Very high
Sample risk assessment form (completed)

<table>
<thead>
<tr>
<th>Location: Any Town</th>
<th>Work Site/activity: Room 101</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazard:</strong> Fire: burns, asphyxiation</td>
<td><strong>Persons and/or numbers at risk:</strong></td>
</tr>
<tr>
<td></td>
<td>Employees</td>
</tr>
</tbody>
</table>

Note: Other affected by the risk of fire, in addition to employees, contractors, and visitors, are neighbors.
Sample risk assessment form (completed)

<table>
<thead>
<tr>
<th>Location: Any Town</th>
<th>Work Site/activity: Room 101</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazards identified</strong>&lt;br&gt;(Please note that serious hazards or conditions of imminent danger must be supported with documented safe systems of work, health and safety plans, etc.)</td>
<td><strong>Persons and/or numbers at risk</strong>&lt;br&gt;(indicate numbers or tick where numbers vary)</td>
</tr>
<tr>
<td></td>
<td>Employees</td>
</tr>
<tr>
<td><strong>Slips and trips</strong></td>
<td>✓</td>
</tr>
<tr>
<td><strong>Current control measures</strong></td>
<td>Floor surfaces kept dry and spillages cleaned up as they arise. Damaged carpet and other surfaces replaced or made safe. Cables and leads kept out of way of walking routes or protected with cable covers. Office housekeeping procedures apply.</td>
</tr>
<tr>
<td><strong>Risk rating</strong></td>
<td>Very high</td>
</tr>
</tbody>
</table>

NOTES: Others affected by the risk of fire, in addition to employees, contractors and visitors, are neighbours.

Assessor name(s): A.N. Other  Date: 10/11/2004  Latest review date:
## Sample risk assessment form completed after implementation of revised control measures

<table>
<thead>
<tr>
<th>Location: Any Town</th>
<th>Date: 01/01/2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Site/activity: Room 101</td>
<td>Reference: AB 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazards identified (Please note that serious hazards or conditions of imminent danger must be supported with documented safe systems of work, health and safety plans, etc.)</th>
<th>Persons and/or numbers at risk (indicate numbers or tick where numbers vary)</th>
<th>Severity of harm</th>
<th>Revised control measures (implemented in addition to current control measures)</th>
<th>Revised likelihood of harm</th>
<th>Revised risk rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity: electric shock, burns</td>
<td>✓ ✓ ✓</td>
<td>✓</td>
<td>New electrical equipment included on the location inventory and allocated an inspection date. Routine visual inspection of electrical equipment and service supplies initiated.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Fire: burns, asphyxiation</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td>Fire alarms fitted. Changes to layouts and/or building fabric made after review of fire risk assessment.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Slips and trips</td>
<td>✓ ✓ ✓</td>
<td></td>
<td>Maintain through regular housekeeping management.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Assessor (print name):</td>
<td></td>
<td></td>
<td>Approved by (print name):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Sample risk assessment action plan (completed)

<table>
<thead>
<tr>
<th>Activity/situation hazard</th>
<th>Action required</th>
<th>Action date</th>
<th>Action by (name)</th>
<th>Completed by (name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Staff instructed to visually inspect electrical equipment and leads, prior to use, for signs of damage, wear and tear.</td>
<td>1/12/04</td>
<td>Section supervisors</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Slips, trips and falls</td>
<td>Clean-up notices posted adjacent to drink dispensing machines.</td>
<td>1/12/04</td>
<td>Canteen supervisor</td>
<td>1/12/04</td>
</tr>
</tbody>
</table>

Name of assessor (print name): 
Assessor’s signature: 
Approved by (print name): 
Approver’s signature: 
Date of assessment: 
Assessment review due (date):
Documenting a risk assessment

The way risk assessments are recorded is entirely a matter of choice for the organization. There is a need to identify the site, work area, activity, hazard, those at risk, worst case scenario with respect to harm and the likelihood of harm occurring with the calculated risk rating.

The control measures also need to be identified. The names of those who carried out the assessment should be recorded, preferably along with a date and signature, together with a recommended review date (per risk, if necessary).

A simple example of a blank form is given on the next page. This is followed by a completed version and a further example of a completed form after revised control measures have been implemented, together with an action plan pro-forma.