

Making a difference

A basic guide to environmental management for OSH practitioners



direction

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IOSH publishes a two-tier range of free technical guidance. Our guidance literature is designed to support and inform members and motivate and influence health and safety stakeholders.

Direct info

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Direction

Strategic corporate guidance on health and safety issues.

Revised February 2011

Making a difference – a basic guide to environmental management for OSH practitioners

This guidance document is a contribution to good practice in health, safety and environmental management, corporate responsibility and sustainable development. The document aims to provide advice and information on this topic to members of IOSH, their employers and other interested parties.

IOSH guidance aims to inform members and others with an active interest in occupational safety and health and the environment. It is developed by groups of members, in consultation as appropriate, to make sure that at the time of publication it represents best practice and current thinking on the topics concerned.

IOSH guidance is designed for use in a variety of ways. However, the ultimate aims are:

- to guide IOSH members and others in working together to prevent work-related accidents, ill health and environmental harm
- to assist trainers and educators to include reference to relevant standards and best practice in their curricula.

Most IOSH members are UK based, but many – including members in Hong Kong, the Republic of Ireland, Caribbean, Middle East and elsewhere – advise organisations with non-UK interests. As far as possible, guidance is developed so as to be applicable to all.

Making a difference can be downloaded from www.iosh.co.uk/enviromgmt.

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1 The role of OSH practitioners in environmental management

Historical perspective

In 1992, at the UN 'Earth Summit' in Rio de Janeiro, 150 countries agreed on the need to follow four fundamental principles:

- pursue sustainable development
- curb the risk of global climate change by reducing carbon dioxide and other 'greenhouse gas' emissions
- protect the diversity of species and habitats
- manage the conservation and sustainable development of the world's forests.

The Earth Summit confirmed the place of environmental issues in the context of sustainable development (the process of moving towards sustainability), and helped to develop environmental management as a policy issue and a business activity. Even so, it is widely believed that the need for universal implementation of the principles above has become even more pressing. Effective environmental management is now vitally important to society in general and to many organisations in particular, and often OSH practitioners have an active role.

The widespread application of environmental management began to take off in the mid-1990s with the UK's groundbreaking 'BS 7750' standard. The EU's Eco-Management and Audit Scheme (EMAS)¹ soon followed, but the ISO 14001² standard has gone on to have by far the biggest impact. The uptake of these standards – and ISO 14001 in particular – within various business sectors means that environmental management has become a widely established professional activity. In addition, 'risk to business' reporting requirements such as the UK's 'Turnbull' guidelines,³ the Global Reporting Initiative⁴ and the UN Global Compact⁵ have further boosted the profile of environmental issues in major companies. These companies have gone on to demand improved health,

safety and environmental (H,S&E) performance from their suppliers and contractors.

In many companies, the corporate social responsibility (CSR) agenda has also incorporated safety and environmental management. Stakeholder pressure – whether from the public or other organisations – to modify corporate behaviour is now commonplace and, in turn, corporate actions affect supply chains. To these external factors we should add the internal driver of rationalising support functions by combining OSH and environmental roles.

All these factors have contributed to the growth in the number of OSH practitioners who have become H,S&E (or SHE) professionals, either within commercial and public organisations, or working as consultants.

A question of competence

OSH practitioners have technical competences and other skills (such as the ability to convince management of the need to consider or take action) which, in many situations, can be vital to successful environmental management. The 'hazard and risk control' approach is particularly useful for assessing and controlling acute risks to the environment, for example spillage or explosion. In addition, environmental management systems (EMSs) such as ISO 14001 use the 'plan-do-check-act' methodology. This is familiar to, and has been applied by, many OSH practitioners in other management systems, for example BS 18004,⁶ ILO Guidelines⁷ and OHSAS 18001.⁸

However, management systems such as ISO 14001 specifically require the consideration of environmental aspects and impacts associated with an organisation's activities and interests. Often, environmental management, CSR or sustainability issues require a broad approach to environmental impacts – examples include strategic

environmental planning, stakeholder engagement, reducing (or even anticipating) climate change impacts, improving resource efficiency, using 'cleaner technology', or more specific initiatives aimed at reducing environmental impacts along the supply chain (such as 'green' procurement). In short, the OSH practitioner may need new skills to contribute successfully in these areas.

H,S&E legislation compared

In general, the principles underlying European environmental legislation are different from those of EU health and safety law. Much of the legislation is based on goal-setting principles, such as best available techniques/technology (BAT), which have no direct equivalent in health and safety law. Increasingly, EU legislation does not seek to control accidents or emissions (outputs), but rather to improve resource efficiency, ie by dealing with both inputs and outputs. For example, legislation designed to boost packaging and electronic waste recovery bears no practical resemblance to risk-based health and safety law. Also, much of Europe's environmental legislation is either process-based or, in the case of 'producer responsibility' requirements, product-based. As such, large tracts of environmental legislation apply only to certain sectors, and operational compliance may be in the hands of process or commercial specialists. All this means that managing environmental issues successfully, or working with other professionals on environmental issues, can require OSH practitioners to broaden both their general and technical competences. This is particularly true when an organisation's significant environmental impacts are related to lifecycle or other sustainability issues, and not just to hazards and risk control measures.

There are, however, some significant areas of legal overlap between safety and environment, notably legislation covering H,S&E at high hazard sites,

and the transport of hazardous materials. Such overlaps usually reflect the need for a hazard and risk control approach to the environmental issues in question. A clear example of where H,S&E legislation (and competences) are combined is the EU requirement (Directive 96/35/EC⁹) for 'dangerous goods safety advisers'. The aim of this role is to help prevent harm to people and the environment from the transportation of dangerous goods.

Significantly, there can also be practical overlaps between health and safety, and environmental issues. Depending on circumstances, these can be useful or problematic. For example, directives on chemical agents or noise are designed to control risks at work from substances or noise, but the actions taken to reduce risks to health may have positive environmental impacts, even though these directives are not aimed at the wider environment. Conversely, environmental measures such as those aimed at airborne solvent emissions may have health and safety benefits by requiring, for example, reduced inventories and the control of 'fugitive' (non-point source) emissions.

Other areas where H,S&E issues converge include:

- the use of the 'risk hierarchy' – looking for substance elimination
- design or procurement to eliminate or reduce risk
- waste minimisation, for example reducing risk at source
- emergency plans
- packaging and labelling of dangerous goods
- supply chain issues such as REACH (the Registration, Evaluation, Authorisation and restriction of CHemicals)¹⁰ and the GHS (United Nations Globally Harmonised System of Classification and Labelling of Chemicals).¹¹

Exercising H,S&E competency

OSH practitioners working in an H,S&E role need to understand the relationships between health and safety, and environmental policy, law and practice. Regardless of whether H,S&E professionals have a strategic or day-to-day (operational) role, they need to be aware of the competences needed for effective H,S&E performance. This includes having a suitable level of competency in environmental management techniques. Such awareness may have to extend to assessing the competency of colleagues and perhaps contractors.

OSH practitioners may need further training to understand environmental legislation, the principles behind it, and how enforcers deal with it. They may also need to learn more about environmental management techniques such as lifecycle approaches, 'mass balancing', 'waste mapping' and, more generally, waste minimisation. These techniques can also lead to improved standards of health and safety by reducing exposures to harmful materials.

Working with environmental professionals

Conversely, environmental and other professionals should understand how their work might impact on health and safety. A survey of environmental managers by ENDS,¹² a leading UK environmental journal, found that around 83 per cent of respondents had additional functions, and that over half of these people had health and safety responsibilities. OSH practitioners should help environmental and other professionals to access proper training in the principles of health and safety management and make sure that, where necessary, these people can deal with key principles such as hazard and risk assessment, and the hierarchy of controls.

Examples of where communication can be crucially important are:

- planning
- control of releases
- incidents and emergencies
- technical guidance, notably on best available techniques/technology (environment) or 'so far as reasonably practicable' (health and safety).

Basic principles for OSH practitioners and employers

- Maintaining a safe and healthy working environment is a key social aspect of sustainable development and CSR, and it can contribute to the environmental aspect of sustainable development.
- OSH practitioners with suitable competences in environmental management can play a significant role in the environmental aspect of sustainable development.
- H,S&E decisions and policies (including those of government and enforcers) should be founded on adequate risk assessment. Where relevant they should also be backed up by the best available scientific and technical information.
- H,S&E policies should involve effective, ongoing communication with key stakeholders.

OSH practitioners should seek to make sure that their organisations use proper risk assessment and control techniques to control H,S&E risks. Significant risks to health and safety should be the priority for risk control. Specifically, practitioners need to make sure that, when environmental options are considered (for example the use of pollution-abatement technologies, or the recovery and recycling of materials), they do not reduce standards of occupational or public health and safety. In fact, where possible, practitioners should try to make sure that the options chosen improve health and safety.

Both practitioners and organisations can benefit from:

- making sure that any environmental, CSR or sustainable development policy is compatible with its health and safety policy
- addressing the most significant environmental or CSR impacts of new products and services at the design and planning stages, with due regard to health and safety
- employing competent people to deal with H,S&E matters and obtaining competent specialist advice where necessary.

Organisations attempting to integrate a management system so that it covers environment, safety and health and, for example, issues such as quality, should value those individuals who:

- are capable of a multidisciplinary approach
- understand how external factors link to what the organisation needs
- offer good technical skills
- have good communication skills.

Increasingly, clients and consumers want safer chemicals, the ability to re-use and recover materials, and much more H,S&E information. Clearly, those OSH practitioners looking to make a difference to the H,S&E performance of their organisations will need an array of general and technical competences to help deliver these stakeholder requirements.

2 Environmental management systems

EMSs help organisations manage their environmental issues effectively. The most significant models for an EMS are ISO 14001, the international environmental management system standard, and to a lesser extent EMAS. There are other national EMS schemes and, in the UK, there is a 'six steps to ISO 14001' scheme (BS 8555¹³). However, ISO 14001 is recognised around the world.

'Plan, do, check and act'

A systematic approach to environmental management should be based on the plan, do, check and act (PDCA, also known as the 'Deming') cycle. This is the basis of both ISO 14001 and BS OHSAS 18001 (see Figure 1).

The PDCA stages, as applied to ISO 14001, can be broken down further (see Figure 2).

Important features of an EMS include:

- the environmental policy statement, which sets the framework for environmental management. The environmental policy should address significant environmental aspects and the requirements of applicable environmental legislation (note: legislation should in any case be used as part of the assessment of 'significance')
- the policy is implemented through appropriate objectives, targets, responsibilities, action plans, programmes and procedures

- performance is checked through monitoring and planned auditing, and rectified where non-conformances are identified
- there are feedback mechanisms through the management review, to make sure that the system is kept relevant and fit-for-purpose, and can deliver continual improvement
- initial environmental review is an important first stage for organisations that don't have a formal EMS; more environmental reviews may be needed if circumstances significantly change, for example new activities, products and services, and external developments.

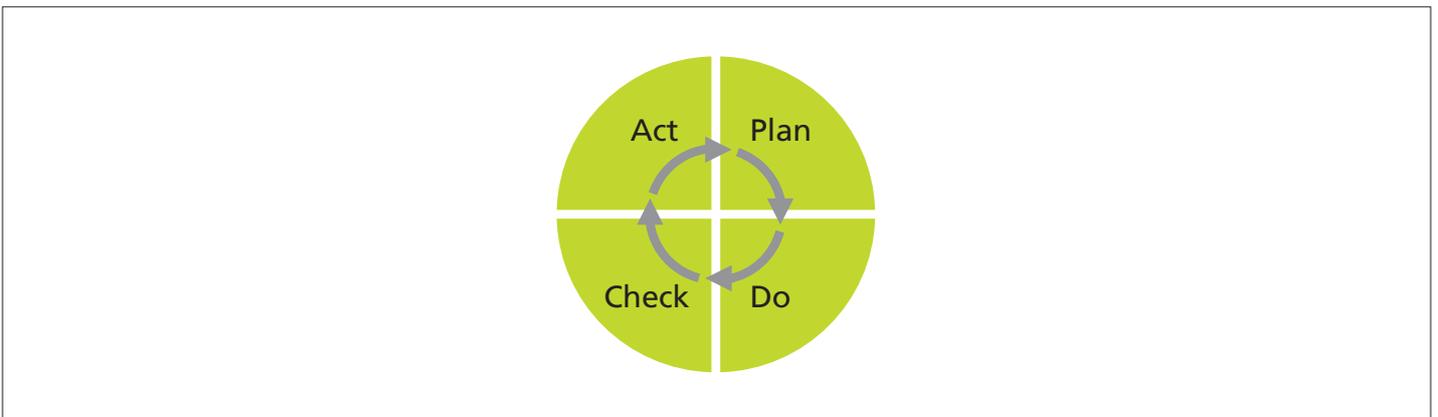


Figure 1 The PDCA cycle

ISO 14001

ISO 14001 was developed by the International Organisation for Standardisation (ISO), and is part of a suite of ISO environmental management standards that provide guidance on various topics, including environmental auditing, environmental performance indicators and lifecycle assessment. The structure of ISO 14001 is highly compatible with the occupational health and safety management standard BS OHSAS 18001.

ISO 14001 is a 'specification with guidance for environmental management systems'. It is a standard

specification of the requirements for an EMS that need to be in place to obtain accredited certification. However, organisations that design their EMS to conform to the standard are not obliged to obtain certification.

ISO 14001 requires an organisation to make explicit commitments in its policy statement to:

- comply with applicable legislation and regulations
- ensure continual improvement
- ensure prevention of pollution.

The 'prevention of pollution' requirement does not define 'pollution' levels.

ISO 14001 definition

Environmental management system

The part of the overall management system used to develop and implement its environmental policy and manage its environmental impacts.

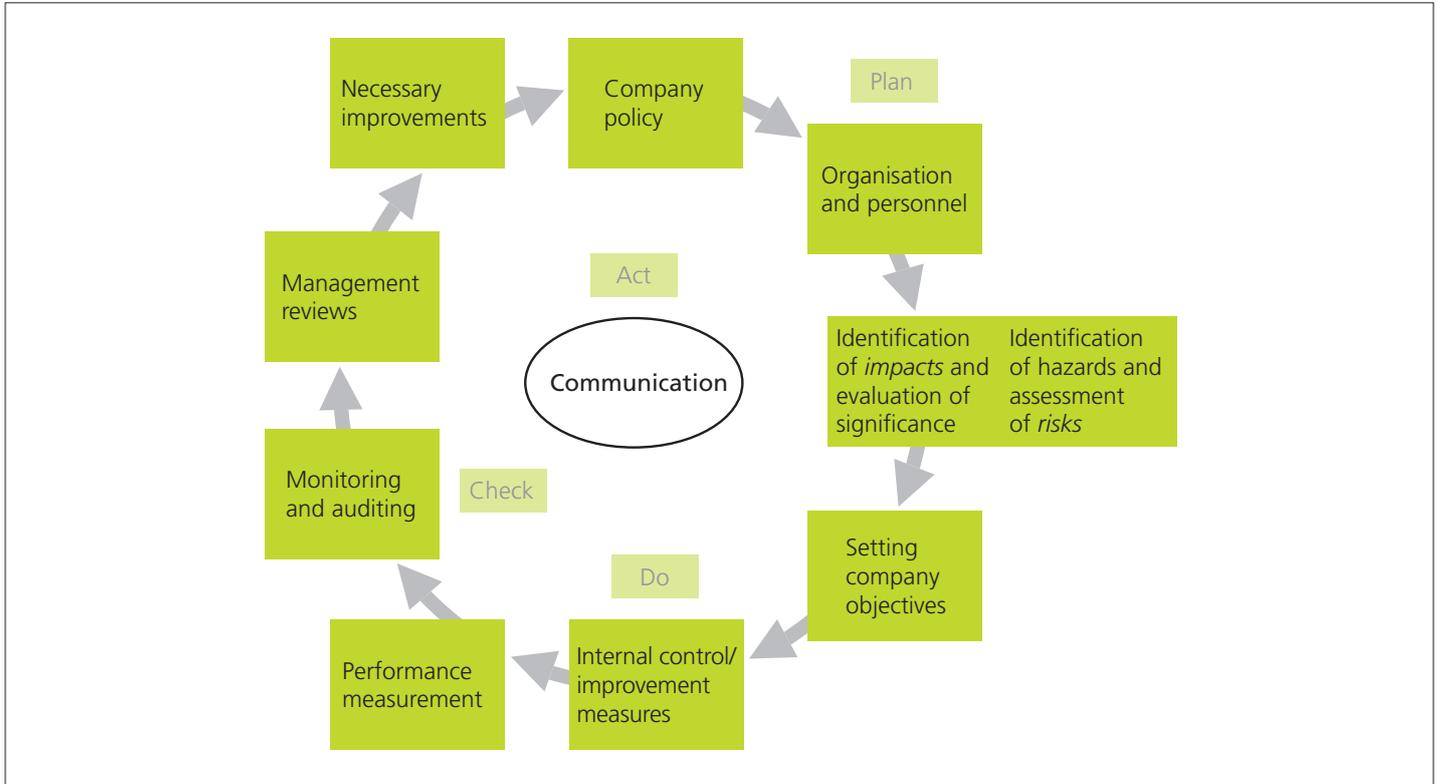


Figure 2 Main stages in the PDCA cycle as applied to ISO 14001

Cycle stage	Management activities/steps	Relevant environmental management tool
Plan	<ul style="list-style-type: none"> Identify priority issues (significant aspects) Establish/modify policy to address issues Identify performance standards/improvement opportunities (legal requirements, best practice solutions) Allocate specific responsibilities Set objectives and targets to meet performance levels Prepare action plans, programmes and procedures for achieving performance/meeting objectives and targets 	Environmental review (initial or subsequent)
Do	<ul style="list-style-type: none"> Those responsible implement plans, programmes and procedures 	Standards and procedures
Check	<ul style="list-style-type: none"> Monitor results Evaluate performance against policy aims, objectives, targets, plans, programmes and procedures Determine reasons for deviations, eg non-conformances 	Environmental monitoring and management audit
Act	<ul style="list-style-type: none"> Take corrective action for non-conformances Consider performance and adequacy of system elements in delivering desired performance Ensure changing circumstances are identified Modify system elements: policy; objectives and targets; responsibilities; plans; programmes; procedures, as necessary 	Management review

Table 1 Stages of PDCA as applied to ISO 14001

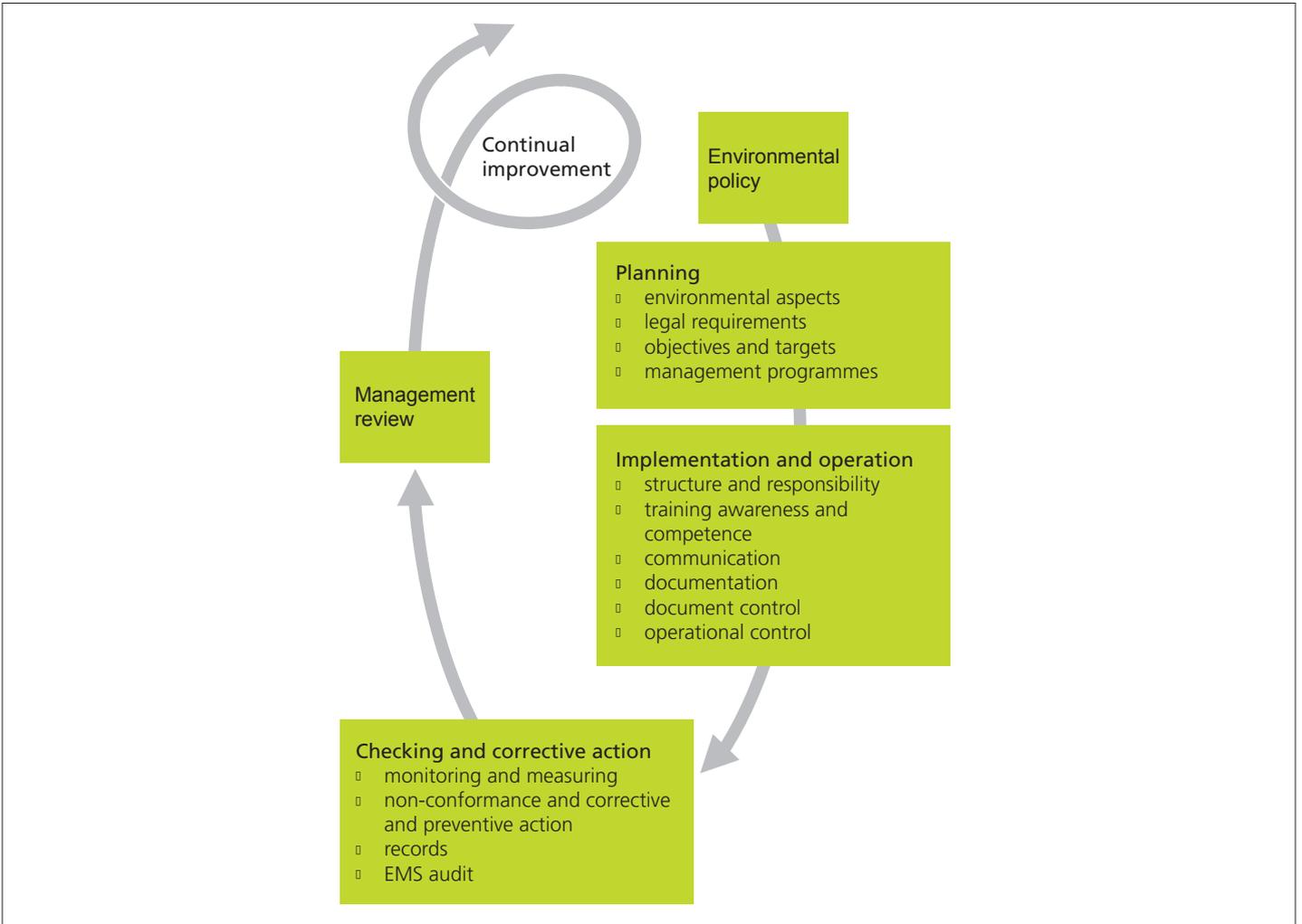


Figure 3 ISO 14001 model

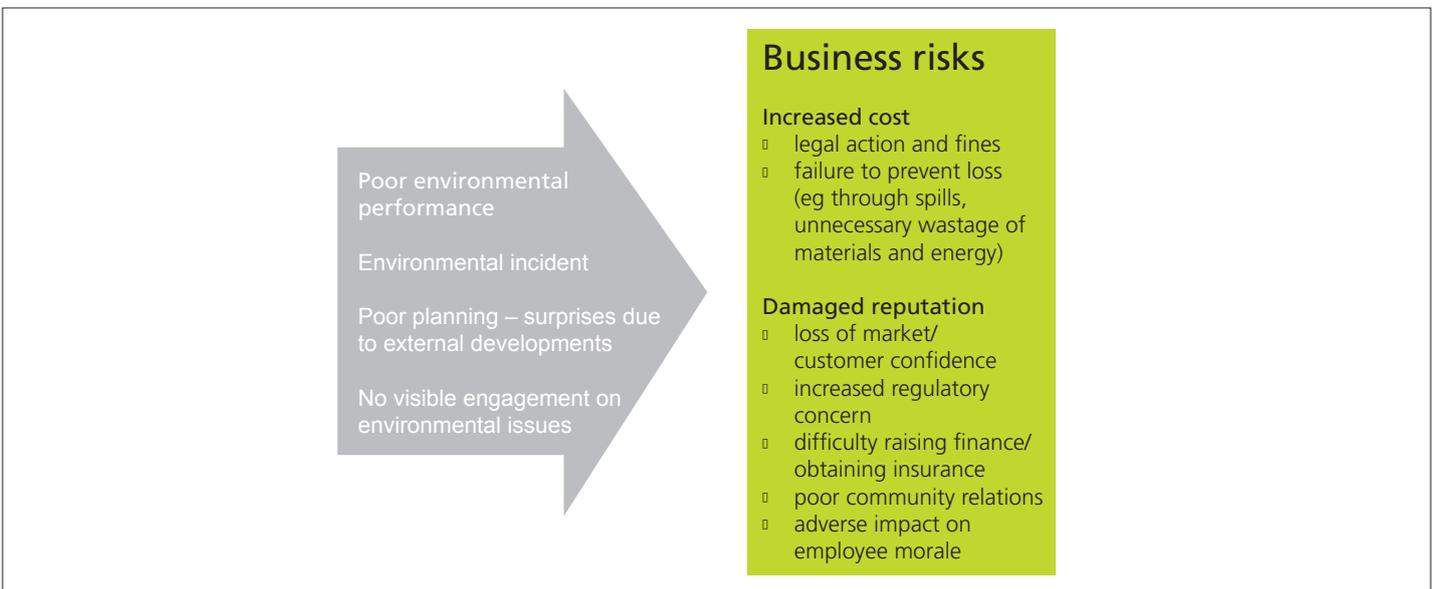


Figure 4 Environmental business risks

Purpose of an EMS

A key driver for developing and maintaining an EMS is to minimise the organisation's business risks that are associated with environmental impacts. This is achieved through the systematic management of activities and interactions (environmental 'aspects') that lead to significant impacts.

Business benefit is the 'other side of the coin' to business risk. Some of the potential business benefits of establishing and maintaining an effective EMS are shown in Table 2.

The BS 8555 guide

'Environmental management systems. Guide to the phased implementation of an environmental management system including the use of environmental performance evaluation' provides a comprehensive guide to the phased implementation, maintenance and improvement of an EMS. It describes a six-step approach to implementing an EMS using environmental performance evaluation. It is aimed particularly at smaller companies that want to gain recognition for being en route to a full

EMS. However, it is also useful for larger companies, notably those that want improved environmental performance along their supply chain.

Identifying environmental aspects and impacts

The fundamental principle of environmental management is that significant environmental activities and interactions ('aspects', either actual or potential) should be managed. ISO 14001 (4.3.1) sets this out as follows:

"The organisation shall establish and maintain (a) procedure(s) to identify the environmental aspects of its activities, products and services that it can control and over which it can be expected to have an influence, in order to determine those which have or can have significant impacts on the environment. The organisation shall ensure that the aspects related to these significant impacts are considered in setting its environmental objectives."

ISO 14001 definitions

Continual improvement

Recurring process of enhancing the EMS to achieve improvements in overall environmental performance consistent with the organisation's environmental policy. Note: this is subtly distinct from *continuous* improvement.

Prevention of pollution

Use of processes, practices, techniques, products, services or energy to avoid, reduce or control the creation, emission or discharge of any pollutant or waste, to reduce adverse environmental impacts.

Area of benefit	Specific benefits can include:
'Licence to operate' (this can mean acceptance by society or stakeholders, not just formal licences issued by enforcers)	<ul style="list-style-type: none"> - Ease in obtaining regulatory permits, licences, consents, authorisations (including planning consents and operational licences) - Maintains and enhances community relations - Improved relations with regulator - Avoids enforcement or civil actions
Cost control	<ul style="list-style-type: none"> - Improved operational and process efficiency - Ongoing annual savings in materials, water, energy and waste costs where minimisation programmes are functioning - Avoids fines and damages awarded from legal action through criminal or civil courts - Avoids hidden costs of legal action (including substantial draw on management time) - Direct contribution to bottom line
Access to product markets	<ul style="list-style-type: none"> - Assures customers of commitment to responsible environmental practices - Helps understand (and meet or exceed) customer supplier requirements - Creates improved or new products and services with market opportunities
Access to capital markets	<ul style="list-style-type: none"> - Satisfies investor criteria - Helps obtain insurance at reasonable cost
General public	<ul style="list-style-type: none"> - Helps build positive reputation/enhanced image

Table 2 Benefits of an effective EMS

Distinction between aspects and impacts

When considering aspects and impacts, it is useful to think in terms of 'causes' and 'effects' respectively. In simple terms, activities have aspects that cause environmental impacts (changes in the environment).

Key words in the ISO's definitions of 'environmental aspect' and 'environmental impact' (see opposite) are 'interact' and 'change' respectively. Examples are included in Table 3.

Note that whether an impact is considered to be adverse or beneficial, and to what extent, may depend on legislation or on the views of society or specific stakeholders. The existence of legal controls and other government policy measures, and the opinions of other stakeholders, are fundamental considerations when assessing significance.

ISO 14001 definitions

Environmental aspect

An element of an organisation's activities, products and services which can interact with the environment. Note: a significant aspect may have a significant environmental impact.

Environmental impact

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.

OSH practitioners should also have a clear understanding of how the 'Source-Pathway-Receptor' model is used (see Figure 6). This model is the basis for legislation on the identification of contaminated land, and is used extensively to help assess the risk of environmental harm to people (environmental noise, for example) or the wider ecosystem.

Systematic approach to aspects and impacts

Identifying and understanding environmental aspects is essential for creating, developing and maintaining an effective environmental management process. Those aspects that are determined to be significant should always be the focal point for management and performance improvement. A systematic approach to identifying aspects and impacts is a firm foundation for effective environmental management.

The main steps in identifying aspects and impacts are summarised in Figure 7. Defining the scope of an environmental management system is particularly important. Aspects related to the organisation's operations are normally given priority because they are linked with the core business and are directly under its control. However, environmental aspects associated with the use and disposal of a product, or provision of a service, should also be considered. For those organisations seeking certification to ISO 14001, this is an explicit requirement.

Screening aspects for management

A survey of activities (and products) might identify a large number of environmental aspects and associated impacts. However many there are, the next (and fundamentally important) management step is to screen the aspects to identify the most important (significant) ones for management action.

Why determine significance?

Assessing significance is essentially about setting priorities. It enables organisations to understand their key environmental impacts and to concentrate resources and effort on the aspects (including company activities and products, but perhaps also supply chains) leading to them.

An organisation needs to decide on its criteria for significance, and to apply them in a justifiable, consistent and transparent way.

Environmental aspect	Environmental impact
Chemical or oil spill	Water pollution or land contamination
Atmospheric emission, eg volatile organic compounds	Atmospheric pollution, eg tropospheric ozone creation
Noise	Noise nuisance

Table 3 Examples of environmental aspects and impacts

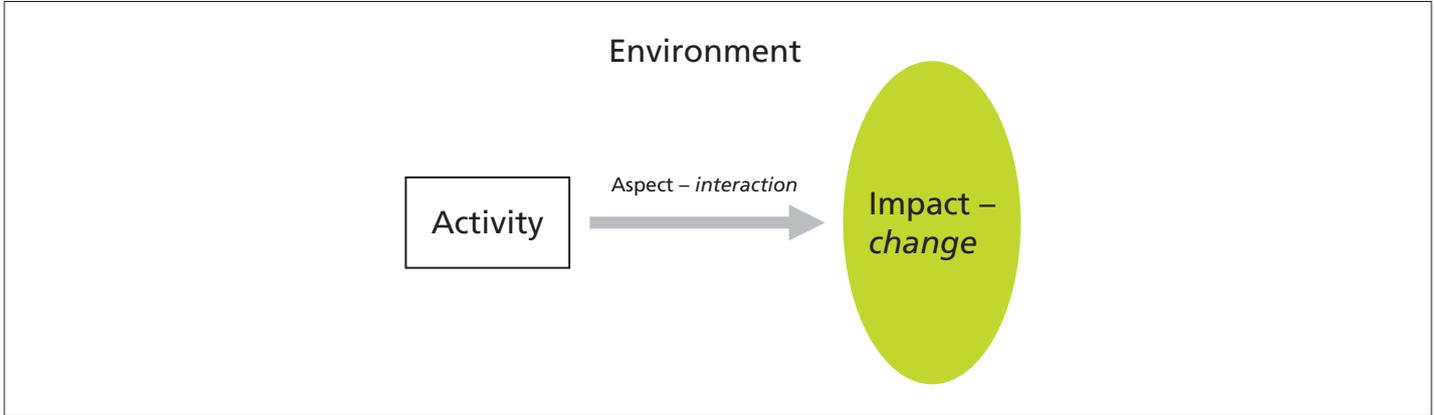


Figure 5 The 'Activity-Aspect-Impact' relationship

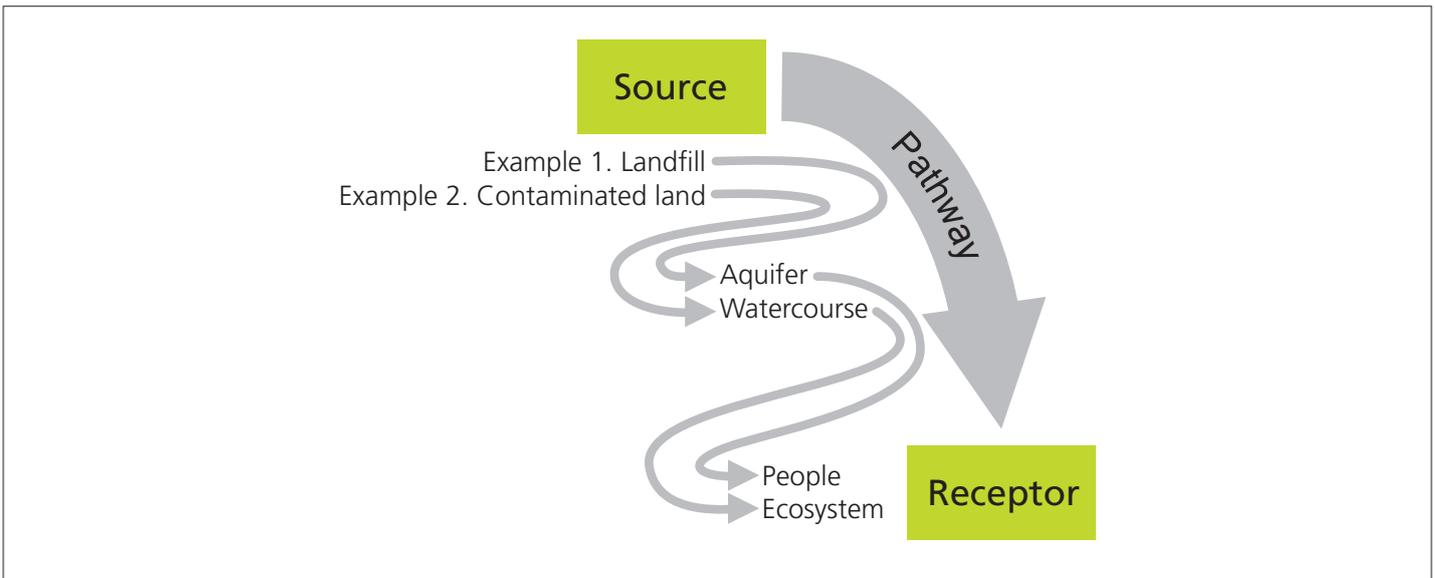


Figure 6 The 'Source-Pathway-Receptor' model



Figure 7 Principal steps in identifying aspects and impacts

Factors in assessing significance

In general, an environmental aspect should be considered 'significant' if:

- it is controlled by regulatory requirements
- it, or its associated impact, is of concern to key stakeholders
- it has the potential to cause a demonstrable impact on the environment
- it has major financial implications – either positive (savings or market opportunities) or negative (costs).

An organisation may need to apply more criteria. It is for the organisation to design a method that works for its circumstances – there is no standard technique.

Environmental management issues are not always about the assessment of risks from discharges to the environment (outputs). OSH

practitioners should be aware of the possible environmental impact of using resources such as raw materials and energy (inputs) – possibly including renewable energy. Environmental management has a universally recognised 'hierarchy' (see Figure 8) for reducing impacts due to material inputs and outputs. Increased re-use or recovery, both during production and after products have reached the end of their useful life, can reduce impacts significantly (see Figure 9).

Certification/verification

Certification is the process by which an independent third party organisation (certification body or certifier) checks that an organisation's EMS conforms to a standard such as ISO 14001 and certifies that this is the case. For EMAS, the terminology is slightly different – the process is referred to as 'registration' and those conducting it as 'verifiers'.

Certification has time and cost implications, but it has a number of benefits:

- it provides independent recognition that the organisation is managing its environmental issues in accordance with a recognised standard
- it provides an internal discipline for the organisation – the business understands that its system is being audited not only through the internal management audit, but through accredited external verifiers.

External reporting (particularly when verified by a third party) may be important in helping to demonstrate both environmental engagement and performance. External reports will be more robust where they draw on information from an effective EMS. To ensure credibility, organisations seeking certification to ISO 14001 should commission certification bodies that are accredited by government agencies to carry out certification work. In the UK, this is the UK Accreditation Service (UKAS).

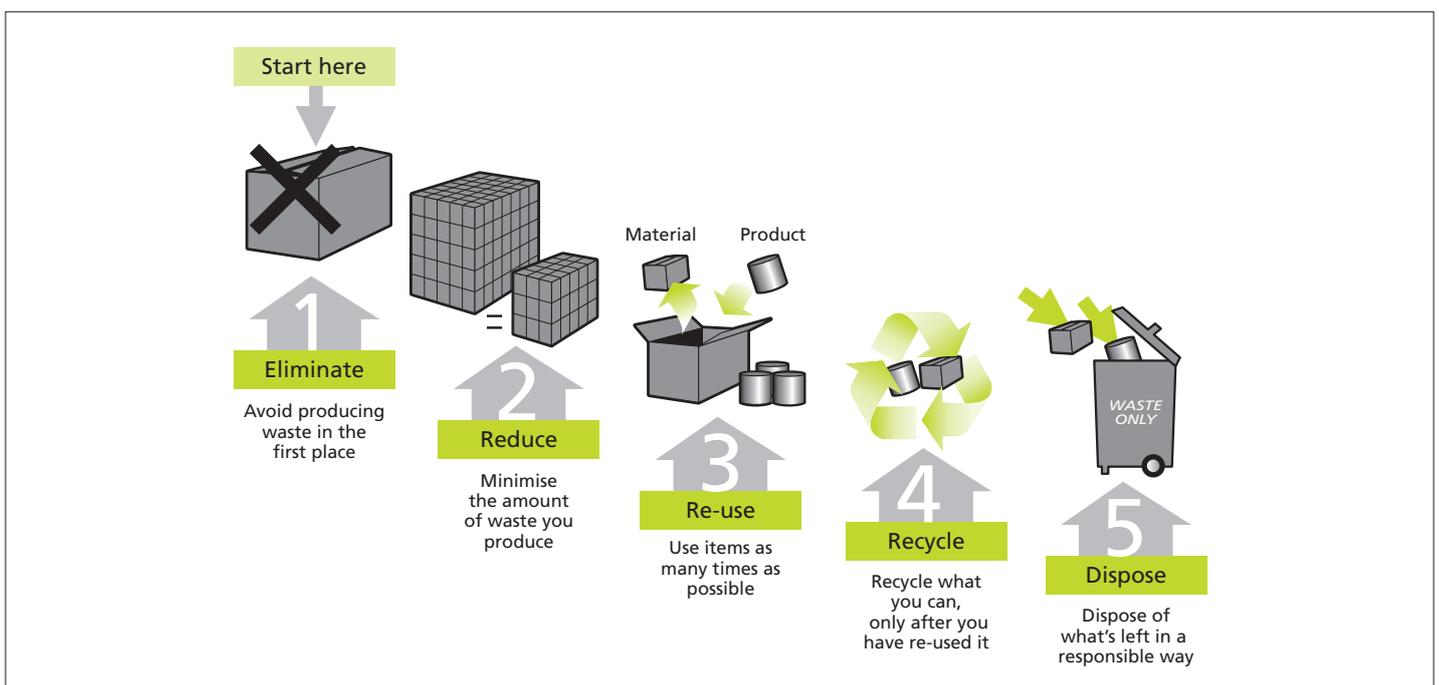


Figure 8 The 'waste hierarchy'

Before awarding a certificate, certifiers usually carry out an initial assessment of the system, followed by the main assessment. This includes examining documents, interviews and site visit(s). If non-conformances with ISO 14001 are found, the organisation will be advised about changes they must make. These areas will be checked again before a certificate is awarded. Should non-conformances be discovered during a later certification

surveillance audit, the organisation is usually given a timescale to take corrective action. If this is not taken or if the non-conformance is substantial, the organisation may lose certification status. In the case of EMAS, organisations may have their registration withdrawn if, in the opinion of the enforcing authority, they show significant non-compliance with environmental legislation.

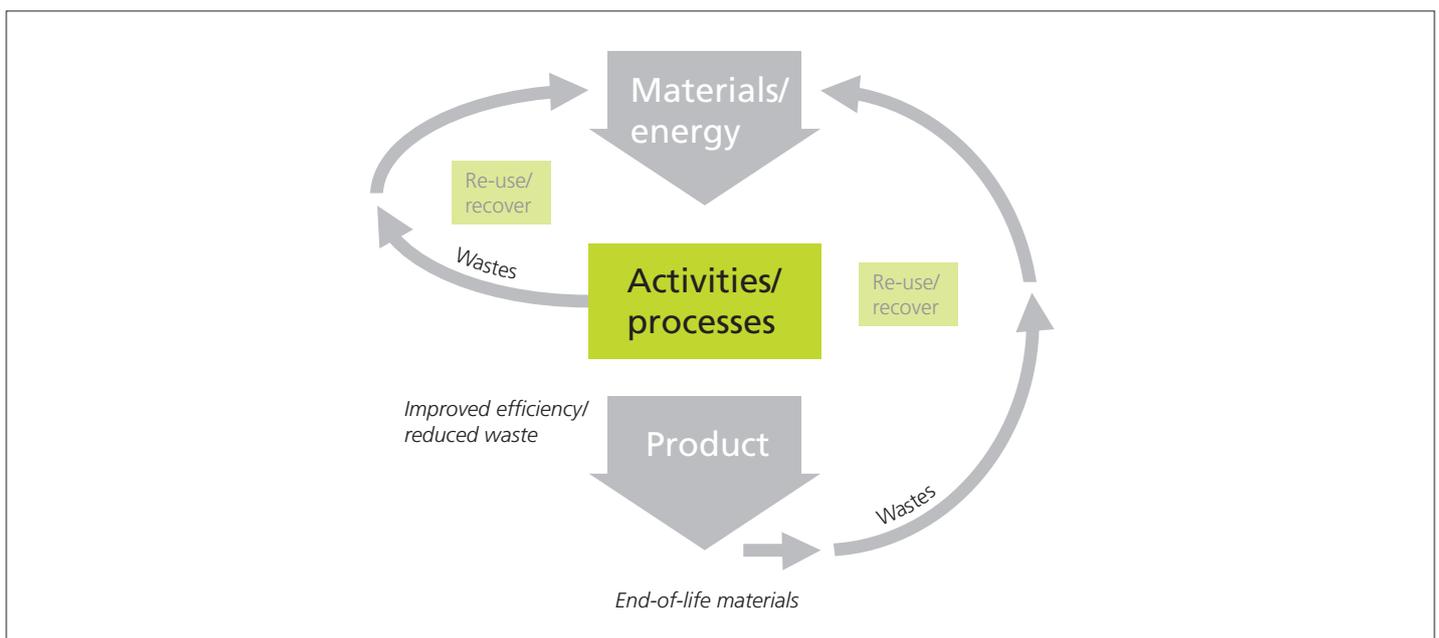


Figure 9 Improved eco-efficiency: 'closing the loop'

3 Qualifications

Knowledge is not competence, but it is a good start. The level of knowledge needed by OSH practitioners with an environmental role depends on:

- the organisation
- the role itself
- career aspirations.

A practitioner may have the qualifications for a given role, but may plan to obtain more widely recognised qualifications so that they can develop their career in their current or another business.

If you're new to the subject, it's best to take a taught course leading to a nationally recognised qualification.

Some environmental management courses (UK only)

You can get basic environmental management knowledge from courses such as:

- Associate certificate in environmental management (two-week course, accredited by the Institute of Environmental Management and Assessment (IEMA), which allows successful candidates to become associate members of IEMA)
- EMS implementation courses
- Foundation course in environmental auditing
- EMS auditor courses
- NEBOSH specialist diploma in environmental management.

As part of its Continuing Professional Development (CPD) programme, IOSH runs a series of environmental courses for OSH practitioners, eg:

- Environmental practitioner 1: Understanding the basics
- Environmental practitioner 2: Waste management, contaminated land and planning
- Environmental practitioner 3: Understanding your responsibilities for controlling air and water pollution
- Environmental practitioner 4: Assessment and management of environmental performance
- Environmental practitioner update: Environmental policy and legislation.

All these courses are supported by the IOSH book *Essentials of environmental management*. Note that the IOSH CPD courses provide the underpinning knowledge if you want to take the 'open-book' route to associate membership of IEMA. IOSH also offers other courses that include environmental issues, for example Understanding REACH, CSR and the triple bottom line, and Business risk management.

For more information on IOSH courses, visit www.iosh.co.uk/pdprogramme or phone +44 (0)116 257 3197.

If you want to develop your awareness and abilities substantially in the area of H,S&E management, and sustainability and CSR issues, modular degree or Master's courses on these topics are available from several universities.

These courses include Master's degrees in integrated environmental management (for example, via distance learning) and corporate environmental management.

It is also worth noting that IEMA is a key source of information about suitable environmental courses (see contact details for IEMA and other environmental organisations on pages 16–17).

Maintaining knowledge

If you want to maintain and develop your knowledge in this area, you're welcome to join the IOSH Environmental and Waste Management Group. Phone t +44 (0)116 257 3234 or email membership@iosh.co.uk. We also advise that you consider the benefits of membership of IEMA or another professional body, which will help keep you up to date with environmental management issues. IEMA offers opportunities to learn about, and exchange, good and best practice.

Best practice publications and workshops in many environmental management techniques are also available free from the 'Envirowise' programme (see contact details for Envirowise and other environmental organisations on page 16).

Glossary

Best available techniques/technology (BAT)

Those techniques/technology most effective in preventing, minimising or rendering harmless polluting releases and that are economically and technically viable. The techniques/technology should be procurable by operators of the process in question, and while they do not have to be in general use, they should be generally accessible. Availability can include techniques/technology still at the pilot stage. 'Technique' includes both the plant in which the process is carried out and how the process is operated. It includes the numbers and competences of staff, working methods and supervision, and the design, construction, layout and maintenance of buildings.

Clean technology

Technology which is designed to reduce environmental impacts (often waste material) from equipment or processes. Examples are 'closed loop' systems that fully recycle process water, or buildings / vehicles supplied by renewable or more 'carbon efficient' energy sources.

Environmental aspect

An element of an organisation's activities, products and services that can interact with the environment.

Environmental impact

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

Mass balancing

Measuring the total inputs of a substance into a process, and the total outputs of that substance from the process, to assess the extent and nature of any losses of that substance at various stages in the process. Once assessed, a plan can be implemented to reduce these losses.

Sustainable development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development requires the maintenance or improvement of social, economic and environmental standards.

More environmental terms are included in the glossary of the IOSH book *Essentials of environmental management* (see 'Further reading' opposite).

References and further reading

References

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- 9 Council Directive 96/35/EC on the appointment and vocational qualification of safety advisers for the transport of dangerous goods by road, rail and inland waterway. *Official Journal of the European Communities*; L145; Vol. 39; 19 June 1996: 10–15. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0035:EN:HTML>; Council Directive 2000/18/EC on minimum examination requirements for safety advisers for the transport of dangerous goods by road, rail or inland waterway. *Official Journal of the European Communities*; L118; Vol 43; 19 May 2000: 41–43. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:118:0041:0043:EN:PDF>.
- 10 HSE. Registration, Evaluation, Authorisation and restriction of CHemicals (REACH). www.hse.gov.uk/reach/about.htm.
- 11 HSE. United Nations Globally Harmonised System of Classification and Labelling of Chemicals. www.hse.gov.uk/ghs.
- 12 Source: ENDS environmental managers survey 2003. www.ends.co.uk. (You must be a subscriber to access, although a free trial is usually available.)
- 13 BSI. *Environmental management systems. Guide to the phased implementation of an environmental management system including the use of environmental performance evaluation*. BS 8555:2003. London: BSI, 2003.

Further reading

- Hyde P and Reeve P. *Essentials of environmental management*. Wigston: IOSH, 2011. Available from Lavenham Group, t +44 (0)1787 249293. This is IOSH's recommended course textbook on environmental management.
- IOSH. *Systems in focus: guidance on occupational safety and health management systems*. www.iosh.co.uk/systems.
- IOSH. *Joined-up working: an introduction to integrated management systems*. www.iosh.co.uk/joinedup.
- Defra. *Environmental key performance indicators – reporting guidelines for UK business*. London: Defra, 2006. www.defra.gov.uk/environment/business/reporting/pdf/envkpi-guidelines.pdf.
- Von Weizsäcker E, Lovins A B and Hunter Lovins L. *Factor four: doubling wealth, halving resource use*. London: Earthscan, 1998. Available from Earthscan, t +44 (0)20 7841 1930. www.earthscan.co.uk/?tabid=849. The book seeks to achieve a technically feasible quadrupling of 'resource productivity'.

More information

Below is a selection of sources of more information on environmental management and related matters.

These range from practical operational support to strategic thinking and innovation.

Organisation	Example of advice or information available	Contact details
British Standards Institution (BSI)	Information on ISO 14000 (environmental management) series standards	t +44 (0)20 8996 9001 www.bsi-global.com
Department for Environment, Food and Rural Affairs (Defra)	Information on UK environmental protection policy and related developments	t +44 (0)845 933 5577 (general enquiries) www.defra.gov.uk/environment/index.htm
Environment Agency (EA)	Leading enforcement body for protecting and improving the environment in England and Wales. Provides information on regulatory controls. Also, advice on environmental management good practice, including waste management. Provides information on Local Environmental Action Plans (LEAPs) and a variety of environmental topics. NetRegs provides freely downloadable environmental guidelines and legislation (for England, Scotland, Wales and Northern Ireland)	t +44 (0)870 850 6506 enquiries@environment-agency.gov.uk ww2.defra.gov.uk/environment www.netregs.gov.uk
Envirowise	Free practical environmental advice to UK business, including free best practice guidance on energy, waste, process efficiency and general environmental management. Also, information on eco-design, pollution control technology, techniques such as 'mass balancing/waste mapping', and motivating people	t +44 (0)800 585 794 helpline@envirowise.gov.uk www.envirowise.gov.uk
Global Reporting Initiative (GRI)	An international multi-stakeholder UN-recognised initiative. Provides guidelines on sustainability reporting	t +31 (0)20 531 0000 info@globalreporting.org www.globalreporting.org
Institute of Environmental Management and Assessment (IEMA)	The UK's leading professional body covering environmental management and assessment. Includes professional development, best practice and networking. Has overall aim to promote sustainable development. Also, the UK Competent body for the EU Eco-Management and Audit Scheme (EMAS) and lead body on 'Project Acorn', which contributed to the development of BS 8555	t +44 (0)1522 540069 info@iema.net www.iema.net
Institution of Occupational Safety and Health (IOSH)	Europe's largest professional body for individuals involved in OSH, maintaining standards and providing impartial and authoritative guidance and training on health and safety issues. The IOSH Environmental and Waste Management Group (also open to non-IOSH members) is a forum for environmental issues and shares information on its webpages	t +44 (0)116 257 3100 f + 44 (0)116 257 3101 www.iosh.co.uk www.iosh.co.uk/groups/environmental (IOSH Environmental and Waste Management Group webpages)
Northern Ireland Environment Agency (NIEA)	Public body responsible for environmental protection in Northern Ireland. Provides information on regulatory controls. Also, advice on conservation, pollution control and environmental management best practice	t +44 (0)28 9054 3095 (general enquiries) bh@doeni.gov.uk www.ni-environment.gov.uk
Scottish Environmental Protection Agency (SEPA)	Public body responsible for environmental protection in Scotland. Provides information on regulatory controls. Also, advice on environmental management best practice, including waste management	t +44 (0)1786 457700 publications@sepa.org.uk www.sepa.org.uk

Organisation	Example of advice or information available	Contact details
The Stationery Office (TSO)	Source of official publications in the UK (including policy papers, Acts of Parliament, Statutory Instruments and British Standards). Also source of EU and international publications, and a range of professional and business books on environmental topics	t +44 (0)870 600 5522 (general enquiries) www.tso.co.uk (catalogue of publications, bibliographic database/online ordering) t +44 (0)870 242 2345 (for enquiries about website and website orders)
UK Accreditation Service (UKAS)	Official UK organisation for accreditation of certification bodies, including certifiers of ISO 14001. Maintains contact details of accredited certification bodies for ISO 14001	t +44 (0)20 8917 8400 info@ukas.com www.ukas.com
United Nations Environmental Programme (UNEP)	UN body responsible for co-ordinating sustainability efforts. Initiatives include environmental monitoring and assessment, information and research, and co-ordination of international policy, eg climate change, biodiversity	www.unep.org www.unlibrary-nairobi.org/lib_catalogue.asp (online catalogue)
World Business Council for Sustainable Development (WBCSD)	Coalition of around 150 international companies. Provides information on business and sustainable development including eco-efficiency, innovation and responsible business practices	t +41 (22) 839 3100 f +41 (22) 839 3131(Swiss-based) www.wbcsd.org

Acknowledgments

The Technical Committee is grateful to IOSH's Environmental and Waste Management Group, and in particular to Paul Reeve CFIOSH CEnv FIEMA, for help in the production of this document.

We welcome all comments aimed at improving the quality of our guidance, including details of non-UK references and good practices. Please send your feedback to Luise Vassie, Executive Director – Policy, at luise.vassie@iosh.co.uk.

