

A QUICK GUIDE



Health and Safety

Ray Gilbert



A Quick Guide to Health and Safety

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A Quick Guide to Health and Safety

R. Gilbert

Series editor: Clifford Matthews

Matthews Engineering Training Limited
www.matthews-training.co.uk

WPNL0206

WOODHEAD PUBLISHING LIMITED

Cambridge England

WPNL0206

Published by Woodhead Publishing Limited, Abington Hall, Granta Park, Great Abington, Cambridge CB21 6AH, England
www.woodheadpublishing.com

and

Matthews Engineering Training Limited
www.matthews-training.co.uk

First published 2008, Woodhead Publishing Limited and Matthews Engineering Training Ltd

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British Library Cataloguing in Publication Data.

A catalogue record for this book is available from the British Library

ISBN 978-1-84569-499-9 (book)

ISBN 978-1-84569-500-2 (e-book)

Typeset in the UK by Data Standards Ltd, Frome, Somerset, UK.
Printed by Cromwell Press Ltd, Trowbridge, Wiltshire, UK.

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The Quick Guide Series

The *Quick Guide* data books are intended as simplified, easily accessed references to a range of technical subjects. The initial books in the series were published by The Institution of Mechanical Engineers (Professional Engineering Publishing Ltd), written by the series editor Cliff Matthews. The series is now being extended to cover an increasing range of technical subjects by Matthews Engineering Publishing.

The concept of the Matthews *Quick Guides* is to provide condensed technical information on complex technical subjects in a pocket book format. Coverage includes the various regulations, codes and standards relevant to the subject. These can be difficult to understand in their full form, so the *Quick Guides* try to pick out the key points and explain them in straightforward terms. This of course means that each guide can only cover the main points of its subject – it is not always possible to explain everything in great depth. For this reason, the *Quick Guides* should only be taken as that – a quick guide – rather than a detailed treatise on the subject.

Where subject matter has statutory significance, e.g. statutory regulation and referenced technical codes and standards, then these guides do not claim to be a full interpretation of the statutory requirements. In reality, even regulations themselves do not really have this full status – many points can only be interpreted in a court of law. The objective of the *Quick Guides* is therefore to provide information that will add to the clarity of the picture rather than produce new subject matter or interpretations that will confuse you even further.

If you have any comments on this book, or you have any suggestions for other books you would like to see in the *Quick Guide* series, contact us through our website: www.matthews-training.co.uk

Cliff Matthews
Series Editor

Invitation to New Authors

If you have an idea for a *Quick Guide* book and are interested in authorship, we are interested in hearing from you. You do not have to already be a published author (in fact we are actively interested in finding new unpublished ones with a bit of talent). All we ask is that:

- you know your subject as well as (or even slightly better than) others in your field;
- you can explain it in simple terms;
- you have the tenacity to write 25 000–30 000 words (and accompanying figures and tables).

If you can meet these requirements, then get in touch and we will discuss with you the procedure for submitting your proposal. Contact Cliff Matthews at:

enquiries@matthews-training.co.uk

Introduction

Attention all employers, employees, managers and business owners, Health and Safety (H&S) is here to stay. I suspect you knew that already – in recent years the culture of H&S seems to have grown upwards and outwards, to the point where it now seems to impose upon almost every part of business life. I have spent a lot of my career dealing with H&S issues and somewhere, buried deep under the misinformation and padding, lies the well-meaning common-sense core of the subject – the duty of care to people, like you and me, in their working environment.

Sitting at the top of the tree lies the system of enforcement, managed and implemented in the UK by The Health and Safety Executive (HSE). Together with their associated agencies and companies, the HSE publish numerous booklets, leaflets and documents, paid for by you, the taxpayer.

These undoubtedly high-quality publications come complete with colour photographs and simplified abbreviations of the many sets of regulations that cover H&S aspects relating to factories, offices, buildings, construction sites and all other workplaces, in their entirety. Each document contains multiple cross-references to bits of itself, other documents and so on, ad infinitum.

You are not alone if you find this suite of documents and their cross-references confusing. You might be forgiven for concluding that they are more network than route maps, and at times it can be difficult to know exactly which bits of this elaborate spider's web apply to you, and, of those that do, exactly which are most important.

This *Quick Guide to Health and Safety* is not a statement of the law, or even a uniquely valid interpretation. There are hundreds, if not thousands, of shelf-bending tomes covering H&S subjects in the most myopic of detail – this is not one of those. It is a quick guide, as the title says. Its objective is to

Introduction

help you put the whole thing into some form of context, providing you with a rational overview of the subject. It can help you know where to start.

R.Gilbert
Author

Your 10 Minute A–Z Guide to Health and Safety

Read this before you get too involved in the detail in the rest of the book. Come back to it occasionally if you find yourself getting so caught up in the world of H&S rules and regulations that you are in danger of forgetting what your job actually is, or what your business is actually there to do.

A is for ACoP

ACoP stands for *Approved Code of Practice*, documents published for the HSE to explain some of the H&S laws and regulations in (reasonably) common language. HSE inspectors feel all warm and happy if they see that businesses have them, and are using them when they visit.

And also **ASBESTOS**

Dangerous stuff. Don't think you can properly identify, work on it or remove it without specialist advice. Ask the HSE for a list of approved contractors.

B is for BUSINESS (YOURS)

All UK businesses are obliged to comply with H&S laws, rules and regulations. The situation is similar to driving where you have to comply with all the laws, common and obscure, that cover driving... which of course you do.

And also **BUSINESS SUCCESS**

Compliance with H&S requirements will not *make* a business successful. On odd occasions, poor H&S compliance, leading to accidents and prosecutions or whatever, can make it *unsuccessful*, but most recover. H&S officers inside large organisations don't always think like this.

C is for COMPLEXITY

H&S legislation is complex (lawyers will tell you this – and they should know as they made it like that). Practically, in most situations, compliance reduces to simple documents, procedures and practices, 90 per cent of which are common sense or good practice.

And maybe for CHARADE

In the world of H&S, as in all other aspects of business, some activities are necessary, productive and genuinely useful, and some are charade. The larger the organisation, the greater is the percentage of charade.

D is for DANGER

Danger lurks everywhere, no doubt. Fortunately, on a good day, most of it will pass you by – without you ever knowing it was there.

And also DUTY OF CARE

You have it. It's the law (see Chapter 2).

E is for ENFORCEMENT

Enforcement is the main role of the HSE. They do this in three basic ways:

- issuing improvement notices (requiring you to improve something);
- issuing prohibition notices (requiring you to stop using a machine, site or whatever, until you improve something);
- bringing prosecutions (because they allege you have broken an H&S law; this is an entirely different thing to them *not liking* something that you have, or haven't done);

And also for EXCESS

The HSE do not have a countrywide excess of inspectors. Their enforcement activities are fairly thinly-spread and so have to be targeted. Truly random visits and enquiries are rarer than you might think. In this respect they are no

different to the Police, Tax Authorities or other government departments.

F is for FIRE

Fire is dangerous. The idea that you can stand next to a fire and think logically about how to put it out is a myth. It is very frightening. Happily, the fire itself will rarely actually kill you (the smoke gets you first).

And also for **FILING CABINETS**

Flying filing cabinets can probably cause injury if they fall on you (but why would they?) or if you jam your toe underneath (and why would you do that?). Keep your dangers in perspective.

G is for GAS

Gas can kill you in several ways. If you deal with gas, get specialist advice from someone who knows what they are doing.

And also **GOAL-SETTING**

Goal-setting is a basic tenet of UK H&S legislation, and a wonderful piece of jargon. The basic idea is that the regulations tell you **what** you have to achieve (the goal) but do not actually prescribe **how** you should do it. For example:

Q. How often should this equipment be inspected?

A. Sufficiently regularly so that it is safe.

Q. But how regularly is that?

A. That's up to you – it's your machine so you must know how risky it is (and by the way, you'd better get it right).

H is for HAZARD

A favourite H&S word – a hazard is an activity that can cause damage to you. Not to be confused with risk, which brings the spectre of probability into the equation. If you think about, and list, all the hazards that exist in your workplace, your HSE inspector might be impressed.

And also **HELP**

By all means ask HSE inspectors for advice if they visit your premises. You can contact them on the telephone also. The well-meaning advice you receive will reflect the HSE's role as the enforcing authority and not your paid adviser. Referring you to HSE publications is an uncontroversial way to give you advice (see 'C' for Complexity).

I is for INSPECTOR

The inspector is the public face of the HSE and its enforcement activities. In some types of facility, such as public buildings, schools, shopping centres and suchlike your inspector may be employed by the Local Government Authority, rather than the HSE, but their role is much the same. Your HSE inspector does not *make* the laws but does play a role in their application. Like all people, inspectors harbour opinions and have strengths and weaknesses in what they do.

And also **IMPROVEMENT**

HSE inspectors can issue you with a piece of paper called an **improvement notice** if they feel you are not complying with H&S regulations. If you are given one, it often means that you have ignored a previous less formal request or hint that you need to improve something. Improvement notices are famous for causing management to panic and run around in ever-decreasing circles, looking for someone (apart from themselves) to blame.

J is for JUDGEMENT

During a prosecution case in court, the HSE will be working to persuade the magistrates or jury (depending on how serious the prosecution is) to make a judgement against the defendants that they are guilty of the offence with which they are charged.

And also for **JUDGES AND JURIES**

Part of the legal system, and therefore best avoided at (almost) all costs. The HSE understand this system better than you and records show that they win more cases than they lose.

K is for KILLING

Just about the worst H&S offence with which you can be charged. Penalties include unlimited fines and imprisonment. There are many, many more people killed in traffic accidents and accidents in the home than in accidents at work.

And also for **KICKBACK**

If you lie to, or mislead, your HSE inspector, and are found out, you can expect to be subjected to, surprise, surprise, further questioning and investigation.

L is for LAW

Laws are the rules of a civilised society. Most people know less than 5 per cent of the laws they are subject to, but life continues. Lawyers make their living at it, squabbling theatrically between themselves over every last word and turn of phrase. You pay for it all.

And also for **LIP SERVICE**

This is what some (even quite large) businesses give to H&S issues. It takes the form of elaborate policy statements, lots of written procedures in filing cabinets, lots of pretty banners and posters, but not much action.

M is for MACHINERY

Machines are covered by lots of H&S regulations covering electrical safety, guarding requirements, safe operating procedures and suchlike. Some machines can be very dangerous, but others less so.

And also for **MUDDLE**

Your destination if you read statutory regulations (called 'instruments') too deeply. Approved codes of practice (see A

for ACoPs) and guides are a little better at explaining things in simpler language.

N is for NECESSITY

These are the actions you **really** need to take to comply with H&S regulations.

Not to be confused with **N for NICETY**

Actions and things that, while not actually bad, concentrate on alleviating risks so small so as to be fairly worthless in the bigger picture of things. Some businesses waste their energy concentrating too much on niceties.

O is for Opinion

All HSE inspectors hold opinions. Don't be surprised if they differ (quite a lot in some cases) from those of other inspectors doing a similar job.

And also for **OUTRÉ**

Definition: *exaggerated beyond what is really proper and necessary* (like walking with two hands holding the same handrail, for example).

P is for PPE

Never has so much been written and published about the (absolutely undeniable) need for protective hats, boots, goggles, clothing and other unflattering protective accoutrements. There's even a European Directive on it. Wow.

And also for **PROHIBITION NOTICE**

Just about the worst thing the HSE can give you (apart from the final sanction of prosecution, of course). It is a legal notice requiring you to stop using your machine, construction site, facilities, etc., with immediate effect, as the HSE have decided it is unsafe. It generally will not apply to your business, as a legal entity, but to the facilities and assets and procedures that it uses. You have to be in fairly serious non-compliance with H&S regulations to get one of these. If you don't comply, the HSE are not allowed physically to force

their way on to your premises, they will simply call the police, who are.

Q is for Qualifications

There are lots of H&S qualifications, formal and informal, practical and academic. Your HSE inspector will, however, praise or prosecute on the basis almost entirely of what you are doing or not doing, rather than of how many letters you have after your name.

And also for Questions, Questions, QUESTIONS

The main weapon of all enforcement authorities. They are trained to find things out by asking you awkward questions and listening to your answers, or lack of them. If, for example, you are asked what your colleague did just before a recent incident or accident, rest assured that your colleague will be asked precisely the same question about you.

R is for RISK

Risk is absolutely multivariate and everyone sees it differently. It is next to impossible to reduce risk to zero, and reality can become clouded by elaborate definition as to what risk is and isn't.

And also for REASONABLY PRACTICABLE

This swims with opinion. The idea is that you are expected to take whatever steps are *reasonably practicable* to reduce risk as far as is . . . , you've guessed it, *reasonably practicable*. It does have legal implications and may be quoted to you when something goes wrong. A lot rests on precedent, i.e. what someone else in your situation is doing or not doing using their interpretation of what *reasonably practicable* means to them.

S is for SLIPS, TRIPS AND FALLS

The biggest accident category of them all. Many remain unpredictable, no matter how hard you try (look at how it is possible to trip over a paving slab edge raised by only a few millimetres).

And also **STATEMENTS**

After an accident, the enforcing authority can ask you to make a statement. If you do it, it will turn out to be either to your benefit or to your detriment (what other alternatives are there?).

T is for TOOLS

Another common source of H&S risks and dangers (particularly power tools). They need maintenance and to be used correctly, to be safe.

And also for **TRAINING**

One of the easiest things for an enforcement authority to ask is, *'Have you trained your staff in all the relevant H&S issues for the risks they are likely to be exposed to?'*. Guess what answer they are looking for.

U is for UNDERSTANDING YOUR HSE INSPECTOR

Your HSE inspector is a government employee, has hundreds or thousands of potential premises to visit and does not have the time to act as your unpaid (by you) H&S adviser. Inspectors, like you, daily see situations, premises, equipment and people that are new to them.

And of course **ULTRACREPIDATE**

Definition: *To give a critical opinion of something beyond your grasp or over your head.* Watch out for this in yourself and others.

V is for VIBRATION

Vibration from tools like pneumatic drills can cause physiological damage to people.

And also **VDUs**

VDUs can cause eyestrain for computer users. Presumably, therefore, billions of the world's population suffer from eyestrain. There are regulations covering VDUs, and their use should be governed by common sense.

W is for WORKPLACE

Anywhere that people work is defined as a place of work and is subject to H&S legislation. Peoples' homes (unless that is their workplace) are not covered in the same way.

And also for WORKERS

Any people in a workplace, whether they actually work for the workplace owner/user or not. There can be a surprising diversity of popular, and legal, opinion as to whether some people are defined as workers or not (what about someone who delivers goods to someone else's premises, for example).

X is for X-RAYS

A mass of regulations covers radiological dangers and protection. Radiation is dangerous – this is an area best left to specialists.

And of course XENOMANCY

Definition: *Predicting your future using strangers* (H&S consultants and suchlike).

Y is for YOU (as an employer)

You as an employer have an H&S responsibility for yourself and all the competents and incompetents that work for you.

And at the same time YOU (as an employee)

You have an H&S responsibility for yourself and the competents and incompetents that you work for or work with.

Z is for ZERO

The number of accidents you should wish to have. Easily achieved by using imaginative definitions of how you define some accident categories (e.g. serious accident, lost time accident, etc.).

And also ZEALOUS ... (noun ZEALOT)

The usual, visible state of large-company H&S managers who are doing their jobs properly as they see it.

Chapter 1

Health and Safety Legislation – How Much is There?

The answer is ‘a lot’. In recent years more than 25 statutory instruments have been enacted, governing the protection of employees and others in the workplace, and the public from activities carried on in the workplace. **The Health and Safety at Work Act 1974** (HSW Act) is the foundation of most of the present-day legislation. Here are its main objectives:

- *It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.*
- *To conduct his undertaking . . . in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.*

This is frequently summarised as the employer’s **duty of care**.

The act also places similar duties on manufacturers, namely:

- *It shall be the duty of any person who designs, manufactures, imports or supplies any article for use at work to ensure, so far as is reasonably practicable, that the article is so designed and constructed as to be safe and without risks to health when properly used.*

The HSW Act does not go into great detail specifying ‘how’ to be safe; it merely says, ‘you will be safe’. The act, however, lays down the principles and is the foundation for many of the subsequent and more detailed legislation.

1.1 Some of the other legislation

You now need to be aware of other legislation (regulations) which are bolted on to the HSW Act. There are a lot, and we

will try to cover the main points of the more generally applicable ones in subsequent chapters. Much of our recent Health and Safety (H&S) law and regulations have resulted from EC directives. When the EC issues such directives, member states are required to enact legislation that implements the directives in the member state. For example, the Manual Handling Operations Regulations implement the EC directive on manual handling (90/269/EEC).

One of the subsequent regulations can also be considered as very much a fundamental one, namely: **Management of Health and Safety at Work Regulations 1999 (the Management Regulations)**.

These regulations generally make more explicit what employers are required to do to manage H&S under the HSW Act, and, like the HSW Act, they apply to every work activity. The main requirement on employers is to carry out a **risk assessment**. More on this later.

In order to help make you aware of the existence of some of the other major regulations, their title, and a one-line description, are listed below:

- **Safety Representatives and Safety Committee Regulations 1977.**
- **Health and Safety (First Aid) Regulations 1981.**
- **Noise at Work Regulations 1989** replaced by **The Control of Noise at Work Regulations 2005.**
- **Construction (Head Protection) Regulations 1989.**
- **Dangerous Substances (Notification and Marking of Sites) Regulations 1990.** Relevant if you have large quantities > 25 tonnes.
- **Electricity at Work Regulations 1989.**
- **Workplace (Health, Safety and Welfare) Regulations 1992.** Deals with general matters in the workplace itself.
- **Personal Protective Equipment at Work Regulations 1992.** Deals with the use of PPE.
- **Manual Handling Operations Regulations 1992.** Deals with all manual lifting, pushing, pulling, etc.

- **Health and Safety (Display Screen Equipment) Regulations 1992.** Deals with computer screen work and the like.
- **Construction (Design and Management) Regulations 1994 (CDM Regulations).** Deals with the management of safety on construction projects. There are exemptions for small projects.
- **Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR).** Deals with what has to be reported and when.
- **Construction (Health, Safety and Welfare) Regulations 1996.** Deals with general matters on construction and building sites.
- **Health and Safety (Consultation with Employees) Regulations 1996.**
- **Confined Spaces Regulations 1997.** Deals with how to work safely in confined spaces, e.g. closed tanks, vessels, sewers, pits, etc.
- **Provision and Use of Work Equipment Regulations 1998 (PUWER).** Deals with all work equipment (including machinery), its maintenance, inspection and guarding requirements.
- **Lifting Operations and Lifting Equipment Regulations 1998 (LOLER).** Deals with non-manual lifting equipment, its use, maintenance and inspection.
- **The Gas Safety (Installations and Use) Regulations 1998.** Deals with gas installations in domestic and commercial premises, although not factories, where the HSW Act actually requires the same precautions.
- **Ionising Radiations Regulations 1999 (IRR 99).** Deals with X-rays, gamma-rays, microwaves, etc.
- **Pressure Systems Safety Regulations 2000.** Deals with systems that are under pressure other than purely hydraulic pressure, their design, operation, maintenance, inspection and testing.
- **Personal Protective Equipment Regulations 2002.** Deals with the manufacture and supply of PPE.
- **Control of Lead at Work Regulations 2002.**

- **Control of Asbestos at Work Regulations 2002.**
- **Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR).** Deals with the control of flammable and explosive substances.
- **Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP).** Very important if you are a supplier of chemicals.
- **The Control of Substances Hazardous to Health Regulations 2002 (COSHH).** Deals with all substances, with a few exceptions, that could cause injury or ill health – liquids, vapours, dusts, etc.
- **Petroleum Acts.** You may need a license if you store > 15 litres of petrol or petroleum mixtures – consult your local authority.)

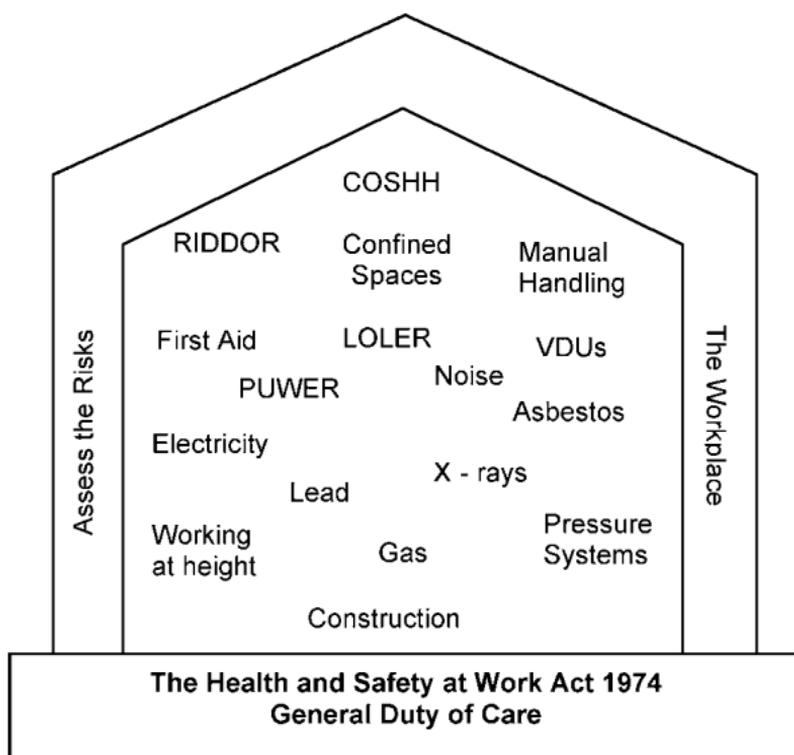


Figure 1.1 Reminders of some topics subject to H&S Regulations



Hard copy of all the regulations, codes of practice, etc.



This book is intended to give you most of what you need to know in one place

Figure 1.2 The intention of this book

This is an awesome list, but you need to be aware of their existence. Some of them will certainly be relevant to your factory, business, office, etc., so you need to understand the requirements and comply with them.

If you have paper copy of all the regulations, HSE approved codes of practice and guidelines you will need a fairly large bookcase to house them all and a lot of time to read them. The objective of this book is to help you get a good quick appreciation of the main requirements and duties and steer you in the right direction if you need to know more.

1.2 Other sources of information

All recent legislation (called statutory instruments) can be accessed on the government's website: www.opsi.gov.uk

The HSE publish numerous approved codes of practice and guidelines on the meaning and implementation of these regulations. A full list can be obtained from the Health and Safety Executive or on their website: www.hse.gov.uk

Chapter 2

Enforcement and the Legal Situation

2.1 Who enforces the laws and regulations?

Two bodies enforce the various H&S laws and regulations. The Health and Safety Executive (**HSE**) generally cover factories, building sites, mines, farms, fairgrounds, quarries, railways, chemical plant, offshore and nuclear installations, schools, hospitals and other workplaces. Local authorities cover shops, some warehouses, most offices, hotels and catering, sports, leisure, consumer services and places of worship. The addresses and telephone contact numbers of both can be found in local telephone directories or on their websites.

2.2 What is the purpose of enforcement and how is it done?

The obvious purpose is to find and punish those who flout the laws and regulations. This is usually the action of last

Enforcement by the HSE	Enforcement by local authority
Generally industrial workplaces such as: <ul style="list-style-type: none">• factories• building sites• chemical plants• offshore platforms• nuclear plants	Generally non-industrial workplaces such as: <ul style="list-style-type: none">• shops• offices• hotels• catering• leisure facilities• places of worship
PLUS <ul style="list-style-type: none">• schools• hospitals• fairgrounds	PLUS <ul style="list-style-type: none">• some warehouses

Figure 2.1 Who enforces the laws and regulations and where?

resort. The more helpful and positive purpose of these enforcing authorities is to prevent harm to employees, workers and the public by actively promoting compliance with the regulations and helping employers to achieve this.

Enforcing authorities use several methods to help them secure compliance with the law. These include:

- publication of codes of practice and guidance documents;
- provision of information and advice (both face to face and in writing);
- issuing warnings (usually written);
- issuing improvement notices (e.g. 'do x by date y');
- issuing prohibition notices (e.g. 'stop doing or operating x immediately');
- issuing formal written cautions;
- initiating prosecutions for serious breaches.

2.3 Provision of information and advice

Enforcing authorities will normally attempt to correct non-compliance in the first instance by giving information or advice. Where non-compliance presents immediate and serious risk, however, more serious enforcement methods may be used immediately. The HSE also publish numerous codes of practice and guidelines on how to comply with the various laws and regulations.

Approved codes of practice (ACOPs) issued by the HSE have special significance and legal status. If you follow the guidance and provisions of an ACOP you will be deemed to have done all that is necessary to comply with the law. If persons are prosecuted for a breach of H&S law and did not follow the provisions of an ACOP, then the onus is on them to show that they complied with the law in another way that is equally good. Guideline documents issued by the HSE or local authority do not have quite the same legal status as ACOPs, nevertheless, if you do follow the guidance given, you will almost certainly have done all that is required by the law.

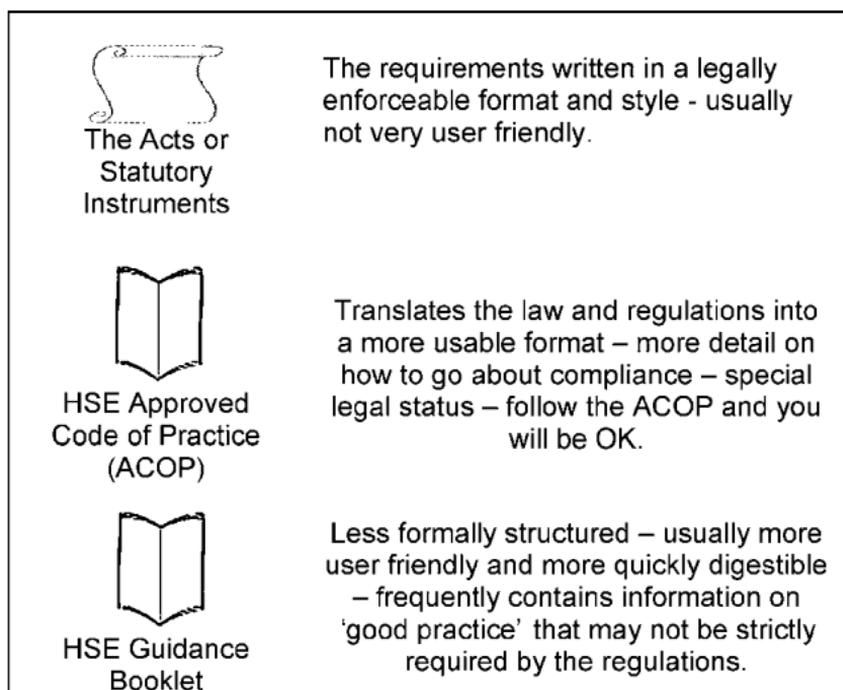


Figure 2.2 The official sources of information on the laws and regulations

2.3.1 A word of advice on asking for advice

If you ask your HSE or local authority inspectors for advice, they will surely give it as best they can. This advice will probably, and understandably, be conservative and cautious because they may at some future time be faced with the need to take strong action against or even prosecute the company or person they give the advice to. If you really do not have any idea about how to comply with a certain aspect of a regulation, then you can ask the open question ‘What should I do?’. It is better, however, to consider the particular compliance issue yourself, work out a plan of action that you believe will meet the requirements and then (if you are not sure) ask the enforcing authority for comment. This does not mean that you will ‘get away’ with not complying properly, but it should help you to arrive at a solution that you find practical and achievable in your situation.

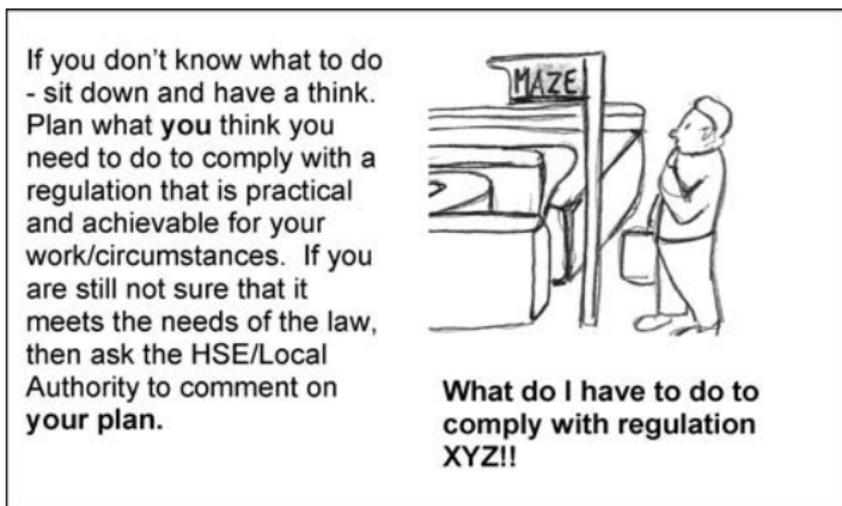


Figure 2.3 Asking for advice

2.4 Proportionality (action proportional to the risk)

Some H&S legislation is precise and prescriptive, but much of it is not and requires the exercise of judgement and common sense. For example, you must report a 'reportable accident' to the ICC (Incident Contact Centre) within 10 days. This is fairly precise and prescriptive. An example of a frequent and less precise requirement is where employers are required to avoid the need for manual handling that involves the risk of injury *so far as is reasonably practicable*. This is not precise, and judgement will be required by the employer and the enforcing authority. In enforcing this example requirement, the enforcing authority will exercise *proportionality*.

Proportionality, in this context, means any enforcement action taken should be related to the **risk** (in this context, *risk* means the seriousness of the consequences and the likelihood of it happening – more on this in Chapter 5). If there is a minor non-compliance and the risk is small, then the enforcement approach will probably be one of giving advice. If the non-compliance is serious and the consequential risk is

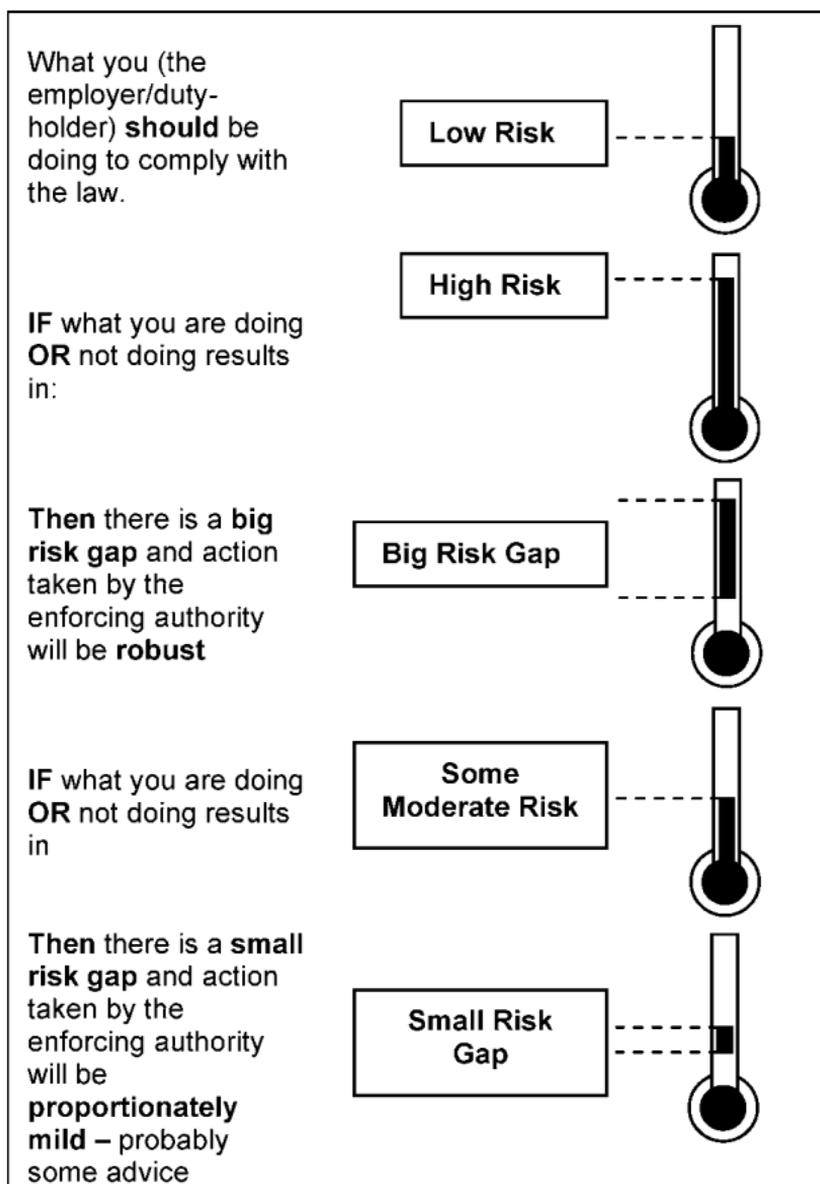


Figure 2.4 Response proportionate to the risk gap

high, then a much more robust enforcement approach can be expected, e.g. issue of an improvement or prohibition notice and, in the extreme, prosecution.

The Health and Safety Commission's Policy Statement on

Possible Action by Enforcing Authority	Degree of Risk from Non-compliance
Prosecution	Actual serious injury or real and present danger of serious injury
Prohibition notice	
Formal caution	
Improvement notice	
Written warning	
Advice	
Guidance	

Figure 2.5 Response proportionate to risk

Enforcement contains the following words on proportionality:

Proportionality means relating enforcement action to risks. Those whom the law protects and those on whom it places duties (duty holders) expect that action taken by enforcing authorities to achieve compliance or bring duty holders to account for non-compliance should be proportionate to any risks to health and safety, or to the seriousness of any breach, which includes any actual or potential harm arising from a breach of law.

Note the use of the word ‘potential’. Enforcing authorities can and will take action in the absence of any actual injury or harm if the potential for injury or harm has been allowed to exist.

2.5 Improvement notices and prohibition notices – what are they?

An improvement notice is an official written communication from the enforcing authority (HSE or local authority) to the duty holder (usually the owner/director/senior manager of

the facility), instructing him or her to make specified improvements or changes by a specified date.

A prohibition notice officially communicates an instruction to stop a specified activity/shut down certain equipment immediately because the risk is unacceptably high.

2.6 Reasonably practicable – what does this mean?

Much of H&S law and regulations require employers do something **or** not do something if it is **reasonably practicable**. For example, in Regulation 4 of the Electricity at Work Regulations it states '*systems shall be constructed and maintained so as to prevent, as far as is reasonably practicable, danger*'. In Regulation 13 of The Workplace (Health, Safety and Welfare) Regulations it states '*So far as is reasonably practicable, suitable measures shall be taken to prevent ... any person falling a distance likely to cause personal injury, ...*'. There are many, many more regulations like this.

Think about the real-world implication of this. It is obviously possible for a window cleaner to clean the windows of a house without working from ladders; scaffolding with staircases could be erected. A £10 job would then, of course, become a £1000 job. We still use ladders for window cleaning, however. The Working at Height Regulations say '*... ensure that work at height is ... carried out in a manner which is, so far as reasonably practicable, safe*'. We have balanced on the one hand the risks of cleaning the windows from ladders and on the other hand the cost of the alternatives that do not require working from ladders. Another example – if an employee is required to use a fixed grinder to dress work and if this machine emits sparks and small debris particles likely to hurt one's eyes, then there is a risk. Provision of suitable eye protection would cost around £1–£5. In this case it would be totally *unreasonable* if eye protection were not provided.

In these two examples, the correct and defensible judgement of reasonably practicable is fairly straightforward and

obvious. Many real situations are less obvious, and you will need to exercise good judgement and common sense. It may help if you think of analogous situations when making these judgements.

The Health and Safety Commission's Policy Statement on Enforcement contains the following words on reasonably practicable:

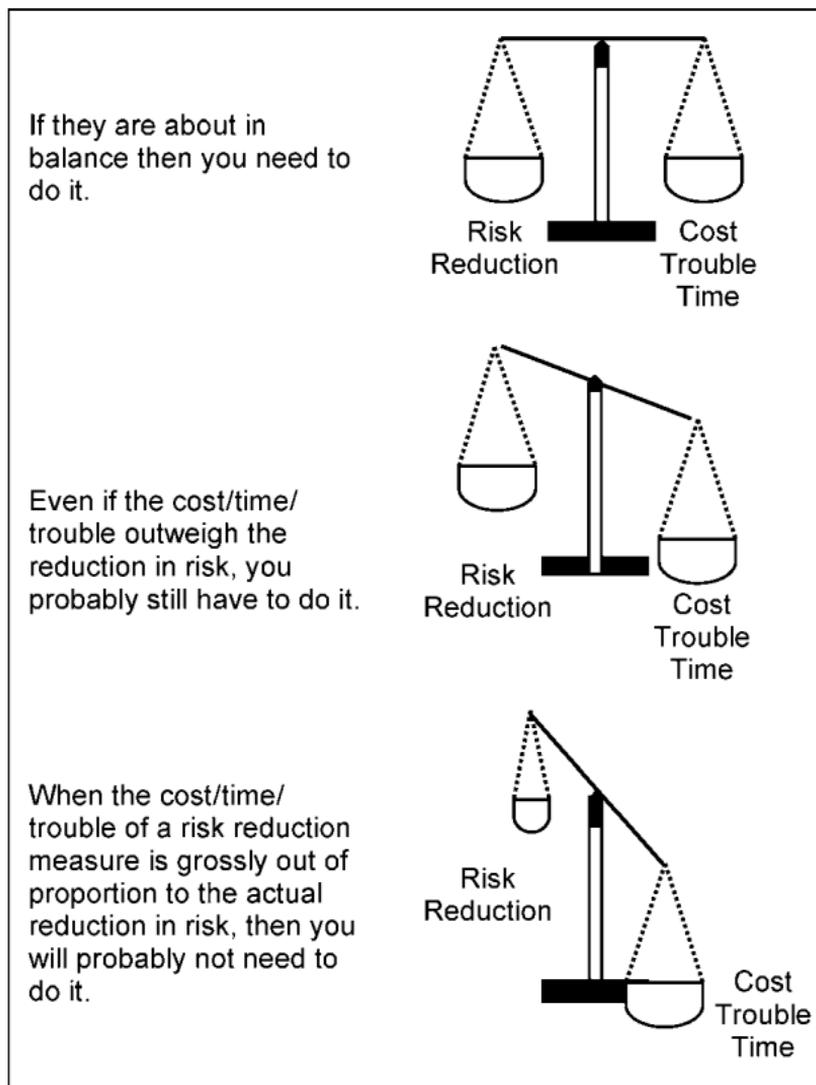


Figure 2.6 Reasonably practicable risk reduction

Enforcement and the Legal Situation

Deciding what is reasonably practicable to control risks involves the exercise of judgement. Where duty holders must control risk so far as is reasonably practicable, enforcing authorities considering protective measures taken by duty holders must take account of the degree of risk on the one hand, and on the other the sacrifice, whether in money, time or trouble, involved in the measures necessary to avert the risk.

For obvious and understandable reasons, the Health and Safety Commission's words probably err on the cautious side.

The enforcing authorities will expect to see relevant good practice used. So, if it is good practice in your industry/activity to do **X**, then you will need a fairly good reason for not doing it. Conversely, if you think you are required or are advised to go way beyond what you know to be 'good normal' practice, then check it out and challenge it. Ultimately, the courts will decide what is reasonably practicable in particular cases.

2.7 Who will receive the most attention from enforcing authorities?

Enforcing authorities like to pay most attention to those activities that cause the greatest risks and where hazards are least well controlled. A facility that has low risk activities but is considered to pay little serious attention to the health, safety and welfare of its employees, or is considered to be poorly managed, will also receive more attention than a well-managed, well-operated one.

Chapter 3

Health and Safety ... so What Business are You in?

3.1 Business survival

In order for any business to prosper, it has to survive. It needs to provide goods or services that a customer is prepared to buy and receive an income that covers its costs and provides profits to enable it to invest in improvements, pay shareholders, etc. Organisations funded from the public purse may not be subject to the same type of commercial disciplines, but they are still judged on some measure of performance and still need to allocate resources in a sensible and effective way. It goes without saying that a key underpinning requirement is to have an efficient way of doing whatever it is you do. Employees who know what to do, know how to do it effectively and efficiently and want to do it are obviously very important to survival and success. Every £ or man-hour spent that does not contribute to your business'/organisation's success makes it less likely to survive and prosper. So, is money and time spent on H&S helping your organisation to prosper or is it bringing it closer to failure?

It is estimated that there are 1.6 million accidents every year, and 2.2 million people suffer ill health caused or made worse by their work. Thirty million working days are lost each year, with a cost to industry of some £700 million. Estimates of the overall cost to employers vary from £4000 million to £9000 million per year, some 5–10 per cent of gross trading profit. On a national basis (including social security and NHS costs) it is estimated that the total cost to the country is some £10–15 billion per year. It is not easy to understand how these 'official' figures are counted, but, even

if they are overestimated by a factor of 2, the numbers are still very large.

3.2 Good H&S should be good business

If you have 'high' levels of accidents and dangerous occurrences in your business, then you can be fairly sure that your work activities are not efficient or effective, e.g.:

- People tripping over trailing cables in an untidy office = untidy office, untidy systems and people wasting time looking for things.
- People having injuries because they are not using the right tools for the job suggests poor planning and preparation. Wrong tools = more time and poor quality.
- People injured by belt drives when the guard is left off suggests poor maintenance. Poor maintenance = poor equipment performance and more costs.

The wrong tools can be painful and dangerous



Figure 3.1 The right tools for the job

Health and Safety ... so What Business are You in?

Good H&S almost always comes from:

- planning the activity well;
- providing adequate training/instruction;
- providing the right tools for the job;
- providing sufficient time and the right environmental conditions for the job.

Most of the H&S laws and regulations require employers to do sensible things in order to protect employees and others affected by their activities. They require us, in the main, to do things that good businesses have been doing for a long time. Once these 'good practices' are enshrined in laws and regulations, then two things tend to happen:

- The words used in the laws/regulations become ones that have to be suitable for purposes of law enforcement and prosecution. The style of writing becomes 'legalese' and the documents are not very user friendly.
- The need for written procedures, instructions and the keeping of records becomes a major requirement. You may be required to demonstrate that you have done an adequate risk assessment or have a safe job method.

Keep it to a sensible amount. Paper that just fills filing cabinets will not improve safety. Doing it right will improve safety.



Figure 3.2 H&S paperwork

Absence of a written record means you can't demonstrate this easily.

You will need some documentation to be able to demonstrate compliance with H&S law. Keep it simple and to the point. If you find yourself saying: 'Why am I doing this? It is just paper to fill a filing cabinet', then pause and reconsider. The right sort of 'paper' should help you, but too much of the 'wrong' sort of paper will simply waste time without improving safety.

3.3 As well as hurting people, accidents and injuries cost the business

As well as hurting people, accidents and injuries hurt the business. There is the direct time lost by the injured/ill person, the time cost and money spent on replacement (even

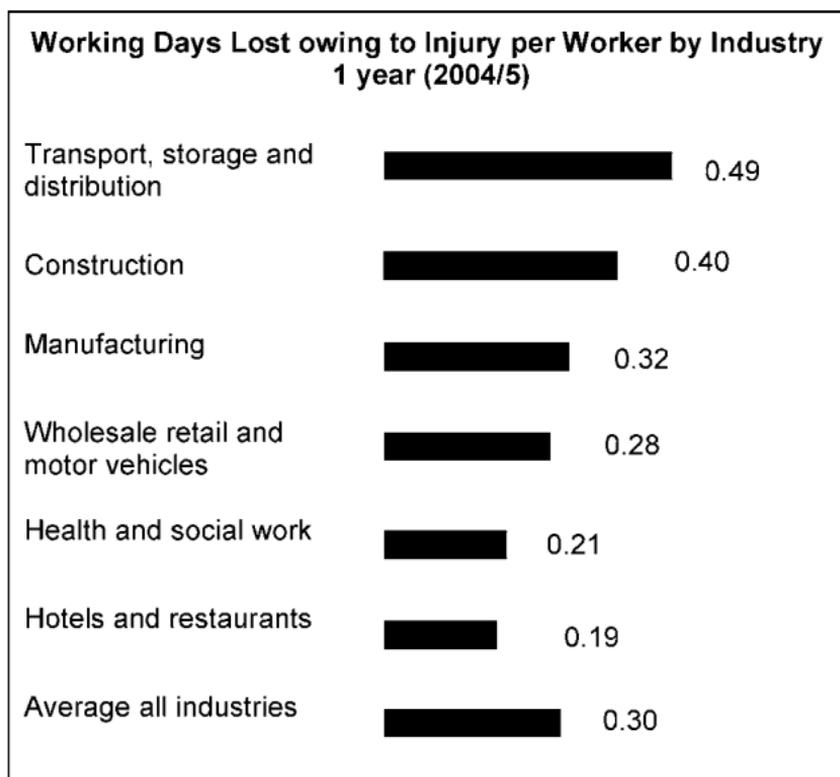


Figure 3.3 Working days lost owing to injury

Health and Safety ... so What Business are You in?

for a day) or lost output, etc. Too many accidents have a bad effect on employees' morale and willingness to do their jobs well. There are numerous statistics on business loss due to accidents, injuries and other unsafe events. You are probably best able to assess these losses for yourself in your particular line of business. One hidden effect you should keep in mind is the time needed by owners/managers/staff to sort out the resulting 'mess'. Every hour spent on reports, investigations and action plans is one hour less spent on running/improving the business. You cannot be developing the plan for production improvement while you are carrying out investigations, being interviewed by the HSE or local authority and developing safety improvement strategies.

In a number of large companies it has been demonstrated

A well run and efficient business AND a good safety performance frequently go hand in hand

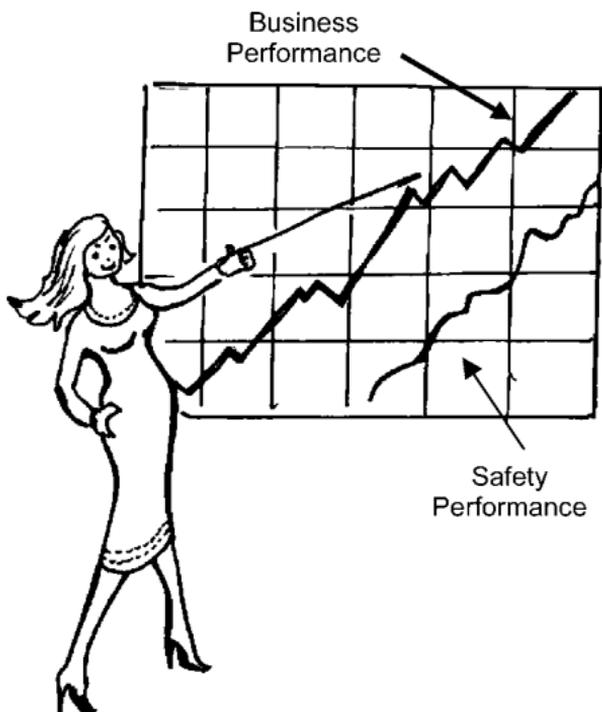


Figure 3.4 Link between business and safety performance

that an increase in the injury rate frequently coincides with a reduction in business performance, and vice versa. Is this coincidence? Almost certainly not. The same employee attitudes, management effectiveness, etc., result in good business and good safety.

3.4 If you think training is expensive – try ignorance

Many accidents, injuries and dangerous occurrences have some element of poor training or instruction as their root cause. Just think of some you personally know about. Ask why it happened about 5 times and see if you end up concluding that lack of proper training or instruction was the root cause.

Root Cause Analysis Keep asking WHY?

A powerful tool for many situations not just investigating accidents

A person was injured when a portable self-erect scaffold toppled over.

WHY did it topple over? It had not been erected properly. There was insufficient cross-bracing and the outrigger stabilisers had not been fitted.

WHY was this? The person who erected it did not know enough about the correct way to erect it.

WHY didn't he know? He **had not been trained** or instructed properly.

Think of a recent accident you know about, keep asking WHY until you find the root cause. What was the root cause?

Figure 3.5 Root cause analysis – a short example

Health and Safety ... so What Business are You in?

In almost every piece of H&S legislation there is a requirement adequately to train and instruct employees, e.g. Regulations 8 and 9 of PUWER contain the requirement: *employers should provide information, instructions and training not only to those who actually use work equipment, but also to employees supervising or managing its use.*

Training is often thought of as a formal 'classroom' period of training under the direction of some professional instructor or trainer. This, of course, is the best way of delivering some types of training. Verbal instruction and physical demonstration at the workplace itself, by a knowledgeable and competent person, is the best approach for many situations. This type of training, sometimes needing no more than 10 min, is in many instances all that is required. Training and instruction on the H&S aspects done at the same time as instruction on how to do a job, use a machine or whatever imposes little real extra burden and reaps a good return.

Some companies have what they call 'tool box talks' say once per week. Some particular topical subject is chosen and someone will talk for about 10 min on, say, the safe use of portable electric hand tools. This sort of approach is good for business as well as safety on its own.

3.5 What are the most common accidents and causes of injury?

You cannot really have a book on H&S at work without some statistics. So here are some (all statistics extracted from HSE published information):

- Every year there are about 200 fatalities caused by accidents at work (about 3000 people are killed on UK roads each year). The main causes of fatalities are shown in Fig. 3.6.

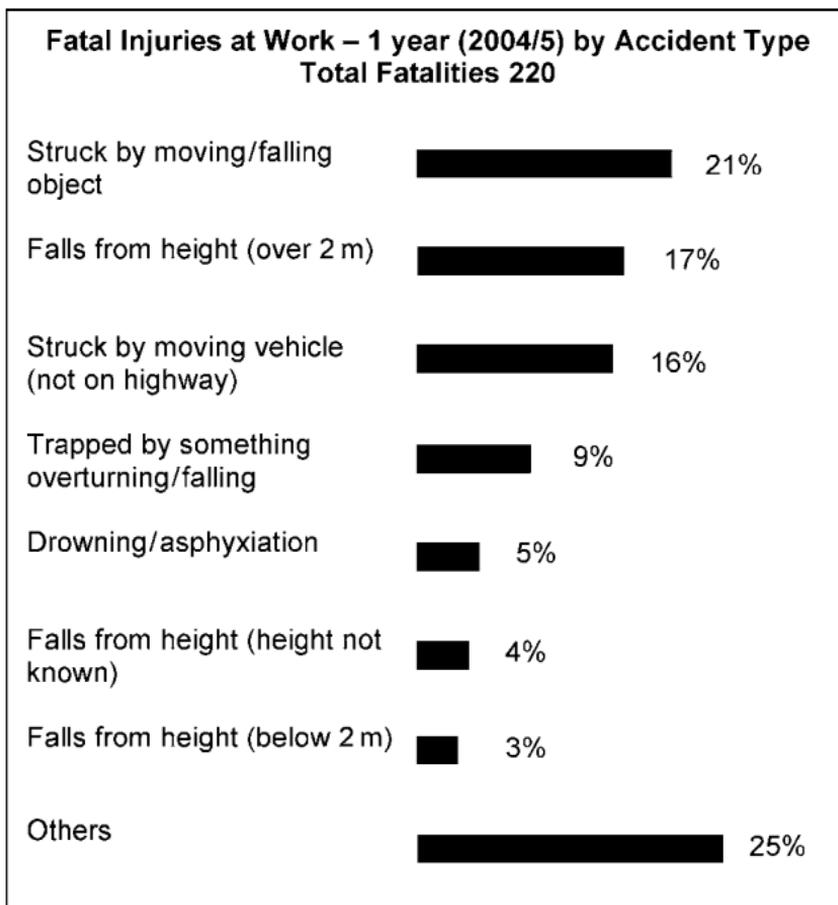


Figure 3.6 Fatal injuries at work

- Every year there are about 30 000 major injuries. The main causes are shown in Fig. 3.7. You will see that the main cause is not a very exciting one – it is slips, trips and falls.

Health and Safety ... so What Business are You in?



Figure 3.7 Major injuries to employees

- Every year there are about 120 000 injuries that prevent persons from working (or doing their normal job) for more than 3 days. The main causes are shown in Fig. 3.8.

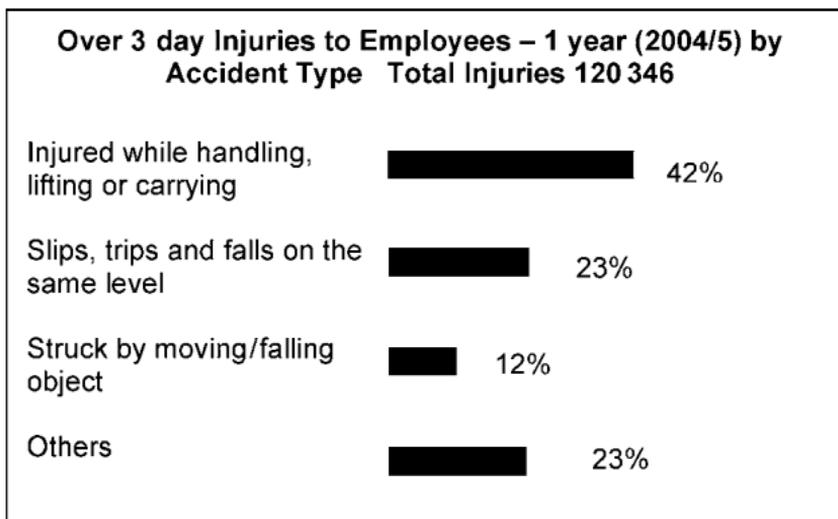


Figure 3.8 Over 3 day injuries to employees

- About 7 000 000 working days are lost every year as a consequence of injury at work. That's equivalent to about 30 000 people off work for the whole year. Figure 3.9 shows the recorded causes of this lost time.

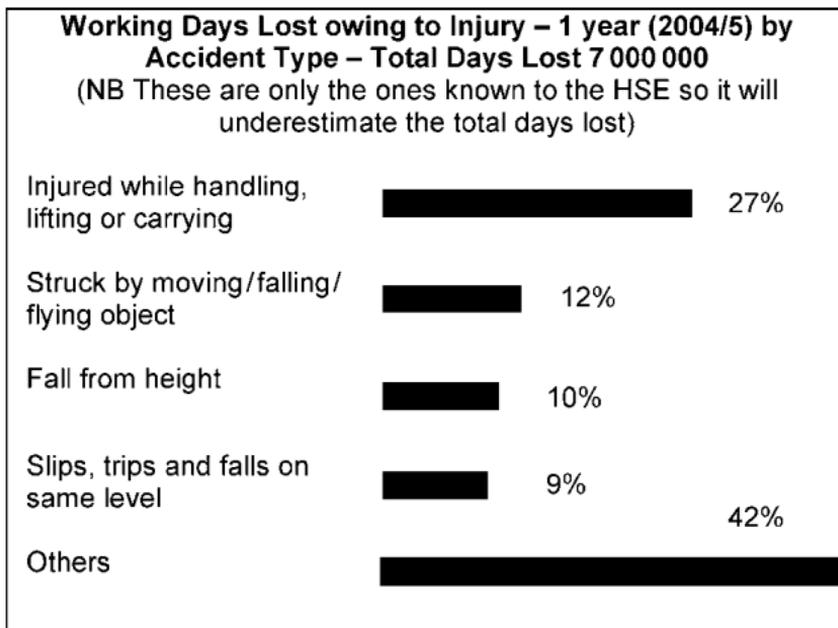


Figure 3.9 Working days lost owing to injury

Health and Safety ... so What Business are You in?

- Figure 3.10 shows figures for the injury rate per 100 employees. If you are 'typical' and you employ 50 plant/machine operatives, then one of your employees will have a reportable injury every year. Not very good is it?

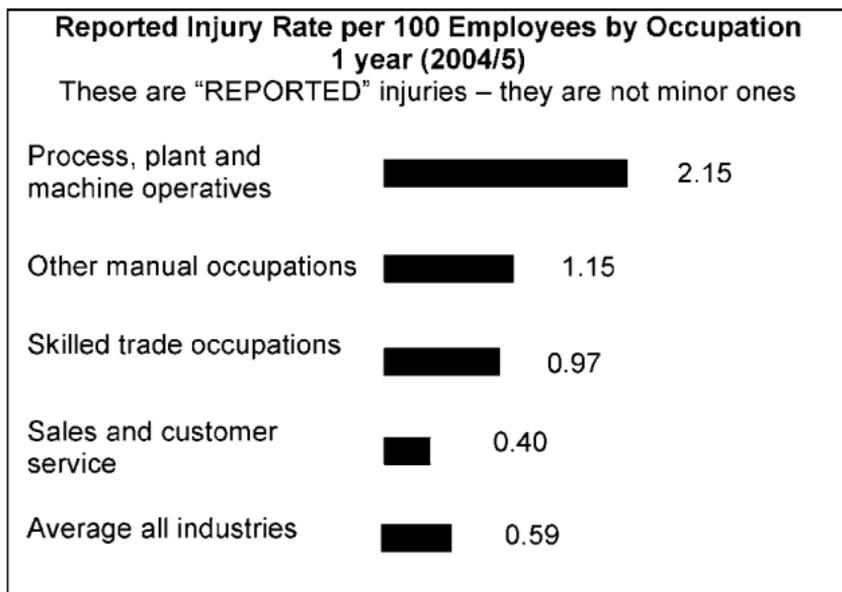


Figure 3.10 Injury rate per 100 employees

Chapter 4

The Health and Safety at Work Act 1974 (HSW Act) and What it Means

4.1 Basic concepts and duties

This act is probably the most important piece of H&S legislation in recent decades and forms the basis of our H&S law. As well as setting out general duties on employers and others, it lays the foundations for subsequent legislation, regulations and enforcement regimes.

If you wanted to summarise it in one sentence, then it would be something like: **you must do whatever is ‘reasonably practicable’ to ensure the health and safety of employees and others who might be affected by your work activities.**

The Act imposes:

- general duties on employers for the health and safety of employees and members of the public;
- general duties on employees for their own health and safety and that of other employees.

These duties are qualified by the principle of **so far as is reasonably practicable**, i.e. an employer does not have to take measures to avoid or reduce risk if they are technically impossible or if the time, trouble or cost of the measure would be grossly disproportionate to the risk.

The law requires you to do what good practice and common sense would lead you to do anyway, that is, look at the risks and take sensible measures to eliminate them or reduce them to acceptable levels.

The HSW Act does not spell out exactly HOW you should go about achieving the goals and objectives, it simply says you will. Subsequent legislation and regulations bolted on to this act do go into more detail on the HOW for some subjects and specific work activities.



If you are an employer, then you must do whatever is **reasonably practicable** to ensure the health and safety of employees and others who might be affected by your work activities.

Figure 4.1 Employer's overall duty

4.2 Duties of employers to employees

Employer's duties in this regard are:

- to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all employees;

and, in particular:

- the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health (**safe systems of work is an important point**);
- ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances;

The Health and Safety at Work Act 1974 (HSAW Act)

- Provide and maintain plant and equipment that is safe
- Operate safe systems of work
- Safe handling, transport and storage of articles and substances
- Provide adequate training, instruction and supervision
- Provide a safe and healthy place to work in

Figure 4.2 Employer's duties to employees – key points

Name of Company:

Health and Safety Policy Statement Health and Safety at Work etc. Act 1974

Our statement of general policy is:

- to provide adequate control of the health and safety risks arising from our work activities;
- to consult with our employees on matters affecting their health and safety;
- to provide and maintain safe plant and equipment;
- to ensure safe handling and use of substances;
- to provide information instruction and supervision for employees
- to ensure all employees are competent to do their tasks, and to give them adequate training;
- to prevent accidents and cases of work-related ill health;
- to maintain safe and healthy working conditions; and
- to review and revise this policy as necessary at regular intervals

Signed:

(Employer/Owner/Director)

Date

Review date

Note: This model policy was obtained from HSE publication 'An Introduction to Health and Safety'

Figure 4.3 Sample H&S policy

- the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of employees (**beware of just paying lip-service to instruction and training**);
- so far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risks to health and the provision and maintenance of means of access to and egress from it that are safe and without such risks;
- the provision and maintenance of a working environment for employees that is, so far as is reasonably practicable, safe, without risks to health and adequate as regards facilities and arrangements for their welfare at work.

Additionally, you must have and display a written policy with regard to health and safety at work.

4.3 Duties of employers (and self-employed) to others

Employers have duties to the general public, visitors to their premises and other persons who do work on their premises. This duty is:

- to ensure, so far as is reasonably practicable, that persons not in their employment who may be affected thereby are not thereby exposed to risks to their health or safety.

The duty to the public and visitors is fairly obvious. The duty to contractors, for example, that come to your workplace to do work is sometimes overlooked. If you employ a company or contractors to do some work in your workplace, then they have a responsibility to avoid exposing you and your employees to danger from their activities. Equally, you have a responsibility to protect them from your activities and you must clearly advise and warn them of any dangers posed by your activities. If, for example, you hire a contract joiner to do some work in your workplace where chemicals are

processed or handled, then you must advise of the potential dangers and provide any necessary protection from the chemical dangers.

4.4 Duties of employees

Employees also have sensible duties placed on them. They must:

- take reasonable care of themselves and anyone else who may be affected by what they do, or omit to do, in their work;
- cooperate with their employer in H&S matters;
- not interfere with or misuse things provided for their, or others', health and safety.

If an employee creates a trip hazard by carelessly positioning a cable supply to a portable tool close to the top of a general stairway and someone trips and falls downstairs, who is at fault, the employer or the employee? There would have to be some good reasons why the employee was not considered to be the one at fault. Questions could be raised, however, as to whether training was adequate, whether there was a practicable alternative route for the cable, etc.

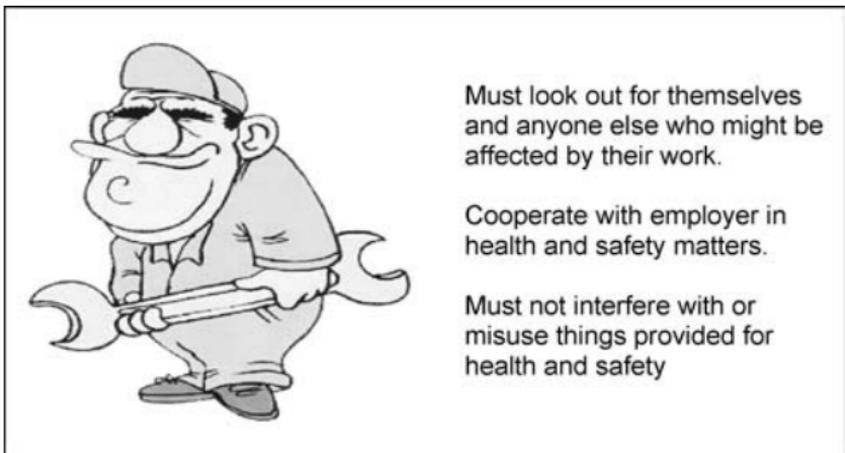


Figure 4.4 Employee's duties – summary

4.5 Consultation with employees

Employers are required to consult with employees on matters that affect their health, safety and welfare at work. This can be done in several ways:

- through a trade union appointed safety representative (if you have a recognised trade union);
- through a safety representative elected by the employees;
- directly with employees.

4.6 Duties to provide safety equipment or PPE

If personal protective equipment (PPE) needs to be worn in order to protect employees, then this must be provided by the employer at no cost to the employee.

4.7 Duties of manufacturers

The Act places clear duties on those who design, manufacture, import or supply articles for use at work. They are required to:

- ensure, so far as is reasonably practicable, that the article is so designed and constructed as to be safe and without risks to health when properly used and carry out or arrange for any necessary testing;



Figure 4.5 Employer's duty to consult

The Health and Safety at Work Act 1974 (HSWA Act)

- provide adequate information to enable it to be used safely.

Remember, if you make some of your own tools or equipment for your own activities, then you will be considered to be the ‘manufacturer’. You must then comply with the above requirements.

4.8 Powers given to the enforcing authorities

The Act gives a number of powers to inspectors appointed by an enforcing authority (i.e. the HSE and local authorities) in the exercise of their duties. These powers include the authority to:

- enter premises at any reasonable time for the purpose of discharging their duties (or at any time if they consider a dangerous situation exists);
- carry out investigations and examinations;
- instruct an employer to leave equipment or areas undisturbed for future examination;
- take measurements, photographs and samples of material or equipment;
- take documents, logs or copies of them;
- talk to and interview employees and staff in private.

The Act also gives powers for inspectors to issue improvement notices and prohibition notices (see Chapter 2).

4.9 What does ‘at work’ mean?

As with all statutory instruments and legal documents, it is important to have a clear definition of important words and terms. In the HSW Act, the following definitions apply:

- ‘Work’ means work as an employee or as a self-employed person.
- Employees are at work throughout the time they are in the course of their employment, but not otherwise;
- Self-employed persons are at work throughout such time as they devote to work as self-employed persons.

4.10 Management of H&S regulations – what are they?

In 1999 a new set of regulations was introduced: **The Management of Health and Safety at Work Regulations 1999** (the **Management Regulations**).

4.10.1 Risk assessment

These regulations added some more detail on the HOW to the 1974 Act. Like the HSW Act, they apply to all work activities. The main thrust of these regulations is to require employers to carry out **risk assessments**. Additionally, if you have five or more employees, then you must also record any significant risks identified in the assessment. You must also, of course, set out what you need to do to reduce risk and do it. In a generally non-hazardous workplace, such as a typical office, a risk assessment should be quite straightforward and short. In a dangerous chemical plant it will be necessarily long and quite complex. (See Chapter 5 for more guidance on this.)

4.10.2 Some other requirements

Some of the other key requirements spelled out in these regulations are:

- Set up emergency procedures to deal with foreseeable situations of imminent danger, e.g. a release of dangerous chemicals, gases, fumes, etc.
- Provide clear information and any necessary training on H&S:
 - you need to have some sort of induction training for new employees to make them aware of dangers, emergency procedures, dos and don'ts, etc.;
 - the same applies to contractors who visit your workplace to carry out work – you must instruct them similarly;
 - practise your emergency procedures at sensible intervals – fire drills included.

Chapter 5

Risks and Risk Assessments – What are They?

5.1 Everyday risks

On a typical day we might rise, have a shower, make a cup of tea, walk to the post office (crossing a road en route), have breakfast and drive off somewhere in our car. Some of you who live in London will make a journey on the underground. While doing jobs around the house, you use step ladders, electric drills and electric saws, change light bulbs and occasionally use ladders to paint the upstairs windows and fascia boards.

What has this to do with risk assessment?

These activities could be described in another way, for example:

- standing naked on a slippery wet surface while manoeuvring body and limbs;
- handling a liquid at a temperature that could cause serious burns to the skin;
- crossing the path of objects weighing more than 1 tonne that are being propelled at speeds in excess of 20 m/s under the control of a person whose skill and concentration cannot be guaranteed;
- working from a narrow wooden construction 3 m above the ground;
- standing on a crowded platform 1 m away from a metal projectile weighing hundreds of tonnes travelling at speeds of approximately 15 m/s when any sudden intentional or accidental surge or push from other people behind would propel you into the path of the projectile or on to a high-voltage electrical conductor.

Do you get the idea? Every day we all do things that have a certain risk. We have assessed the risk and decided that it is acceptable. We have no doubt also decided on certain strategies to reduce the risk: we are careful when pouring the boiling water, look before crossing the road and maybe choose not to stand in front of a jostling crowd on the tube platform.

Those who have young children will almost certainly not allow them to use an electric saw until they are strong enough and responsible enough to do so, having received a little basic training from you.

Perhaps we should bear in mind these life practices and experiences when we look at the ‘formal risk assessment’ required by virtually all H&S regulations.

Risk (Oxford Dictionary): the possibility of incurring misfortune or loss.

5.2 Risk – what do we mean?

Before going further, let’s consider what we mean by risk. Crossing a not so busy straight road in daylight is not so risky; if it were, then we probably wouldn’t do it. Crossing a very busy road, near a bend, on a dark rainy night while wearing dark clothing and dark glasses is very risky – we don’t do it. We make this sensible judgement almost intuitively, but we are in fact considering the following:

- There is a **hazard** – being knocked down by a vehicle and seriously injured or killed, i.e. a very serious consequence – the same very serious consequence in both examples.
- There is a **probability/likelihood/chance** of this happening:
 - in the former we are unlikely to be knocked down;
 - in the dark night/dark glasses scenario we will probably be knocked down.
- Intuitively, we have multiplied the consequence of the hazard by the likelihood of it happening. In one case we have assessed the risk as **low**, in the other case we have assessed the risk as **high**.

Risks and Risk Assessments – What are They?

$$\text{RISK} = \text{CONSEQUENCE (of the hazard)} \\ \times \text{LIKELIHOOD (of it happening)}$$

To help us assess risks, it is sometimes helpful to use a simple word model risk matrix such as that in Fig. 5.1.

This type of risk matrix is frequently used in industry as an aid to the risk assessment process. In chemical industries and nuclear industries, for example, where avoidance of dangerous chemical/nuclear accidents is being considered, the matrix will perhaps have more levels and have numerical values for likelihood (a numerical probability). The principle is the same.

If we use the risk matrix in the above example of crossing a busy road at night in the rain, we can agree that the consequence of the hazard is **serious** and the likelihood is **probable**, thereby resulting in a **very high risk**. If we now make some changes (add some further controls), we can assess their effectiveness with the help of the matrix. For example, not wearing dark glasses will perhaps reduce the likelihood to **possible**, in which case the risk is reduced to

		CONSEQUENCE or IMPACT of the Hazardous Event		
		Insignificant or Minor	Moderate	Serious
LIKELIHOOD of the Hazardous Event happening	Possible	Moderate Risk	High Risk	Very High Risk
	Probable	Low Risk	Moderate Risk	High Risk
	Very Unlikely	Insignificant Risk	Low Risk	Moderate Risk

Figure 5.1 Risk matrix

high. If we now cross the road away from the bend (so we can see the vehicles) and wear some light or reflective clothing (so the drivers can see us), then the likelihood will become **very unlikely** and the risk will become **moderate**. Note that the consequence of the hazard has not changed, it remains **serious** in all cases, but our extra ‘controls’ have reduced the risk.

5.3 Risk assessments – what are they?

In almost every H&S law/regulation there is a requirement to assess the risks by carrying out a risk assessment. If you have five or more employees, the risk assessment must be recorded (written down), kept and periodically reviewed to make sure it is still valid. It is important, therefore, that we have a good working understanding of what a risk assessment is so that we can do what is required.

A risk assessment is nothing more than a careful examination of what, in your work, could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. The aim is to make sure that no one gets hurt or becomes ill.

The HSE guidance documents on risk assessment outline the following five-step approach:

1. Look around the workplace or the particular activity and look at what could reasonably be expected to cause harm.
2. Decide who might be harmed and how.
3. Evaluate the current risks and decide if they are acceptable – if they are not acceptable, then change something (e.g. equipment, ways of working, protective equipment, training, etc.) until the risk becomes acceptable. Make sure you have considered all the relevant H&S regulations.
4. Record your findings (if you have five or more employees this is mandatory, if you have less than five it is optional).
5. Review your assessment periodically (e.g. after significant changes, or a significant period of time).

While doing a risk assessment is important and, as mentioned before, is a mandatory requirement in most of the H&S

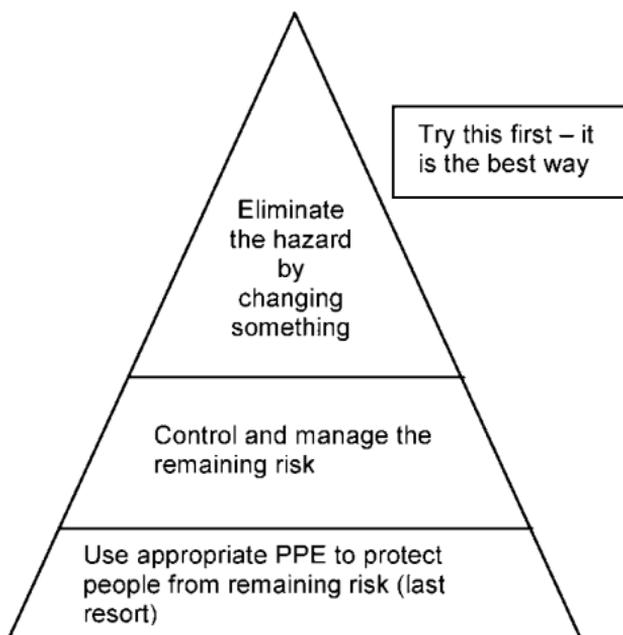


Figure 5.2 Risk reduction hierarchy

legislation, if you are in general industry or business you should aim to avoid making it overcomplicated. You are probably already well aware of the dangers in your workshop/office/work site and have already taken most or all of the necessary precautions, but you may not have written them down. Remember, also, that there will always be some risk – the objective is to reduce it to an acceptable level.

Risk assessments can be done for a particular whole job or a particular task or operation. You can decide on how to structure them. You may find it useful to adopt a mix-and-match approach, e.g. a general risk assessment for workshop staff, which looks at the generality of the work and assesses the general hazards, plus a specific risk assessment for operating a circular saw.

The examples of risk assessments in Figs 5.3 to 5.5, while having no formal HSE approval, may help you to pitch your assessments at an appropriate level. These are illustrative examples only. They are not necessarily complete or a list of all the hazards.

A Quick Guide to Health and Safety

Company Name / Department	Fred Bloggs & Co. Ltd
Work/activity assessed	Cutting and laying paving stones on building sites
Date of Assessment	25 May xxxx
Step 1 List the significant hazards here:	<ol style="list-style-type: none"> 1. noise and vibration from stone cutting equipment 2. exposure to dust (all dust is potentially hazardous to health) from cutting the paving stones 3. manual handling of the paving stones (e.g. back strain, or foot injury through dropping stone) 4. electric shock from portable power tools
Step 2 List the groups of people who are at risk from the significant hazards identified here:	<p>The direct workers are at risk from hazards 1 to 4 inclusive</p> <p>Other workers on the site and visitors.</p>
Step 3 List existing controls or note where the information may be found. List the risks that are not adequately controlled and the action needed here:	<ol style="list-style-type: none"> 1. Noise levels close to cutter are assessed as above 120 dB(A) – hearing protection is provided and operators instructed to use it. 2. Dust masks are provided and operators instructed to use them when cutting is in progress. 3. All operators have received instruction in safe manual handling (records of instruction need to be established and maintained). Site rules require all persons to wear safety footwear. 4. All electric power tools are 110V. <p>Other co-workers and site visitors are not exposed to noise or dust from this activity for significant periods.</p>
Step 5 Set a date for review of the assessment here:	<p>Date of next review is:</p> <p>before April xxxx</p>
Name and Job Title of Assessor	John Smith – General Foreman

Figure 5.3 Example of risk assessment (following HSE five-step approach)

Risks and Risk Assessments – What are They?

Activity:		Location:
Cutting grass using electrically powered (240 V) mower supplied from a normal fused supply (i.e. not one with a circuit breaker)		Grassed areas anywhere
Persons at Risk: Operator, passers-by, members of the public		
Potential Hazards:		Potential Consequences:
Electricity Noise		Electrocution Hearing damage if >85 dB(A) for long periods
Rotating blade		Damage to body + flying debris /stones hidden in
Slippery surface		Falling
Manual handling of equipment		Strain
Existing controls: Instruction of operative in use of grass cutter but no records		
Risk Rating (Severity x Likelihood) with existing controls		
Electrocution from handling damaged cable, etc.		High Risk
Damage to eyes/feet from flying debris		Moderate Risk
Damage to passers-by from flying debris if too close		Moderate Risk
New Controls Required:		Implementation date
1. All portable electrical equipment to be inspected to the approved schedule by a competent person and after any reported damage		30 June xxxx
2. A residual current device (RCD) to be used		Done
3. Operator to wear safety footwear and safety glasses		Done
4. Operator instructed to:		
a. Isolate mower at supply point before cleaning		
b. Safe routing and handling of cable when in use		
c. Check lawn for debris before cutting		30 April xxxx
d. Activate RCD test and reset button before use		30 June xxxx
e. Cease mowing if public are close by		
5. All operators to receive basic safe manual handling instruction		
6. Operators to be provided with disposable ear plugs (noise assessment measures levels of about 85 dB close to machine)		
7. Keep records of operator instruction/training		

Figure 5.4 (continued overleaf)

A Quick Guide to Health and Safety

Risk Rating (Severity x Likelihood) with new controls	
All risks are now considered to be low or insignificant	
Assessor's Name	Job Title
Signature	
Date	Date for next review of Assessment

Figure 5.4 General risk assessment example

Company:	Department/Section:
Risk Assessment of:	Circular Saw
Hazards:	
<ul style="list-style-type: none"> • Powered by 415 V electrical motor • Exposed cutting blade • Dust generated during cutting operation • Noise levels of 120 dB(A) close to machine when cutting • Machine is subject to PUWER (Provision and Use of Work Equipment Regulations 1998 (Woodworking Machinery)) 	
Persons at Risk:	
Operators of circular saw	
Existing Controls:	
<ul style="list-style-type: none"> • Only trained operators are permitted to use the equipment • Machine has suitable guards and brakes complying with the regulations • Hearing protection is provided for operators • Extraction system must be switched on during each operation • Machine has an emergency stop button close by • Adequate lighting is provided 	
Further Controls Required:	
<ul style="list-style-type: none"> • Records of training/instruction to be established and maintained 	
Name and Job Title of Assessor:	
Date of Assessment:	
Date of Review of Assessment:	
Signature of Assessor:	

Figure 5.5 Specific risk assessment – operation of a circular saw

Chapter 6

Health, Safety and Welfare Requirements in the Workplace

6.1 What are the applicable regulations?

General conditions in a workplace are dealt with in two regulations:

- **The Workplace (Health, Safety and Welfare) Regulations 1992** (WHSW Regs);
- **The Construction (Health, Safety and Welfare) Regulations 1996**.

The purpose of these regulations is to ensure that workplaces are safe and provide minimum acceptable welfare and hygiene facilities. They are straightforward and represent good practice. We will concentrate in this chapter on the WHSW Regs; these are perhaps the ones more generally applicable to most situations. The construction regulations are obviously targeted at construction sites, but their general thrust is the same as the WHSW Regs. Anyone involved in operating or managing a construction site should look at these closely.

6.2 What is a workplace?

The WHSW Regs apply to a very wide range of workplaces, factories, shops and offices but also, for example, to schools, hospitals, hotels and places of entertainment. The term *workplace* also includes the common parts of shared buildings, private roads and paths on industrial estates and business parks, and temporary worksites (but not construction sites).

6.3 The regulations and what they require you to do

Here, extracts from the regulations are in *italics* and interpretation is in normal text.

If you are an employer and if you own, operate or manage a *workplace*, then you must follow the requirements of these regulations. They apply equally to new and existing workplaces and have done so since 1 January 1996. Some of the more noteworthy requirements are outlined below.

6.3.1 Maintenance of workplace, and of equipment, devices and systems (Regulation 5)

The WHSW Regs require the provision of certain equipment and facilities that are necessary for the health, safety and welfare of employees. Regulation 5 states that the *workplace* and such *equipment, devices and systems* shall be maintained (*including cleaned as appropriate*) *in an efficient state, in efficient working order and in good repair*.

For example, if you provide fume extraction equipment in order to protect people from fumes, etc., then this equipment must be maintained in good working order. At a more mundane level, lavatories have to be maintained and kept clean.

6.3.2 Ventilation (Regulation 6)

Enclosed workplaces (e.g. workshop buildings, offices, etc.) shall *be ventilated by a sufficient quantity of fresh or purified air*. Normal opening windows are, of course, a usual and acceptable means. If, however, you use plant and equipment for this ventilation, e.g. fan-driven ducted air, and **if** this ventilation is **essential** to secure the health and safety of employees, then you must ensure that a visible or audible warning is given if there is a significant malfunction of the plant and equipment. This is especially relevant to fume extraction equipment where any failure or malfunction could result in an unsafe situation.

6.3.3 Temperature of indoor workplaces (Regulation 7)

The regulation states: *During working hours, the temperature in all workplaces inside buildings shall be reasonable*. It does not state any particular temperature. The approved code of practice (ACOP) gives the following recommendation for persons working in a workplace for more than short periods

(say more than 2 h): a minimum of 16 °C for sedentary or light work and 13 °C for heavy manual work.

6.3.4 Lighting (Regulation 8)

Every workplace shall have suitable and sufficient lighting. If artificial light is used for activities where the sudden loss of this light could cause danger to the person, then suitable emergency lighting shall be provided.

6.3.5 Cleanliness and waste materials (Regulation 9)

Every workplace and the furniture, furnishings and fittings shall be kept sufficiently clean.

6.3.6 Room dimensions and space (Regulation 10)

Every room where persons work shall have sufficient floor area, height and unoccupied space for the purposes of health, safety and welfare. Again, there are no numerical values in the regulations. The recommended minimum space is 11 m³ per person, including the space occupied by any furniture, and the minimum recommended area is 3.7 m² per person, which is about 1.9 m × 1.9 m. Remember, these are minimal, and more space may be required by the nature of the work.

6.3.7 Condition of floors and traffic routes (Regulation 12)

Floors and traffic routes shall not have dangerous slopes or be slippery and shall be free from holes that could cause people to fall. *So far as is reasonably practicable*, floors and traffic routes shall be kept free of obstructions and free of articles or substances, which may cause people to slip, trip or fall. Remember, slips, trips and falls are a major cause of accidents.

6.3.8 Falls or falling objects (Regulation 13)

So far as is reasonably practicable, suitable and protective measures shall be taken to prevent ... any person falling a distance likely to cause personal injury ... any person being struck by a falling object likely to cause personal injury. In times past there was a 6' trigger, i.e. if the fall distance was 6' or more then precautions had to be taken. The current

regulations do not stipulate any particular fall distance but use the criterion *likely to cause personal injury*. You will have to make your own judgement, but clearly a potential fall of 0.5 m is far less potentially dangerous than one of 2 m plus. The guidance on hand railing and fencing is:

If a person might fall two metres or more, or might fall less than two metres and risk **serious** injury, fencing should be at least 1100 mm high and have two guard-rails. Tanks, pits and structures should be securely covered, or fenced to a height of at least 1100 mm.

With regard to injury caused by falling objects, it is always good practice to prohibit access to places underneath areas

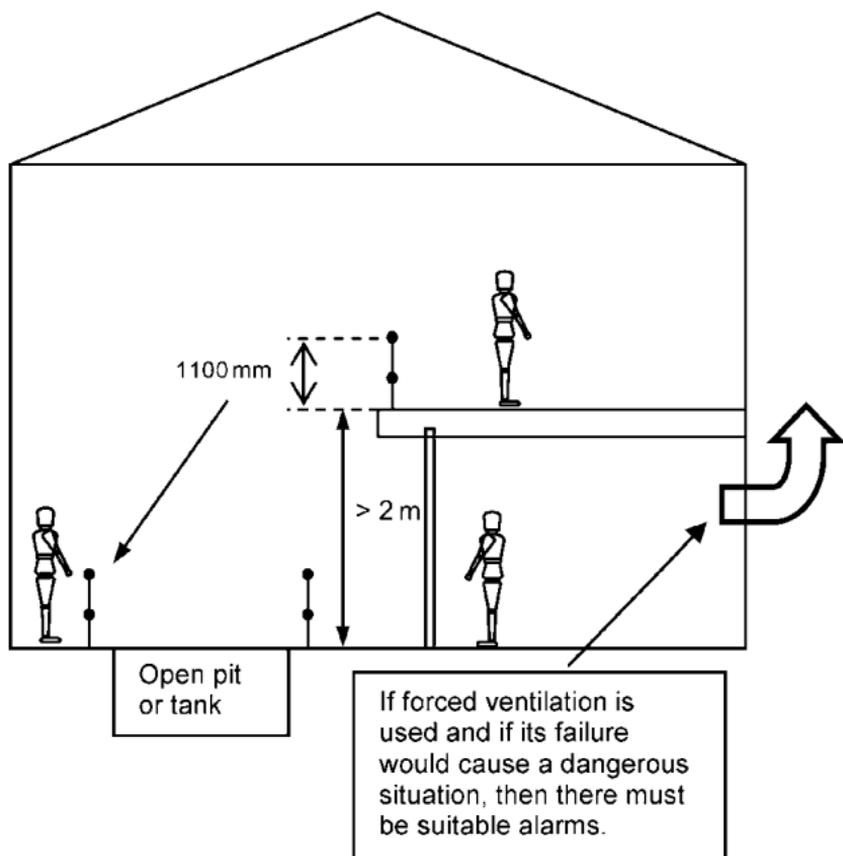


Figure 6.1 Some requirements of the WHSW Regs

where work is being done, unless special protective measures are taken.

Regulation 13 also makes special mention of the need for fencing off/guarding of uncovered tanks or pits containing dangerous substances.

6.3.9 Windows and transparent or translucent doors, gates and walls (Regulation 14)

These shall be made of safety materials **where necessary for health or safety**, for example ‘safety glass’ or flexible plastic. This is relevant to doors with windows where normal operation is to ‘bump’ them open.

6.3.10 Organisation, etc., of traffic routes (Regulation 17)

These shall be arranged so as to be safe. People and vehicles must be able to move about without danger. Vehicle traffic (think about fork-lift trucks) should be kept separate from people traffic. If this is not possible, then other suitable means of preventing collisions shall be provided, e.g. clear warning signs or not having doors in a position where a person will step out directly into the path of a vehicle. Think especially about warehouses with narrow aisles where fork-lift trucks and the like move around – try to keep pedestrian traffic out of the way of these vehicle movements.

6.3.11 Doors and gates (Regulation 18)

These shall be equipped with the necessary safety devices to:

- prevent sliding doors coming off their tracks;
- prevent the falling back of any upward opening door/gate;
- prevent powered doors/gates from trapping a person’s body/limbs.

Doors/gates that open both ways shall have suitable vision panels, and powered doors/gates shall be capable of manual operation if not to have this facility will create a danger.

6.3.12 Sanitary conveniences (Regulation 20)

A *sufficient* number must be provided, maintained and kept clean. If they are of the unisex variety, then they should be in individual rooms and have a bolt, etc., operable from the inside.

6.3.13 Washing facilities (Regulation 21)

A *sufficient* number of suitable facilities must be provided. Showers must also be provided if the nature of the work requires it. They shall be:

- close to each sanitary convenience and any changing facility;
- provided with clean hot and cold water, soap and a means of drying;
- sufficiently ventilated and kept clean.

If there are not separate facilities for men and women, then they shall be in ‘single occupancy’ rooms that can be secured from the inside. If the facilities are only for washing hands, forearms and face, then there need not be separate facilities for men and women.

Guidance on a minimum *sufficient* number for Regulations 20 and 21 is:

- up to five people, one toilet and wash-station;
- 6–25 people, two toilets and wash-stations;
- one extra toilet and wash-station for every subsequent 25 people.

6.3.14 Drinking water (Regulation 22)

A supply of drinking water must be available. It must be identified as drinking water and there must also be a supply of cups unless the water is provided by a drinking fountain.

6.3.15 Accommodation for clothing and facilities for changing clothing (Regulations 23 and 24)

Both shall be provided if normal everyday clothing is not suitable for the work. If the work clothes are contaminated or made very dirty/greasy during the work, then you must

provide separate storage/lockers for the dirty and the clean clothes. The changing facilities provided shall allow men and women to change separately or at different times.

6.3.16 Facilities for rest and to eat meals (Regulation 25)

If a person's workstation is an unsuitable place to eat a meal and if it would be normal to eat during the course of the work period, then a separate room/space that is suitable must be provided. A person's desk is generally considered suitable for eating a meal; a laboratory using chemicals or a dusty workshop is not. Suitable rest facilities must also be provided for pregnant women and nursing mothers, when appropriate. Rest facilities and meal rooms must be such that people who do not smoke are protected from tobacco smoke. Recent legislation requires that smoking is completely banned in enclosed workplaces.

6.3.17 Exemptions

These regulations do not apply to workplaces that are building sites or sites of engineering construction, nor do they apply to mines, quarries or ships. The regulations do not generally apply to temporary work sites; however, Regulations 20 to 25 should be applied *as far as reasonably practicable*.

- Maintain equipment and facilities provided for health, safety and welfare
- Temperature guidance – 16°C for sedentary work – 13°C for heavy manual work
- Minimum of 3.7 m² per person floor space
- 1100 mm high guard-rails if fall > 2m or around uncovered pits and tanks
- 1 toilet and wash-station for up to 5 people
 - 2 toilets & wash-stations for 6–25 people
 - 1 extra for every 25 thereafter
- Lockers and changing facilities for work requiring special work clothes

Figure 6.2 Some summary points from the WHSW Regs

6.4 Brief summary of the Construction Workplace Regulations

The Construction Workplace Regulations have similar requirements to the WHSW Regs but are clearly slanted towards construction and building sites. As such, they give specific mention to and emphasise the caution required when dealing with:

- stability of structures during construction;
- demolition and dismantling;
- excavations and their regular inspection;
- underground cables;
- scaffolding and its regular inspection if in place for more than 7 days.

6.5 Enforcement

Enforcement of these regulations is likely to be proportionate to the risk. A non-compliance such as an unguarded pit containing a dangerous substance into which a person could easily fall will probably be acted upon vigorously.

Failure to provide adequate locker facilities for work clothing will probably be met, initially, with advice from the enforcing authority.

6.6 Regular tours of the workplace

A regular tour of the workplace by owners/managers/supervisors, etc., is a sensible thing to do from both a safety and business point of view. Of course, the workplace is probably walked through all the time, and you could say that a 'tour' is not necessary. A dedicated 'tour' every so often, however, looking specifically for potential safety problems and poor practice, will identify some easy-to-fix issues that will not be noticed during everyday work (this is not a specific requirement of the regulations).

Chapter 7

Machinery and Other Work Equipment

7.1 What are the main regulations with which you have to comply?

The main regulations in addition to the HSW Act are **The Provision and Use of Work Equipment Regulations 1998** (known as **PUWER**). These regulations cover machines and all work equipment. The main requirements are that employers ensure that equipment is:

- suitable for the intended use;
- safe for use, maintained in a safe condition and, in certain circumstances, inspected to ensure that this remains the case;
- used only by people who have received adequate information, instruction and training;
- accompanied with suitable safety measures, e.g. protective devices, guards, emergency stop buttons, markings and warnings and appropriate personal protective equipment (PPE).

7.2 What equipment is covered by these regulations?

These regulations cover machinery and all other work equipment such as:

- fixed machinery;
- circular saws;
- portable power tools;
- hand tools;
- ladders and access equipment;
- motor vehicles, dumper trucks;
- office equipment.

In fact, they cover any equipment that is used by an employee at work.

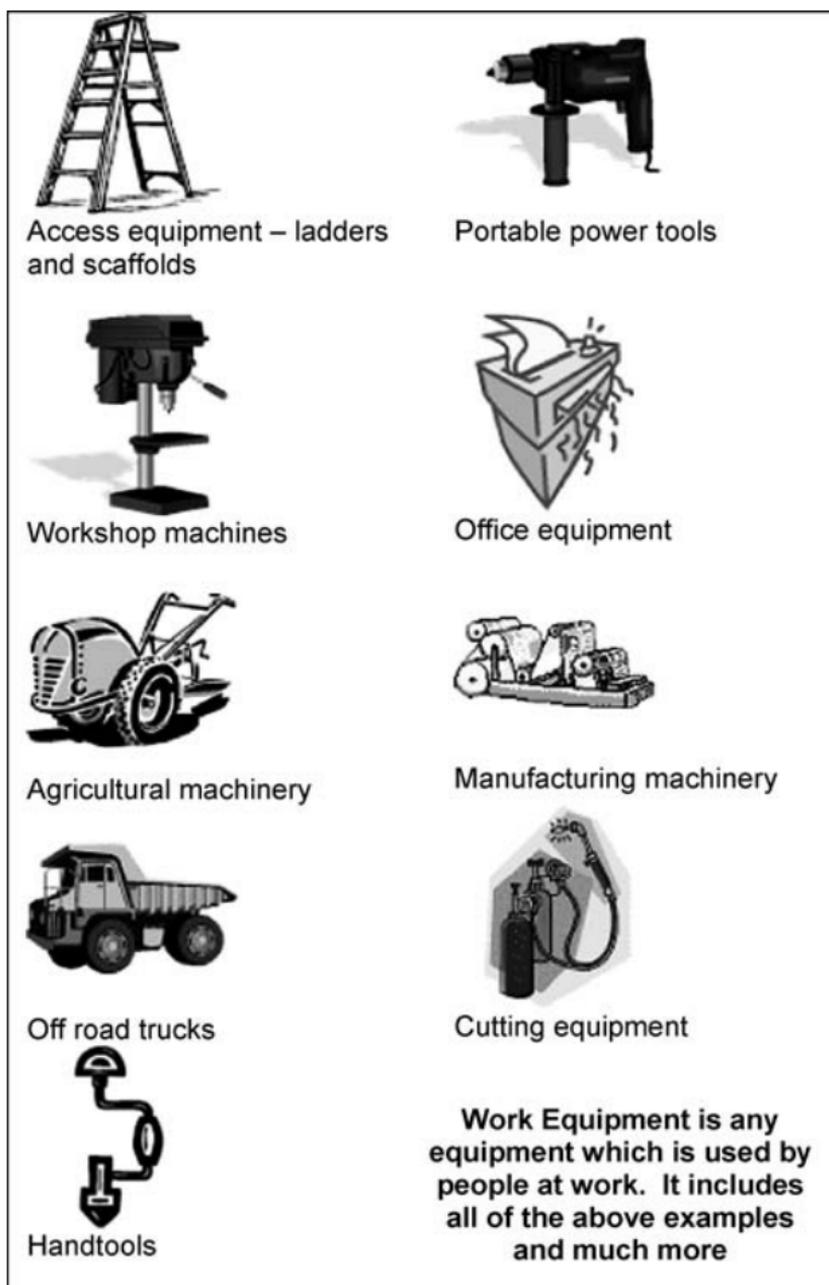


Figure 7.1 Work equipment

It is clear that PUWER applies to equipment provided by employers. What may be less obvious is that it applies also to

equipment provided by employees themselves. If you hire equipment and you have control over the use of such equipment, then the employer is responsible for its safe use and the hirer is responsible for its provision in a safe condition and suitable for its specified use.

7.3 How do you know that machines and equipment you buy are safe?

All machinery and much of the other work equipment sold in the UK should now comply with **The Supply of Machinery (Safety) Regulations 1992**, which enshrined in UK law the **EC Machinery Directive 98/37/EC** and should carry the **CE** mark. This mark is one way of knowing that the machine or equipment has been made in compliance with all the relevant EC harmonised standards, especially those relating to safety. Purchasing a machine or equipment that complies with an appropriate British Standard should also ensure that it has been designed and made to acceptable safety standards.

7.4 What do I have to maintain and inspect?

The regulations are concerned with the maintenance and inspection of items that could result in dangerous situations if they fail to function correctly. They are not concerned with maintenance and inspection carried out for other purposes, e.g. maintenance of product quality or output. While the

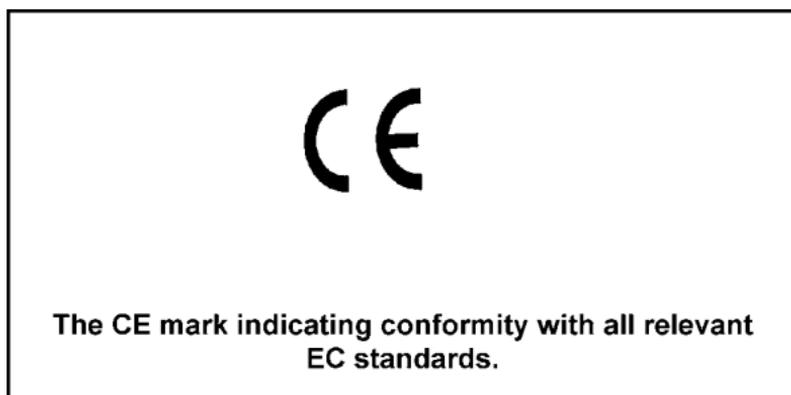


Figure 7.2 The CE mark

regulations do not say that machinery and equipment must be maintained in accordance with the manufacturer's instructions, it is clearly the sensible starting point for any maintenance and inspection regime. You may, for good and considered reasons, deviate from the manufacturer's recommendations, but, if you deviate from those recommendations relating to H&S aspects, then you must be prepared to defend and give good reasons for the deviation.

With regards to inspection in particular (Regulation 6), the general principle should be that inspection is necessary when equipment or parts of equipment will deteriorate and lead to danger and this will not be picked up through operator checks and normal servicing regimes. The requirement should only be applied where there is a significant risk (major injury or worse). It need not be applied to everyday risks, which means that it will not universally apply to all machinery, equipment or parts, but only to equipment or parts subject to rapid and/or serious deterioration.

Employers must ensure that the result of an inspection made under this regulation is recorded and kept until the next inspection is recorded.

7.4.1 Power presses

Power presses receive special attention in the regulations and the requirements are quite prescriptive. In particular, any associated guard or protection device must be thoroughly examined at specified intervals and inspected daily in use to ensure that it is safe. This work should only be performed by a competent person, and records must be kept.

If you have or operate such equipment, then you must make yourself aware of these special requirements and abide by them.

7.5 Instruction and training for use and safety

As with all the H&S regulations, great emphasis is rightly placed on the duty of employers to give adequate instruction and training. It is clearly unsafe to simply instruct employees to 'just go and...' when this involves using a machine or

equipment that is potentially dangerous, and for which they have received no instruction or training. Don't just pay lip service to this duty. Failure adequately to train or instruct an operator is a very serious matter if it results in injury, particularly when young and inexperienced persons are involved. The level of instruction and training should be proportional to the risks and the complexity and take into account the previous experience of the person. If the method of use or sequence of operations is complex or difficult to remember, then instructions should be in writing.

7.6 Stopping equipment and emergency stops

It may seem obvious, but it is necessary to emphasise that employers have a duty to ensure that *work equipment is provided with one or more readily accessible controls the operation of which will bring the work equipment to a safe condition in a safe manner*. Additionally, it may also be necessary for machines and equipment to be provided with one or more emergency stop controls. If you have a long conveyor, for example, and there are potential danger points away from the 'normal' stop button, then there should be emergency stop controls at other places.

7.7 Guards and guarding

If you operate machinery without adequate guarding in place and someone suffers an injury, you will be dealt with robustly by the enforcing authorities.

A general principle to adopt is: **'If you can touch it, then guard it'**. While this principle cannot be applied to situations where, for example, a cutting tool needs to be exposed in order to do the cutting, e.g. the blade of a circular saw, you must apply it to situations where there is no good reason for not applying it. Even in those other situations, e.g. the circular saw example, where the principle cannot be fully applied, you must only expose as little of the dangerous part as possible. You cannot leave the whole of the rotating saw exposed if you are cutting a 2 cm thick piece of wood.

Guards other than physical barriers are acceptable and usual in many applications, e.g. light curtains, interlocks, pressure mats, etc. These types of guard are required to have an appropriate regime of periodic inspections and test.

Don't underestimate the importance of machinery guarding. It is common sense and good practice to have adequate guards in place and to make sure they remain in place. If you look at the record of H&S prosecutions you will see failure to guard machinery properly is one of the most common non-compliances that result in prosecution.

There are too many different types of guarding situation to

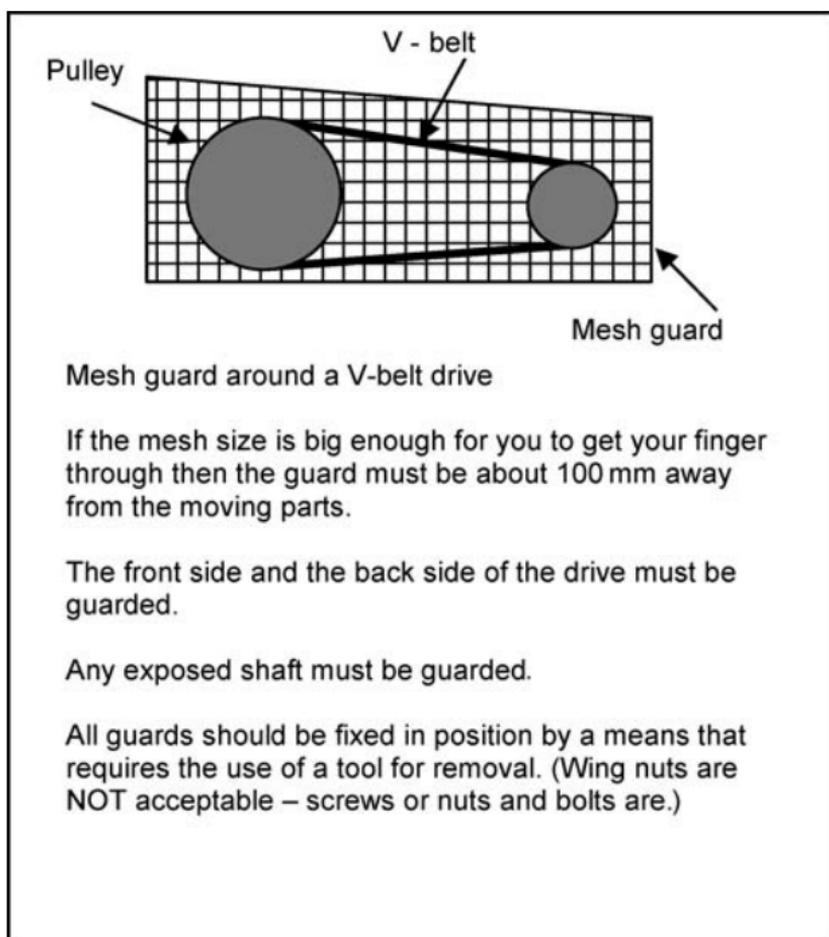


Figure 7.3 V-belt drive guard

illustrate in this short guide. However, Figs 7.3 to 7.5 attempt to illustrate the basic requirements in some common situations. If you have a guarding situation that you are not sure about, then look at the HSE website where you will find numerous examples of good practice for a large number of machinery types.

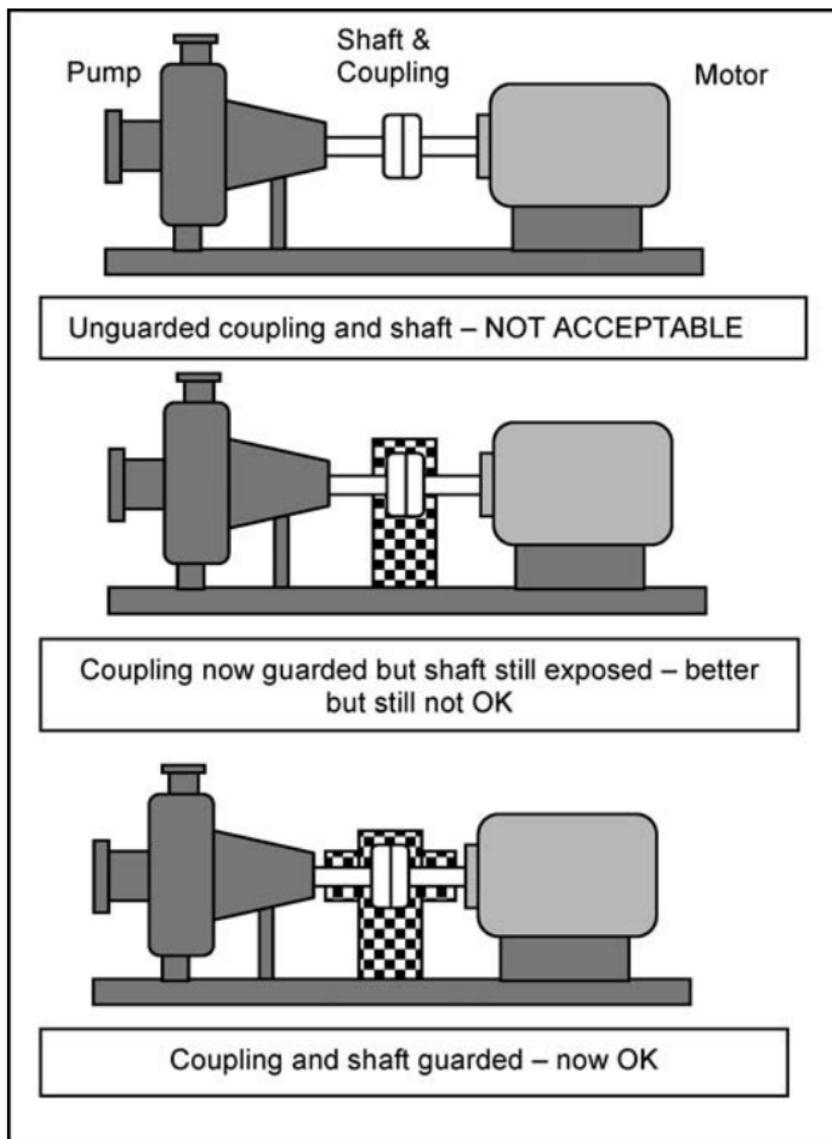


Figure 7.4 Guarding a simple shaft and coupling

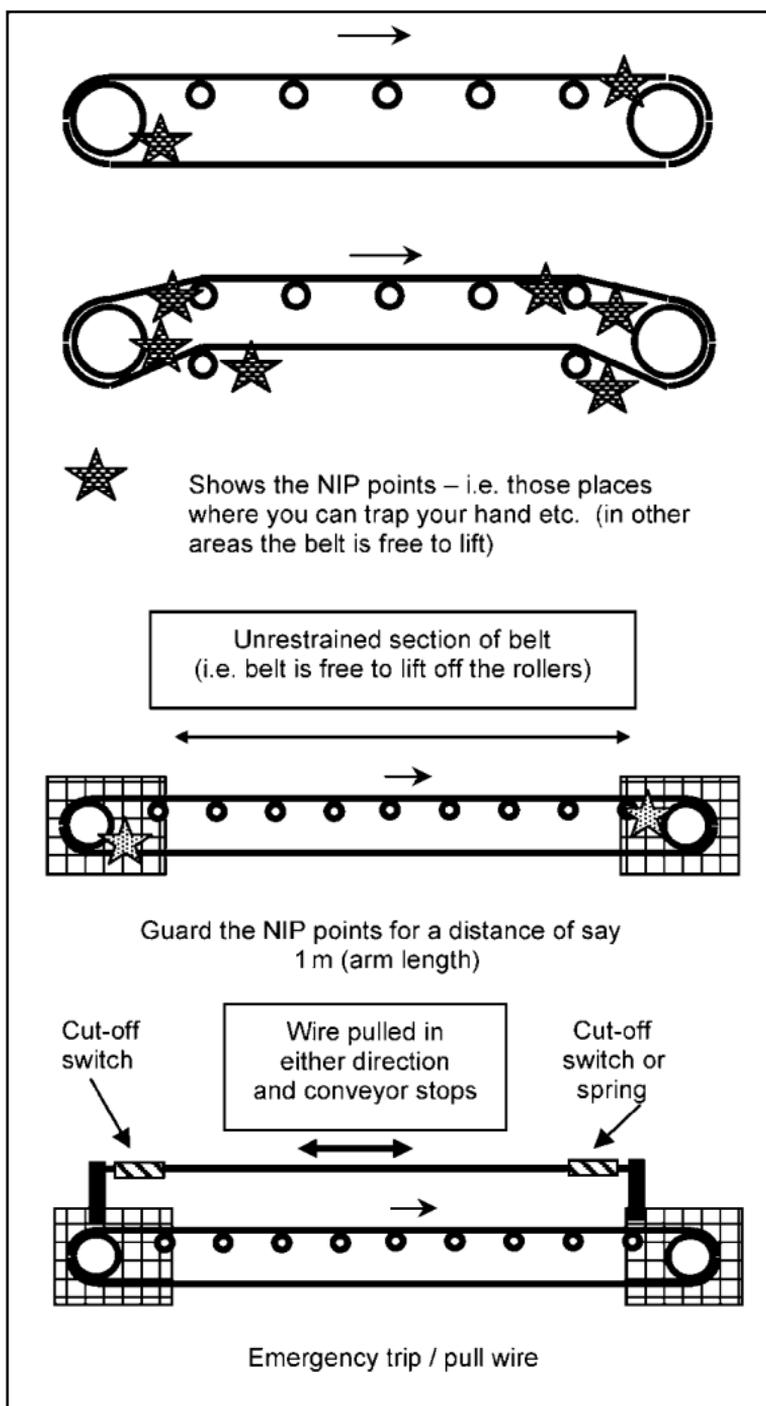


Figure 7.5 Guarding considerations for conveyors

7.8 What to do about cleaning and maintenance

Machinery and other moving equipment must be switched off for cleaning and maintenance unless there are overriding reasons. If cleaning or adjustment can only be done with the equipment in operation, then you must perform a risk assessment and reduce any risks to an acceptable level. Remember that cleaning of equipment while it is still in operation is frequently a consequence of convenience and bad habit; so you should instruct and train employees not to do it.

Chapter 8

Pressure Plant and Equipment

8.1 What is pressure plant and equipment?

In everyday language we all have our own idea of what we mean when we say pressure plant. We might mean things like: industrial steam boilers, high-pressure hydraulic circuits on mechanical excavators, high-pressure oxyacetylene cylinders, etc. The HSW Act requires employers to look after all these things in a way that does not expose people to danger.

There is, however, a special set of equipment that is the subject of **The Pressure Systems Safety Regulations 2000 (PSSR)**, which require special note. These regulations are concerned with systems that contain a dangerous amount of stored energy or steam at any pressure. The regulations use a precisely defined term, i.e. **relevant fluid**, to describe those fluids that are subject to the regulations, and there is a precise definition of this.

8.2 What is a relevant fluid?

There are basically four defined groups of relevant fluids:

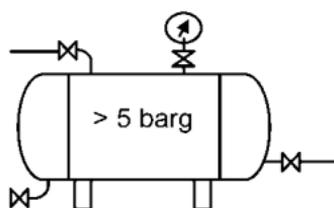
- steam at any pressure;
- a compressible fluid (e.g. a gas or vapour) at a pressure of > 0.5 barg;
- a liquid that has a vapour pressure of > 0.5 bar at either the operating temperature of the liquid or at 17.5°C ;
- a gas dissolved under pressure in a solvent contained in a

- | |
|---|
| <ul style="list-style-type: none">● Relevant fluids● Protective devices● The Competent Person (CP)● Safe Operating Limits (SOL)● Written Schemes of Examination (WSEs)● Examinations and reports |
|---|

Figure 8.1 The six main concepts of the PSSR

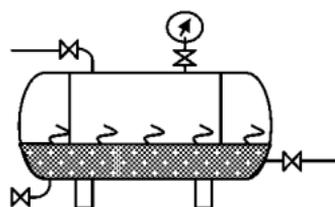
Steam at any positive gauge pressure, whether in a:

- pipe;
- boiler;
- vessel;
- any other container



Compressible fluid at > 0.5 barg (approximately > 1.5 bar absolute)

A single gas or a mixture of gases e.g. nitrogen, oxygen, air etc.



Liquid which has a vapour pressure > 0.5 bar either at the actual temperature of the liquid or at 17.5°C

Fluid will flash-off when the pressure is released

(Pressurised hot water above its boiling point at atmospheric pressure is a Relevant Fluid)



For example, bulk acetylene storage

Gas dissolved in a solvent

(This means any gas dissolved under pressure in a porous substance at ambient temperature – i.e. the gas can be released from the solvent without the application of heat)

Figure 8.2 Relevant fluids – the four defined groups

porous substance at ambient temperature and that could be released from the solvent without the application of heat (e.g. acetylene).

(N.B. 0.5 barg means 0.5 bar gauge pressure which approximately equals 1.5 bar absolute pressure.)

Note that dangerous/corrosive/poisonous liquids or liquids at high hydraulic pressure are not classified as relevant fluids unless they are operated at conditions that fall into one of the above criteria. The regulations are concerned with danger only from stored energy/only steam.

8.3 Do the PSSR (Pressure Systems Safety Regulations) apply to me?

Let us first deal with the items of equipment and systems that are excluded from the Pressure Systems Safety Regulations 2000. The excluded plant and systems include:

- pressure systems on ships or aircraft;
- break and suspension systems on rail and motor vehicles;
- any water cooling system on an internal combustion engine or compressor;
- transportable pressure cylinders such as oxygen, carbon dioxide and acetylene;
- any vehicle tyres;
- pressurised road vehicles;
- portable fire extinguishers with a working pressure below 25 bar at 60 °C weighing less than 23 kg;
- any part of a hand-held tool or appliance.

Does your pressure system contain a relevant fluid? If not, then these regulations do not apply.

If YES, and the fluid is steam, then the whole of the regulations apply. If YES, and the fluid is something other than steam, then you must also have a pressure vessel of a certain size in the system before the regulations apply:

- pressure vessel volume \times operating pressure $>$ 250 bar litres – all the regulations apply;

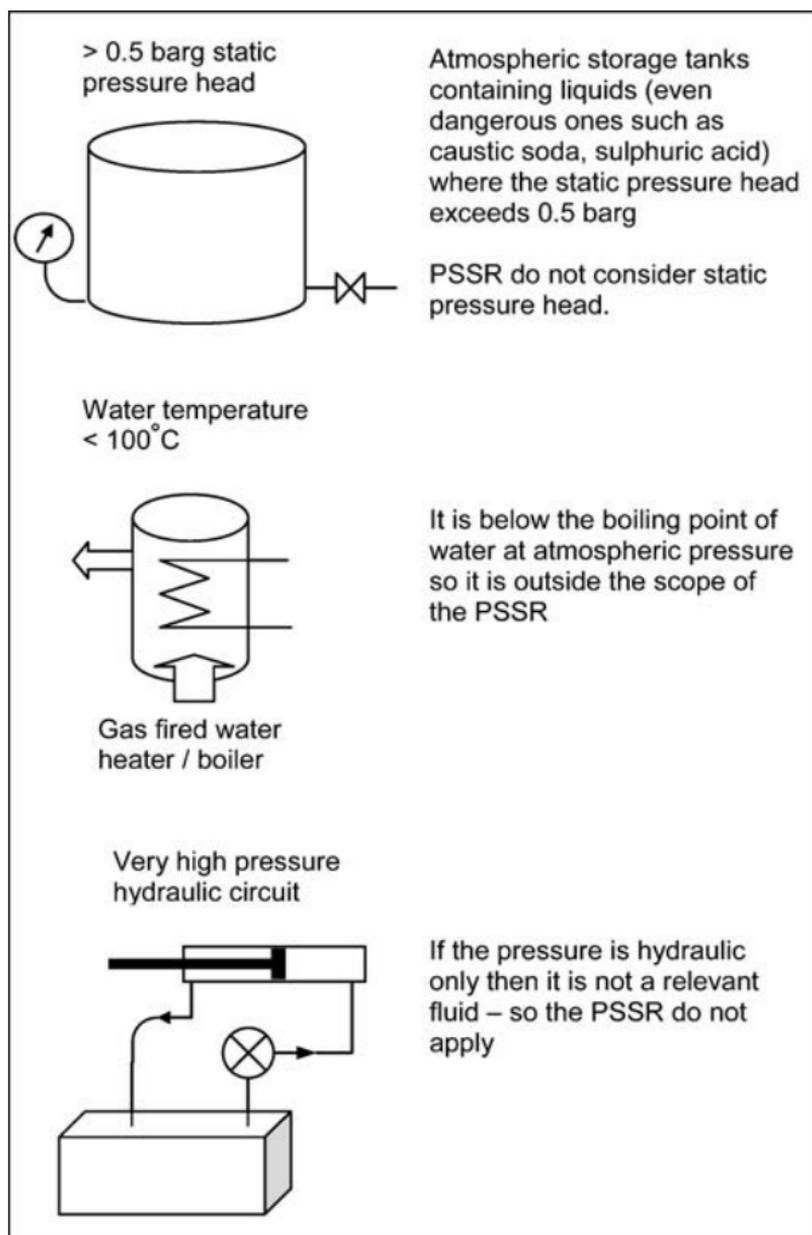


Figure 8.3 Some more exemptions from the PSSR

Pressure Plant and Equipment

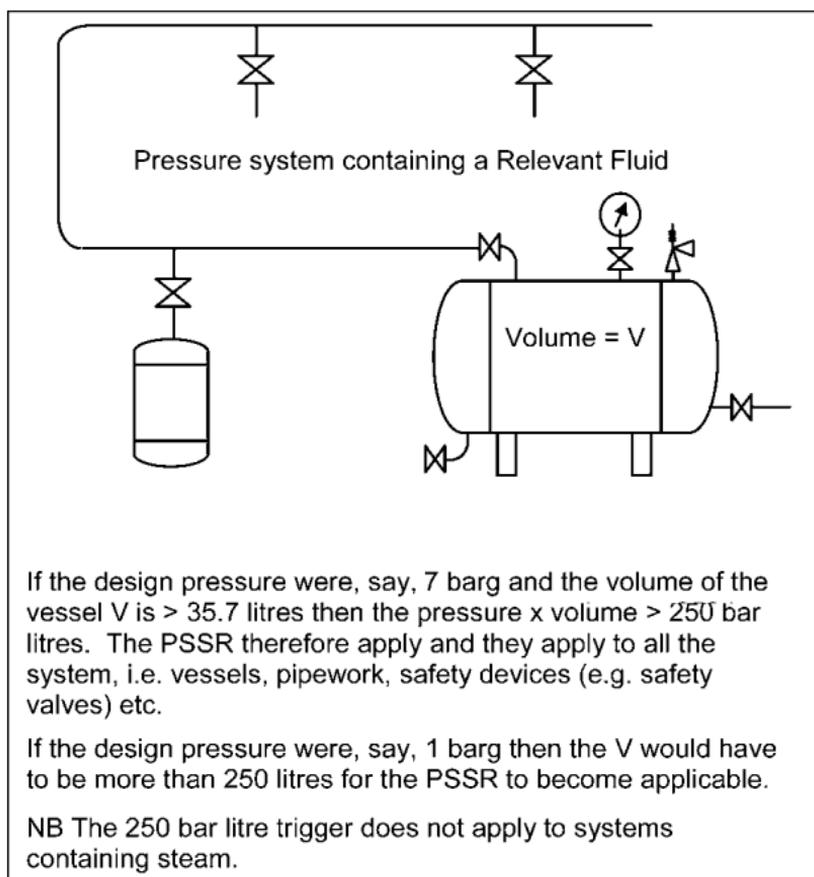


Figure 8.4 The 250 bar litre trigger

- pressure vessel volume \times operating pressure < 250 bar litres – the major requirements for system examination and inspection do not apply but the other requirements do.

(Remember, the 250 bar litre trigger does not apply to systems containing steam.)

8.4 What do I have to do to comply with the regulations?

All pressure plant equipment sold in the UK must comply with appropriate standards and regulations that should ensure it is safe for its stated purpose, e.g. **The Pressure**

Equipment Regulations 1999 and The Simple Pressure Vessels (Safety) Regulations 1991.

As an owner/user of a pressure system, the PSSR require you to:

- Know or establish the **safe operating limits** of the system.
- Have a **written scheme** for the periodic examination of the system that has been prepared or approved by a **competent person**.
- Ensure that the examinations required by the **written scheme** are carried out by a **competent person** within the time limit required by the **written scheme**.
- Provide adequate information and instructions for operators of the plant regarding:
 - safe operation of the plant;
 - action to be taken in the event of any emergency.
- Ensure that the pressure system is operated within its **safe operating limits**.
- Maintain equipment adequately.
- Modify only in accordance with the requirements of the regulations.

8.5 What is meant by safe operating limits?

These are the maximum, or minimum, safe operating limits set either by the designer/manufacturer or the competent person. Normally these are the maximum pressures and temperatures, but there may be other parameters. You should expect to receive this information for all pressure equipment from the supplier; it is a requirement of the regulations. The regulations also require pressure vessels to have this information on the nameplate, which has always been good practice.

It is an offence under PSSR for any person to remove information from a nameplate or to falsify it.

8.6 What is a written scheme of examination?

Owners of systems are not permitted to operate them unless they have a written scheme of examination written by or

approved by a competent person and the specified examinations are not overdue. The written scheme must cover the following parts of the system:

- all protective devices (e.g. safety valves, but other devices too);
- every pressure vessel in which a defect may give rise to danger;
- those parts of the pipework in which a defect may give rise to danger.

The written scheme must specify the nature and frequency of the examination (how to examine what, and how often).

8.7 Who is a competent person?

The competent person can be a single person, or an organisation. Legally, it can be a person who is employed by the owner, but for the vast majority of pressure system owners it is an external inspection body. There are several hundred inspection bodies in the UK that are experienced and practised in carrying out the duties of the **competent person**. While the PSSR have nothing to do with insurance, many of these inspection bodies are part of insurance organisations. A non-expert owner of pressure systems is well advised to employ such organisations for the preparation of written schemes and the carrying out of the necessary inspections and test.

Chapter 9

Lifting and Handling

9.1 Manual handling regulations

The **Manual Handling Operations Regulations 1992** came into force on 1 January 1993 and they implemented the EC directive on manual handling (89/39/EEC). The regulations apply to all work situations with the exception of the armed forces and seagoing ships.

Manual handling is defined as ... *transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or bodily force.*

According to HSE statistics, injuries caused by manual handling are responsible for about one-third of all the injuries resulting in more than 3 days' absence from work. This can be painful for the employee and costly for the employer. Even if some of these injuries are 'phantom', the incidence of real ones is still high.

The main duties for employers are contained in Regulation 4. This requires employers to:

- Avoid the need for manual handling operations that involve the risk of injury **so far as is reasonably practicable**.
- Where manual handling cannot be avoided **and such work involves a risk of the person being injured**, then employers shall:
 - carry out a *suitable and sufficient* risk assessment;
 - reduce any risk to the lowest level reasonably practicable;
 - give the person doing the work information on the weight of the load and the weight distribution (this information should be precise if this is reasonably practicable or, if not, then a general indication will suffice).

The regulation is short and reasonable, but we sometimes make it more difficult for ourselves by overelaborating our interpretation of it. As in most areas, common sense should help guide us.

A key phrase in the regulations is **operations which involve the risk of injury**. If there is no evidence of risk of injury, then manual handling operations may proceed without any need for a risk assessment. How do you know or demonstrate that there is no risk of injury? You have to make a judgement and keep in contact with common sense.

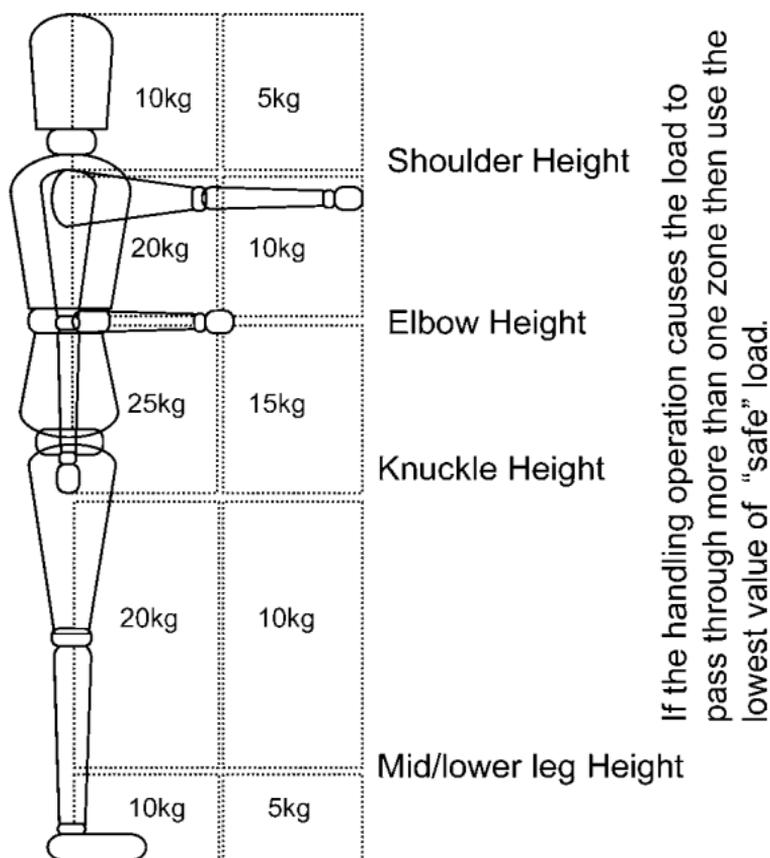
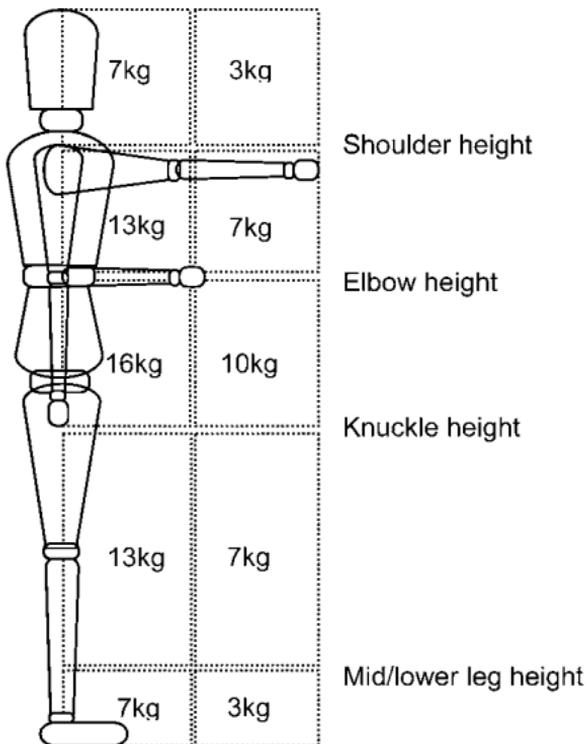


Figure 9.1 Low-risk values for lowering and lifting – male

9.2 General guidelines for lifting, pushing and pulling

The regulations do not give any numerical values for ‘safe’ loads to lift/push/pull. They simply require employers to avoid injury caused by these activities. The HSE guidance pamphlet **Getting to Grips with Manual Handling** (ISBN 0 7176 2828 0) does have some numerical values which are summarised in Figs 9.1 and 9.2.

The guidance pamphlet intends the data in Figs 9.1 and 9.2 to apply for straightforward ‘infrequent’ (e.g. less than 30 operations per hour) lifting and lowering operations with both hands and without twisting. If the operation involves twisting through 90°, then the guideline weights should be reduced by 20%. If the operation is repeated once or twice per minute over long periods, then the guideline weights



If the handling operation causes the load to pass through more than one zone then use the lowest value of “safe” load.

Figure 9.2 Low-risk values for lowering and lifting – female

HSE Guidelines for Pushing and Pulling		
	Men	Women
Force to stop or start a load	20 kg	15 kg
Sustained force to keep the load in motion	10 kg	7 kg

Figure 9.3 Pushing and pulling guidelines

should be reduced by 50%. These guidelines are fairly conservative, as you would expect, and they are guides, not a ‘legal limit’. If the manual lifting operation falls within these guide weights, then you almost certainly do not need to carry out a risk assessment. If they exceed these guidelines, then you may need to assess the risks of the operation. If you follow these guides too rigorously, though, you will see that four men lifting a stretcher with an average 75 kg (12 stone) person will exceed the guidelines if the initial lift is from the floor, and lifting a typical 25 kg bag of cement will exceed the guide in all but one position.

See Fig. 9.3 for HSE guidelines on pushing and pulling.

A good indicator as to whether a manual handling operation is acceptable is previous experience. If it is an operation that has been carried out for a long time without real problems, then it is probably OK. If similar operations are carried out elsewhere in similar businesses/occupations without real problems, then, again, it is probably OK. This, of course, is personal opinion and not a stated opinion of the HSE. If a large part of the job being considered is one of manual handling significant loads, e.g. moving heavy bags from a conveyor belt on to a trolley or pallet, you will almost certainly need to carry out a risk assessment.

9.3 What to consider in a risk assessment and who does it?

The employer has the duty of ensuring a risk assessment is done when one is necessary. A risk assessment cannot be left to the employee. If you are self-employed, you will have to do

Lifting and Handling

Questions to consider		Yes	No
The Task	<p>Is it necessary to hold the load at a distance from the trunk?</p> <p>Is it necessary to twist or bend?</p> <p>Is there a risk of sudden movement of the load?</p> <p>Does it require frequent or prolonged physical effort?</p>		
The person	<p>Does the job require unusual height or strength?</p> <p>Does it pose a risk to those who are pregnant / have health problems?</p> <p>Does it require special knowledge / training to be done safely?</p>		
The Load	<p>Is it heavy / bulky / difficult to grasp?</p> <p>Is it unstable or with contents likely to shift?</p> <p>Is it sharp / hot?</p>		
The Place	<p>Is there sufficient space?</p> <p>Is there an uneven, slippery or unstable floor?</p> <p>Are there trip hazards?</p> <p>Is the lighting satisfactory?</p>		
<p>If the answer is "no" to all of the above then the job / task is unlikely to have significant risk of injury. The more "yes"s given then clearly the higher the risk.</p>			

Figure 9.4 Some things to consider for a manual handling risk assessment

it for yourself (see Fig. 9.4). A generic risk assessment is acceptable (see Fig 9.6 at the end of this chapter), and in many instances this will really be the only practical way of approaching it. (How else would you tackle, say, the job of a furniture remover? It would be impossible for the employer to carry out a risk assessment at each location and for each item of heavy furniture.)

As with all risk assessments, the hierarchy of the approach should be:

1. Get rid of the hazard/risk altogether if reasonably practicable (e.g. do it another way, do it with a machine).
2. If approach 1 is not reasonably practicable, then control the risks so that harm is unlikely:
 - (a) try a less risky option;
 - (b) organise work to reduce exposure to the hazard;
 - (c) train the people to do it in the safest way;
 - (d) issue personal protective equipment if appropriate (e.g. safety shoes, gloves, etc.).

9.4 Manual handling training and instruction

For employees whose job necessarily entails manual handling, it is common sense to give some basic training/instruction in good handling practice. While the regulations do not specifically require this, they do require employers to *reduce risk to the lowest level reasonably practicable*. The use of good lifting techniques will, in most instances, help this to be achieved.

9.5 What about lifting equipment?

Any and all lifting equipment used at work is subject to the requirements of **The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)** which came into force on 5 December 1998.

The basic requirements of LOLER are that employers have duties to ensure that lifting equipment is:

- strong and stable enough for the particular use and is marked to indicate safe working loads;



Figure 9.5 Some examples of lifting equipment

- positioned and installed to minimise risks;
- used safely, i.e. the work is planned, organised and performed by competent people;
- periodically examined and inspected by competent people.

9.5.1 What is classed as lifting equipment?

Any equipment used for lifting or lowering loads is defined as lifting equipment. It includes:

- cranes;
- fork-lift trucks;
- hoists;
- manually operated chain blocks, pull lifts, etc.;

- mobile elevating platforms;
- vehicle inspection hoists, etc.

It also includes smaller items like:

- ropes, chains, slings, etc., used for lifting;
- shackles, eyebolts;
- attachments used for connecting the load to the lifting device;
- personal safety harnesses.

9.5.2 Periodic examinations and inspection

A major requirement is to have all lifting equipment periodically examined/inspected by a competent person and to record the results of such examinations. You can use your own nominated employees for this work provided they are competent to do it, i.e. they have sufficient training, knowledge and experience. Some organisations need to employ a suitably qualified external agency or contractor to do this work. Whichever way it is done, you will need to have an up-to-date comprehensive register of your lifting equipment because you cannot inspect it if you don't know you have it.

9.5.3 What about 'home-made' lifting equipment?

When you purchase new lifting equipment, you should be provided with all the necessary information and, where applicable, test certificates. An essential part of this information is the safe working load. If you make some lifting equipment or lifting attachments for your own use, then you must go through the same testing process as a manufacturer of lifting equipment does. You will need to:

- have it designed to an appropriate standard and have design calculations checked;
- have it inspected during manufacture and, where appropriate, proof tested to verify its safe working load.

It's best to avoid homemade lifting equipment if you can, unless you are professionally competent to design, make and test it.

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<ul style="list-style-type: none"> • unpredictable movement of loads? • repetitive handling? • prolonged physical effort? • insufficient rest or recovery? • a workrate imposed by a process? 		
<p>The Loads – are they:</p> <ul style="list-style-type: none"> • heavy? • bulky/unwieldy? • difficult to grasp? • unstable/unpredictable ? • intrinsically harmful (e.g. sharp or hot)? 	<ul style="list-style-type: none"> ✓ ✓ 	<p>Boxes of books delivered by van can be very heavy.</p>

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Lifting and Handling

Assessment Questions	Further Information	
Tick if answer is Yes	✓	Main problems; possible changes to be made
The Working Environment - are there: <ul style="list-style-type: none"> • constraints on posture? • poor floors? (e.g. uneven / slippery) • variations in levels? • hot / cold / humid conditions? • strong gusts of wind? • poor lighting conditions? 	✓ ✓	Incoming stock is often placed at bend on stairs creating a trip hazard. Outside walkway at rear can be icy in winter.
Individual capability – does the job: <ul style="list-style-type: none"> • require unusual physical capability? • create a hazard to those with a health problem? • create a hazard to those who are pregnant? • create a hazard to the young, elderly or disabled? • call for special information or training? 	✓ ✓ ✓ ✓	Shop Manager / shop staff and van driver carry the incoming stock upstairs. Pregnant women would not be permitted to do these tasks. Basic Manual Handling training for all staff, particularly van driver.
Other Factors – is movement or posture hindered by clothing or personal protective equipment?		

... continued on next page

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Risk Control Measures Tick if existing	Action Required Tick (I) if immediate action required. Insert date when done.			
Description	✓	I	What? When? By whom?	Done
<p>Reduce strain of carrying long distances. Control weight of loads.</p> <p>Control trip hazards on stairs and set housekeeping standards.</p> <p>Vulnerable workers not permitted to carry stock up or down stairs. Reduce risk of slips at rear during icy weather. Use personal protective equipment.</p> <p>Provide Manual Handling training and information.</p>	<p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>Sack truck to be used for van deliveries. Van driver to deliver books in smaller boxes. Shop Manager to instruct team to break large loads down into smaller ones before lifting where possible. Manager to create holding area for incoming stock on ground floor within one month and instruct staff to keep stairs clear at all times.</p> <p>Manager to buy salt before the winter to keep by the rear door.</p> <p>Manager and van driver to attend a course within 2 months. Manager to:</p> <ul style="list-style-type: none"> • instruct shop team in basic safe lifting and carrying techniques within 3 months • display Manual Handling poster on the H&S notice board within 3 months 	

Details of Staff Consultation	
Assessor (Name/Title)	Signed
Manager (Name/Title)	Signed
Assessment Date	Review Date

Figure 9.6 Example of a generic manual handling assessment

Chapter 10

Noise

10.1 Noise at work

Working in noisy environments for prolonged periods can result in temporary or permanent damage to a person's hearing. As well as hearing loss, people can suffer from ringing or buzzing, etc., in the ears (tinnitus). Noisy environments can also create unhealthy levels of stress, loss of concentration and a reduction in people's effectiveness to do their work.

Continued exposure to noise above 85dB(A) will probably, over time, cause some hearing loss. To assess whether or not a sound is loud enough to damage a person's hearing, it is necessary to know the loudness (measured in decibels – dB) and the duration of exposure to the noise. It now appears to be accepted that the maximum noise level a person should be exposed to for 8 h per day is 85 dB(A). If noise levels are higher, then the allowable exposure time is clearly less, for example about 2 min is the maximum safe exposure time to a noise level of 110 dB(A), and no time at all if noise levels are 140 dB(A).

The **Noise at Work Regulations** are designed to ensure that people do not suffer damage to their hearing while at work.

10.2 The regulations (the law) and what you have to do

The relevant law is **The Control of Noise at Work Regulations 2005** which came into force on 6 April 2006. This legislation replaces **The Noise at Work Regulations 1989** which implemented in the UK the European Community directive 86/188/EC. (Extracts from the regulations are in *italics* and interpretation in normal text.)

The new regulations are more demanding, longer and more complex than the previous ones. Nothing new there.

Before looking at all of these regulations, you should determine whether or not you have a noise problem. The 2005 regulations list three action levels:

- **Lower exposure action values:** a daily or weekly personal noise exposure of 80 dB (A-weighted) and a peak sound pressure of 135 dB (C-weighted).
- **Upper exposure action values:** a daily or weekly personal noise exposure of 85 dB (A-weighted) and a peak sound pressure of 137 dB (C-weighted).
- **Exposure limit values:** a daily or weekly personal noise exposure of 87 dB (A-weighted) and a peak sound pressure of 140 dB (C-weighted).

In the previous regulations the lower limit was 85 dB(A) and the upper limit was 90 dB(A).

If none of your employees is continuously exposed to noise levels of 80 dB(A) or above, then you do not need to consider these regulations further. In the absence of specific noise measurements, you will need to make a common sense assessment of the noise levels. The following list may help you:

Noise levels of typical activities

- Normal breathing 10 dB(A)
- Soft whisper 30 dB(A)
- Quiet office 40–50 dB(A)
- Conversation 50–60 dB(A)
- Loud radio 65–75 dB(A)
- Busy street 75–85 dB(A)
- Heavy lorry (about 7 m away) 90–100 dB(A)
- Shouting in the ear 110 dB(A)
- Chainsaw 110–120 dB(A)
- Aeroplane at take-off 140 dB(A)

Noise

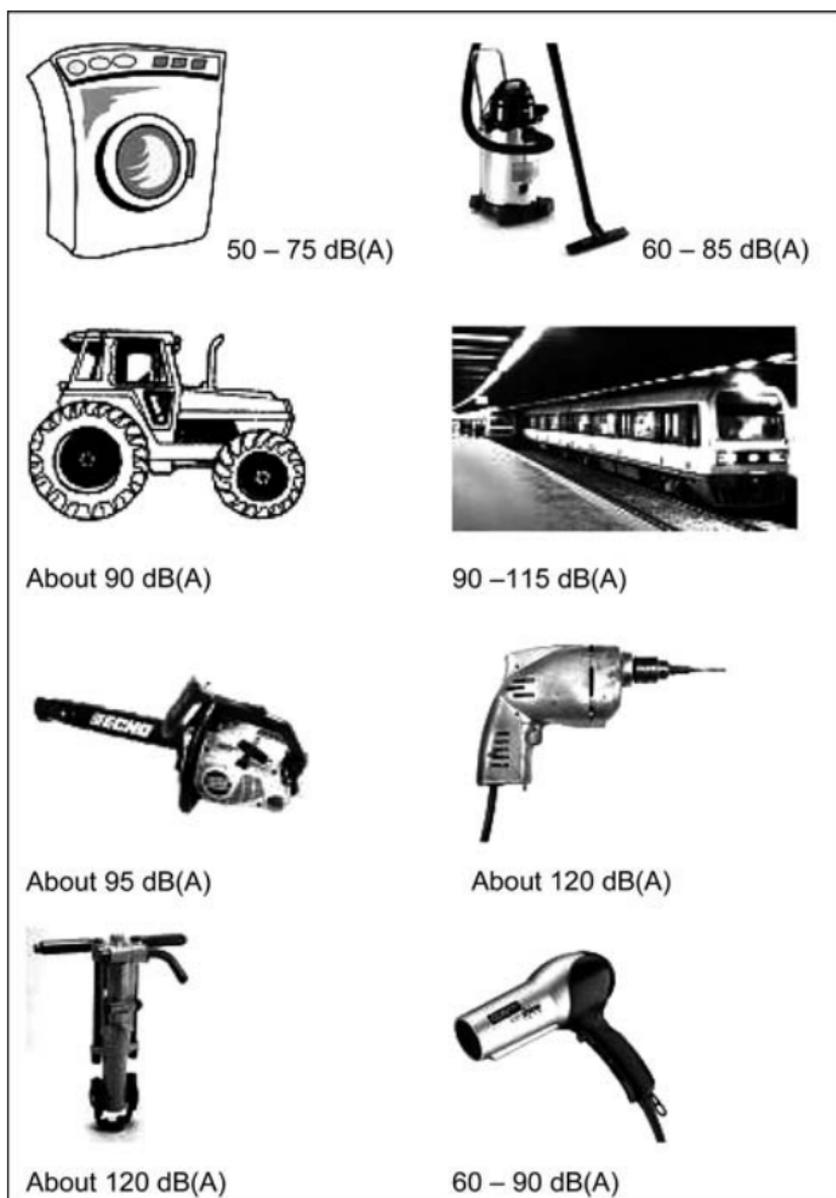


Figure 10.1 Noise levels of some everyday things

10.3 Assessment of risk from noise and reduction of noise levels

If your employees are likely to be continuously exposed on a daily basis to noise levels of 80dB(A) and above or exposed

at all to peak noise levels of 135 dB(C), which is very, very noisy, then you will need to make an assessment. If they are not, then you will not need to consider these regulations much further. Be careful, however, to consider all the equipment/vehicles/power-driven devices, etc., that employees use off your premises as well as on them.

If you do have a potential noise problem, then you must make an assessment of the risks. This will almost always require noise measurements to be taken. You could buy or hire the necessary noise meters and do a simple survey yourself (make sure it is a calibrated meter and you read up a little on how to use it), or you could hire a competent external contractor to do it for you. If you have a less than straightforward work environment, e.g. a large establishment with some very noisy areas, some less noisy and some reasonably quiet ones, then you may well have a contractor/consultant do a survey and prepare a noise map.

If employees are exposed to noise levels at or above the upper exposure action values [85 dB(A) daily or 137 dB(A) peak], then you are required to eliminate or reduce the levels **if this is reasonably practicable**. If it is not reasonably practicable to reduce noise levels to an acceptable level, then you can consider things such as putting noisy equipment in a separate room, using quieter processes or machinery and installing acoustic hoods or other noise-absorbing materials – keeping the noise away from all or most of the people most of the time. Practically, though, some work situations will always remain noisy, in which case other means of protection will be required.

10.4 Hearing protection and warning signs

Employees who are required to be in locations where the noise levels are 80 dB(A) or above are entitled to be provided with hearing protection by the employer if they ask for it. If they are required to be in locations where noise levels are 85 dB(A) or above, then employers **must** provide protection and require employees to use it.

Noise

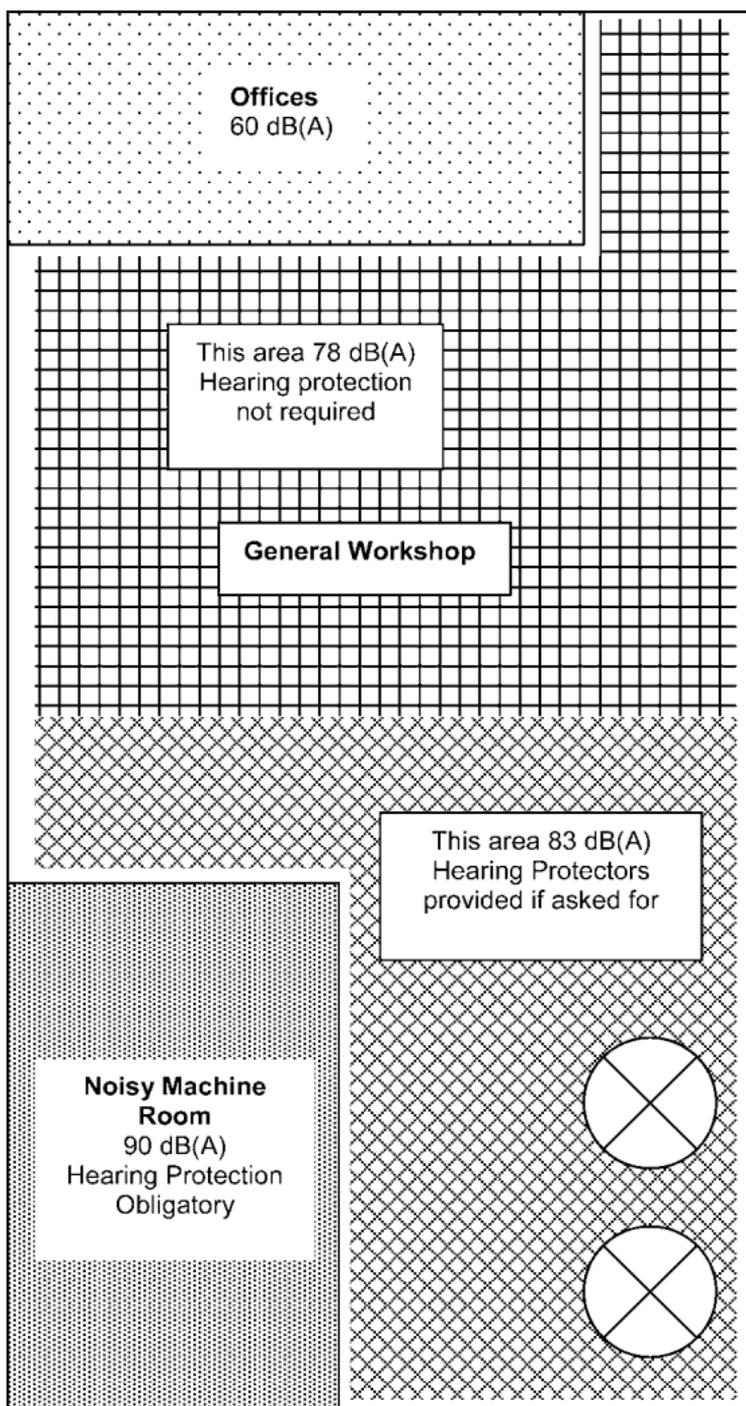


Figure 10.2 Example of a simple noise map



Figure 10.3 Noisy area warning sign

You must also clearly indicate those areas or those activities where hearing protection must be used by, for example, having warning signs positioned at all entrances to the area.

The type of hearing protection provided is not specified, apart from requiring that it must be fit for purpose. Commonly available types are fairly obvious:

- earmuffs (good if worn properly and fit properly – sometimes problems/don't fit well with long hair or beards – need to keep them clean);
- various types of earplug (as good as earmuffs if properly inserted – can have dispensers at points of entry to noisy areas).

Any equipment provided must clearly be kept in good condition and must not cause other health problems (e.g. ear infections due to dirty or shared equipment).

10.5 Information and training

If you have noisy areas or noisy activities, then the regulations require employers to give employees any necessary training/instruction on, for example:

- the risks from exposure to noise;
- what you (the employer) do to comply with the regulations (e.g. designation of areas or activities where protection must be worn or can be requested);
- good practices to minimise noise (close the door, replace

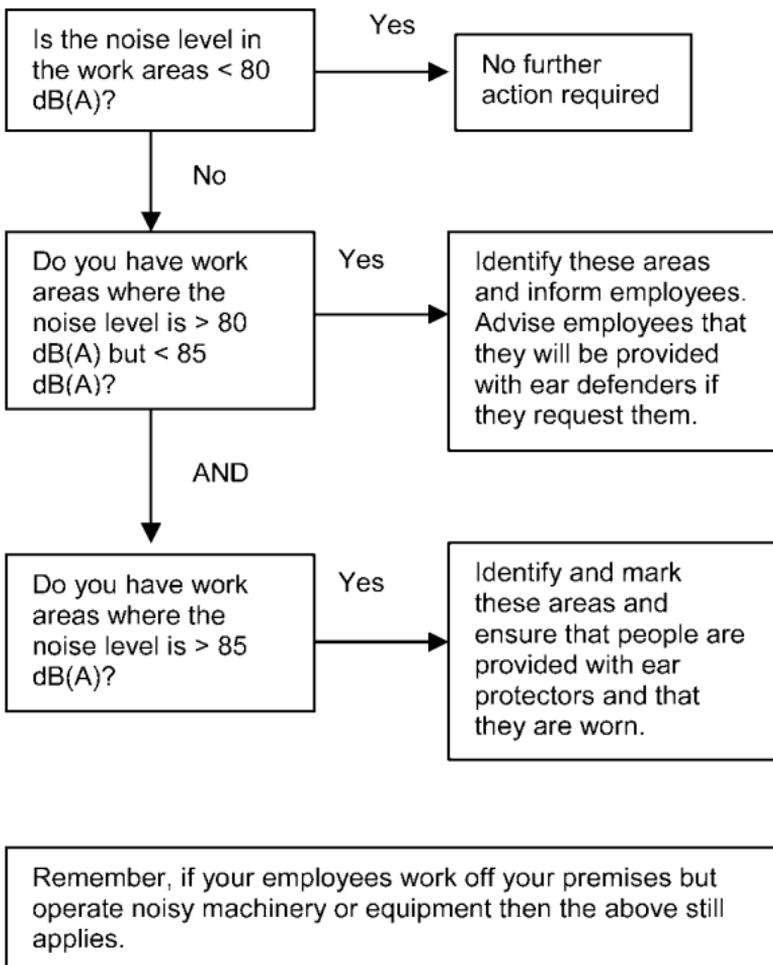


Figure 10.4 Summary of the main requirements

the acoustic hood, shut the machine off when not in use, etc.);

- availability of hearing protection devices and how to use them;
- the noise exposure limits specified in the regulations;
- what they must do themselves (e.g. wear the protectors provided in the noisy areas or on the noisy activities).

10.6 Health surveillance

If, after all you have done, i.e. assessed the noise levels, minimised them where practicable, provided hearing protection, etc., an assessment indicates that there is still a risk to hearing, then the regulations require employers to ensure that those employees at risk are placed under suitable health surveillance. This includes hearing tests.

Chapter 11

Hazardous Substances

11.1 What is COSHH (Control of Substances Hazardous to Health)?

Think of the phrase ‘as mad as a hatter’ – hatters really did go mad. The chemicals used in hat-making included mercurous nitrate, used in curing felt. Prolonged exposure to the mercury vapours caused mercury poisoning. Victims developed severe and uncontrollable muscular tremors and twitching limbs, called ‘hatter’s shakes’. Other symptoms included distorted vision and confused speech. In advanced cases, hatters developed hallucinations and other psychotic symptoms. No doubt the employers of the time were unaware of the dangers caused by these chemicals.

The COSHH Regulations are intended to avoid dangers to people’s health and safety caused by exposure to substances such as those described above.

The relevant law is **The Control of Substances Hazardous to Health Regulations 2002**, otherwise known as **COSHH**. These regulations replace the **COSHH Regulations 1999** and they enshrine in UK law a number of EEC directives.

11.2 Which substances are hazardous to health?

There is no generally defined list of substances hazardous to health in the regulations, but, if a substance is hazardous to health, then it falls within the regulations. The regulations do, however, prohibit the use of certain listed substances (e.g. carbon tetrachloride).

When considering the substances that may be hazardous to health, you must consider:

- substances used directly in work activities (e.g. adhesives, paints, cleaning agents);

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- substances generated during work activities (e.g. fumes from soldering and welding);
- naturally occurring substances (e.g. grain dust);
- biological agents such as bacteria and other microorganisms.

If the containers of substances you use have warning symbols on them, such as those shown in Figs 11.1 and 11.2, then



Figure 11.1 Examples of some approved symbols for dangerous substances

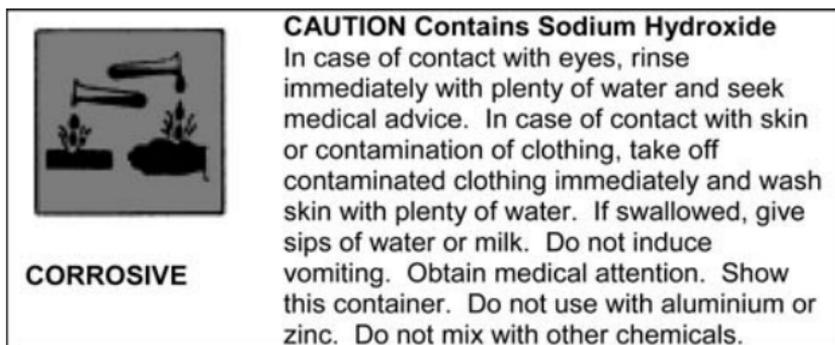


Figure 11.2 Example of a warning label on a container – caustic soda crystals

these will almost certainly be ‘substances hazardous to health’. Ordinary household washing-up liquid does not have a warning label, so is not a problem. Household bleach does have a warning label, so the COSHH Regulations will apply if you use this at work.

In general, a substance is hazardous to health if it is **likely** to cause:

- burning (e.g. caustic soda);
- skin irritation or dermatitis (e.g. prolonged exposure to engine oil);
- asthma or breathing difficulties;
- loss of consciousness;
- cancer;
- infection from bacteria or other microorganisms.

COSHH does not apply to:

- Asbestos and lead (they have their own regulations).
- Substances that are hazardous **only because** they are:
 - radioactive;
 - at high pressure;
 - at extreme temperatures;
 - have explosive or flammable properties;
 - biological agents outside the employer’s control (e.g. catching colds from a colleague – N.B. Legionnaires

disease caused by faulty cooling systems is within the control of the employer, so it is covered by COSHH).

Other reference sources for relevant substances are:

- **Chemicals (Hazard Information and Packaging for Supply) Regulations 2002** (CHIP Regulations);
- HSE document **EH40/2005 Workplace Exposure Limits** (this lists the substances which have set exposure limits and specifies their exposure limits – see Fig. 11.3).

It is worth noting here that prolonged exposure to ALL dust is considered hazardous to health if the levels exceed those specified in the regulations:

... dust of any kind..., when present at a concentration in air equal to or greater than

(i) 10 mg/m³, as a time-weighted average over an 8 hour period, of inhalable dust, or

(ii) 4 mg/m³, as a time-weighted average over an 8 hour period, of respirable dust.

These limits only apply to any dust that poses no specific health hazard other than it being dust. Remember also that

Substance	CAS Number	Workplace Exposure Limits				Comments
		Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15 minute reference period)		
		ppm	mg/m ³	ppm	mg/m ³	
Hydrogen Sulphide	7783-06-04	5	7	10	14	R12, 26, 50
Methyl ethyl ketone peroxide (MEKP)	1338-23-4			0.2	1.5	
1,1,1-Trichloroethane	79-01-6	100	550	200	1110	R20, 59

Figure 11.3 Some examples of exposure limits from the workplace exposure limits document

these limits are not applicable to occasional or periodic exposure. They are exposure limits for prolonged and continuous exposure.

Non-toxic gases such as nitrogen, argon and helium are covered by COSHH because they can endanger life by reducing the amount of oxygen available to breathe.

11.3 If you have hazardous substances – what next?

11.3.1 Assess the risks

The first step is to list the hazardous substances you have and use and those that are created in your work (e.g. fumes/vapours given off). Having identified the substances that are hazardous to health, you must now assess the risks.

Dangerous substances must be supplied with an accompanying **safety data sheet**. This will help you in assessing risk. The data sheet is required to contain information on:

- composition/information on ingredients;
- hazard identification;
- first-aid measures;
- firefighting measures;
- accidental release measures;
- handling and storage;
- exposure controls and personal protection;
- physical and chemical properties;
- stability and reactivity;
- toxicological information;
- ecological information;
- disposal considerations;
- transport information;
- regulatory information.

If, for whatever reason, you do not have a data sheet or cannot obtain one, have a look on the Internet. Simply typing in the name of the substance + material safety data sheet into the search engine will frequently pull up numerous

data sheets. Your trade association will also frequently be able to give informative help on what to do.

The risk assessment required is the same format as always:

- look for the hazards;
- decide who might be harmed (e.g. employees, visiting contractors, the public, etc.);
- evaluate the risks and decide whether existing precautions are adequate or more needs to be done (and do it);
- record your findings;
- review the assessment and if necessary revise it after a significant change or period of time.

It is the employer's duty to carry out the assessment or appoint someone else to do it. As always, keep it simple and to the point. Exercise proportionality; look at the really horrible stuff first before spending time on the bottle of household bleach in the cleaning cupboard.

11.3.2 Decide what precautions are needed

If the risk assessment has identified significant risks, then you must take appropriate action. You must consider the need for the following activities in order to **prevent or adequately control exposure**.

In the case of significant risk you must, **if it is reasonably practicable to do so**:

- change the process or activity so that the hazardous substance is not needed or generated;
- replace it with a safer alternative;
- use the substance in a safer form, e.g. pellets instead of powder.

If it is not **reasonably practicable** to prevent exposure to the hazard, you must control exposure adequately. Such controls might include:

- controlled use of and access to the hazardous substance;
- use of fume cupboards;
- use of local ventilation or fume extraction equipment;

- total enclosure of the source of the hazard.

Almost as a last resort you must consider using adequate personal protective equipment such as goggles, facemasks, respirators, protective clothing, gloves, etc. The use of such personal protective equipment (PPE) will of course be quite common, but it should not be the first choice, it should only be relied on when it is not reasonably practicable to do anything else.

If you have to use or process

- carcinogens (cancer causing substances) or
- mutagens (substances that may cause heritable genetic damage)

then special requirements understandably apply.

One, perhaps, unnecessary piece of advice is **never ever** put hazardous materials into an unmarked or incorrectly labelled container, e.g. bleach in a used water/lemonade bottle. Lots of accidents have been caused by this.

11.3.3 Ensure that control measures are used and maintained

If you are relying on some control measures to manage the risk (e.g. fume extraction equipment, PPE, specific training, etc.), then you are required to make sure that these control measures are used and adequately maintained. This will clearly require some periodic inspection or testing. The regulations do have some specific requirements for local exhaust equipment (see Fig. 11.4).

11.3.4 If necessary – monitor exposure

If your risk assessment concludes that

- there could be serious risks to health if control measures fail or deteriorate
- exposure limits might be exceeded or
- control measures might not be working properly

Process	Minimum frequency
Processes in which blasting is carried out in or incidental to the cleaning of metal castings, in connection with their manufacture.	1 month
Processes, other than wet processes, in which metal articles (other than of gold, platinum or iridium) are ground, abraded or polished using mechanical power, in any room for more than 12 hours in any week.	6 months
Processes giving off dust or fume in which non-ferrous metal castings are produced.	6 months
Jute cloth manufacture.	1 month

Figure 11.4 Frequency of thorough examination and test of local exhaust ventilation plant used in certain processes (required by COSHH)

then you will need to measure and monitor the concentration of hazardous substances breathed in by those exposed unless you have some other means of detection, for example an automatic alarm that detects the hazardous substance or a control limit for that substance.

Monitoring is mandatory when there is exposure to vinyl chloride monomer or the spray from certain electrolytic chromium processes. HSE guidance document **Monitoring Strategies for Toxic Substances** gives more information.

Health surveillance will probably be required if people are exposed to substances and processes listed in Schedule 6 of the regulations (see Fig.11.5) **and** there is a reasonable likelihood that an identifiable disease or adverse health effect will result from that exposure.

Hazardous Substances

Substances for which medical surveillance is appropriate	Process
Vinyl chloride monomer (VCM).	In manufacture, production, reclamation, storage, discharge, transport, use or polymerisation.
Nitro or amino derivatives of phenol and of benzene or its homologues.	In the manufacture of nitro or amino derivatives of phenol and of benzene or its homologues and the making of explosives with the use of any of these substances.
Potassium or sodium chromate or dichromate.	In manufacture.
Ortho-tolidine and its salts. Dianisidine and its salts. Dichlorobenzidine and its salts.	In manufacture, formation or use of these substances.
Auramine. Magenta.	In manufacture.
Carbon disulphide. Disulphur dichloride. Benzene, including benzol. Carbon tetrachloride. Trichlorethylene.	Processes in which these substances are used, or given off as vapour, in the manufacture of india rubber or of articles or goods made wholly or partially of india rubber.
Pitch.	In manufacture of blocks of fuel consisting of coal, coal dust, coke or slurry with pitch as a binding substance

Figure 11.5 Substances/processes for which medical surveillance is probably necessary (as listed in the COSHH Regulations)

11.3.5 Have plans and procedures to deal with accidents, incidents and emergencies

If your operations are of such a scale that an accident or incident will give rise to exposure well beyond normal day-to-

day work, i.e. create a major incident, then you are required to have emergency plans in place. If you do fall within this exceptional category, then you will need to study these requirements very closely and probably require professional advice. This requirement does, however, apply to all operations (irrespective of scale) that involve carcinogens, mutagens or biological agents.

11.3.6 Inform, train and supervise employees

The regulations require you adequately to inform, train and supervise employees exposed to hazardous substances. This should include:

- information on the relevant hazardous substances and access to their safety data sheets;
- the main findings of any risk assessment;
- the precautions they should take to protect themselves and others;
- how to use any necessary PPE;
- results of any exposure monitoring and health surveillance;
- emergency procedures that need to be followed.

As with all regulations, well-informed and trained employees are key to the avoidance of accidents and incidents.

11.4 Summary and conclusion

Most work activities involve some exposure to some hazardous substances, even if it is only household bleach. A few involve exposure to high-level hazardous substances. The COSHH Regulations apply to all these situations. You will need to use proportionality in the way you go about compliance, and best avoid very old hatters.

If the substances you deal with are no more serious than everyday chemicals found in the average home, then do not neglect or underestimate their potential for injury, but do not complicate your operations with unnecessary paperwork. Good safety will come from sensible precautions that are actually observed on the shop floor.

Chapter 12

Electricity

12.1 Working with electricity

Working with electricity can, as we are all aware, cause injury, serious injury and death. The main hazard is electrocution. 240 V cables and equipment have the ability to kill; they must be treated with respect. Each year there are about 1000 reportable accidents at work involving shock and burn, about 30 of which are fatal. Poorly maintained or inadequate electrical installations also cause fires and explosions.

12.2 Which regulations do I have to comply with?

The relevant regulations are **The Electricity at Work Regulations 1989**. The intention of these regulations is to ensure that there is no danger of injury to employees or the public from electricity. They therefore place duties on employers (and employees) to ensure that electrical systems are constructed, installed and maintained so as not to cause danger. They require that systems of work are safe and electrical equipment is both suitable for its purpose and properly inspected and maintained.

The majority of these regulations are directed at electrical hardware and installation, but there are also requirements that affect the users and owners of electrical equipment. Any company that undertakes the installation or maintenance of electrical equipment and systems will need to know a good deal more about the technical implications of the regulations than is covered here. In the next sections we will try and concentrate on those aspects of the regulations of which the non-specialist person or company needs to be aware.

12.3 A summary of the main requirements and duties for users/owners

As usual, it is the employer who has the primary duty to ensure that:

- installations are safe (new installations should be constructed to appropriate standards, e.g. BS 7671 Requirements for Electrical Installations);
- installations are properly maintained and used, especially the safety aspects, e.g. circuit breakers, overload protection devices, fuse systems, etc.;
- equipment is suitable for the environment in which it is to be used, e.g. flammable atmospheres, very wet conditions, etc.;
- there are suitable isolation devices for cutting off the

Location	Maximum Period between Inspections	Suggested (S) Mandatory (M)
Commercial	5 years	S
Education	5 years	S
Industrial	3 years	S
Petrol Stations	1 year	M
Theatres and Cinemas	1 year	M
Restaurants and hotels	1 year	M

The “suggested” periodicities have no legal standing – they are simply suggested periodicities. Employers must use their own judgement based on their working environment and experience.

Figure 12.1 Some suggested periodicities for inspection of electrical systems

electrical supply to the equipment, e.g. stop buttons close to fixed equipment;

- there are effective means of preventing excess current, e.g. correctly rated fuses, circuit breakers and residual current devices (RCDs);
- circuits or equipment that are made dead (isolated) to allow safe maintenance, repair, etc., remain dead and are not mistakenly re-energised (e.g. locked-off isolators, fuses pulled, physical disconnection or **WELL MANAGED** warning systems);
- work is not carried out on live equipment unless there is absolutely no alternative, in which case a risk analysis is required and effective safety precautions must be taken;
- electrical work is only carried out by people who are competent.

12.4 Employers' duties for work 'within their control'

The employer has duties under these regulations *'in so far as they relate to matters which are within his control'*. If employers have people (employees) under their direct control who, for example, carry out works of electrical installation or maintenance, then the employers have the duty to comply with the regulations. If the employers engage a competent contractor to do such works, then clearly many aspects of the work that the contractor carries out will not be within the control of the employers who engage the contractor. In this instance it will be the contractors' employers who have the duty of compliance for those matters within their control. The old question arises as to who is responsible for what. In those cases where an employer engages a contractor to carry out such work, then he should:

- employ a company or someone who is competent to do the work [e.g. one approved by the NICEIC (National Inspection Council for Electrical Installation Contracting) or the ECA];

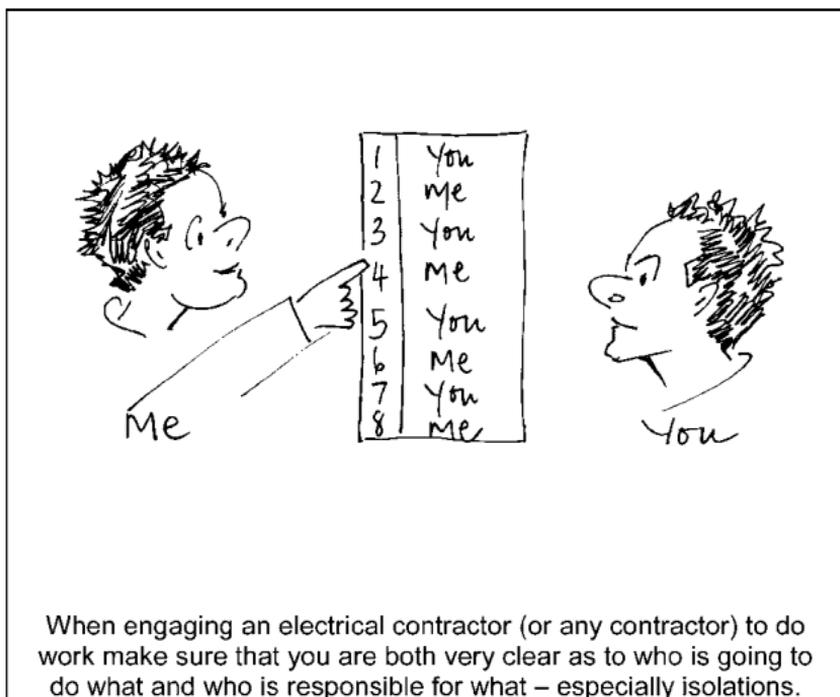


Figure 12.2 Contractor/client – who does what

- clearly define the work to be done and establish a clear and unambiguous list of who is responsible for what;
- be especially clear about who will be responsible for making any electrical isolations and preventing inadvertent re-energising.

In order to have a comprehensive technical understanding of the implications of these regulations, it will be necessary to read publications other than this quick guide, e.g. *Electricity at Work – Safe Working Practices*, ISBN 0 7176 2164 2, published by the Health and Safety Executive. We have, however, attempted to list some of the more common and non-technical things that employers will need to do under these regulations.

12.5 What to do about portable equipment

Portable electrical equipment, especially tools, will be subjected to rough handling. This can eventually lead to

Electricity

cable damage, loosening and damage at cable entry to plugs, sockets and equipment. Apart from care and inspection before use by the employee, it is good practice to inspect all portable equipment on a scheduled basis. To do this you will need to:

- have a list of portable equipment;
- inspect it to a programme;
- mark it with the next due date for inspection;
- issue an instruction that equipment must not be used if the inspection is overdue.

Equipment / Environment	Formal Inspection / Test
Desktop computers, VDU screens, photocopiers, etc. (only moved occasionally)	Every 2 – 4 years
Double insulated equipment: NOT hand-held. Moved occasionally, e.g. fans, table lamps, slide projectors	Every 2 – 4 years
Double insulated equipment: HAND-HELD, e.g. some floor cleaners	Every 2 – 4 years
Earthed equipment: e.g. electric kettles, some floor cleaners	Every year
Cables (leads) and plugs connected to the above. Extension leads (mains voltage)	Every 6 months if frequently moved or likely to be pulled / roughly used, up to say, every 4 years if rarely moved.
This table of periodicities has no legal standing – it is simply suggested periodicities. Employers must use their own judgement based on their working environment and experience	

Figure 12.3 Some suggested inspection periodicities for office-type environments

Inspection periodicity is left to your judgement and experience. Every 3 months may be appropriate for some portable tools subjected to arduous conditions, perhaps every 2 years for office equipment like computers.

12.6 What to do about isolations

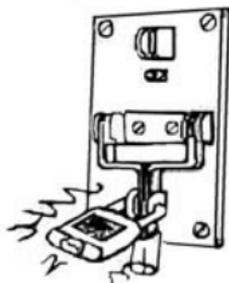
When people are maintaining, repairing, adjusting or cleaning equipment, it will almost always be necessary to isolate it from the electrical supply in order for the work to be done safely. For a simple piece of equipment, the person doing the work should obviously switch it off **AND** unplug it. For other situations, whether it is mechanical work or electrical work, it may well be necessary to isolate the electrical supply to the equipment in other ways that may be remote from the person doing the work. Some of the safest methods of effecting these isolations are:

- switch off the appropriate and correct isolator and padlock in the off position;
- remove the correct fuses;
- physical disconnection of electrical supply.

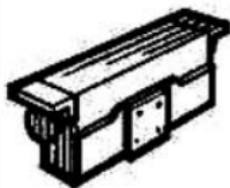
It can be acceptable to isolate using non-lockable switched isolators and then attach a sign saying something like: '**Danger – work in progress. Do not switch on**'. Beware, though, that this method will probably only be acceptable if it is a system that is well practised and managed and is accompanied with an effective permit to work system. Simply sticking on a handwritten danger sign with sticky tape will almost certainly not be acceptable.

12.7 Some good practices

Figure 12.5 shows some good practices that will reduce the risks of working with electricity. Most, if not all, have been done by responsible organisations for many years. Some are not explicit requirements of the regulations, but they are nonetheless relevant (and sometimes implicit) because they will help reduce the risk of danger caused by electricity.



When isolating electrical equipment in order to make it safe for people to work it is better / safer to **LOCK OFF** the isolator. This is especially so in larger facilities with many workers. It is even better and safer to combine this with a **Permit to Work** system.



If there is no switchable isolator then pull the fuse.



A warning sign fixed to the isolator can be acceptable provided there is a strong culture of obeying such warnings and the warning is securely fixed to the isolator

The Regulations require:

...circuits or equipment that are made dead (isolated) to allow safe maintenance, repair etc. remain dead and are not mistakenly re-energised (e.g. locked off isolators, fuses pulled, physical disconnection or **WELL MANAGED** warning systems)

Figure 12.4 Isolation protection

A Quick Guide to Health and Safety

Some Good Practices – Some are Implicit in the Regulations if not Explicit	
Use 110 V for power tools if possible.	(Safer than 240V equipment)
If using 240 V for power tools and portable equipment then use an RCD.	(Not more than 30 mA sensitivity. These are faster acting and more sensitive than fuses.)
Only use qualified staff or contractors for electrical work.	
Unplug not just switch off appliances before cleaning or making adjustments.	
Inspect portable equipment regularly.	(Especially the cable and plug)
Use a "permit to work" system for maintenance work.	(It is always recommended for larger facilities / factories.)
Electrical isolations made in order to enable repairs, adjustments and maintenance to be done safely should be foolproof and mistake-proof.	(People working on the equipment MUST be safeguarded from inadvertent switching on of the electrical supply.)
Power supplies to equipment and machines must be run in protective conduit if there is a possibility of physical damage to the cables.	
Periodic inspection of electrical systems and equipment by a competent person is always recommended.	(It is a requirement in the Regulations. It is the safety aspects that need inspecting.)
You must ensure that you use the right equipment for special atmospheres.	(E.g. flammable atmospheres, inside tanks for example)
Make sure that there are no buried cables in those areas where excavations are being made.	
If there are overhead electrical conductors in your area then you must make sure that people and equipment are kept a safe distance away from them.	
Keeping your electrical system diagrams up to date will help safety and will save you money as well.	(Especially record any modifications / alterations / additional circuits / etc.)
Know what to do for electric shock.	(Display the poster)

Figure 12.5 Some good electrical practices

Chapter 13

Working at Height

13.1 The general situation and current regulations

Working at height has always been potentially dangerous and has required sensible precautions. In 2003/04, falls from height resulted in 67 deaths and nearly 4000 major injuries. They remain the single largest cause of workplace deaths and one of the main causes of serious injuries. While some of these injuries and deaths resulted from fall from great height, the majority of injuries are caused by falls from less than 2 m. In addition to the HSW Act, we now have specific regulations to comply with: **The Work at Height Regulations 2005**. These regulations apply to all work situations in a factory, an office, a school and off-site locations where employees work. The overriding principle is that employers must do all that is **reasonably practicable** to prevent anyone falling. They apply equally to self-employed persons and employees. There are some locations where these regulations do not apply, e.g. on board ship, offshore platforms and some other places.

13.2 What is work at height?

In previous years, special considerations were needed when the potential fall distance was 6ft or more. The new regulations regard work at height as ANY height where a fall is likely to cause injury. Hence, they apply to work where the potential fall distance is half a metre or 100 m. Clearly, the precautions necessary in the second case will be greater than those in the first, but this still means that the employer has to consider the dangers posed by the half a metre fall situation.

In the following sections we will look at some of the main

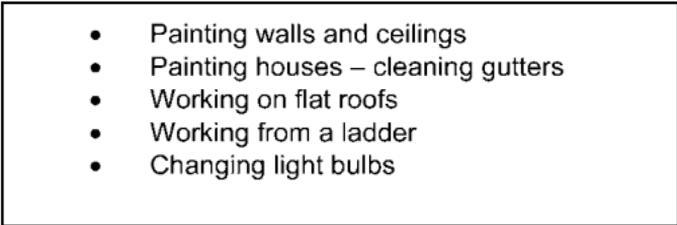
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- Painting walls and ceilings
 - Painting houses – cleaning gutters
 - Working on flat roofs
 - Working from a ladder
 - Changing light bulbs

Figure 13.1 Types of work now covered by the regulations

requirements that affect the more general work at height situations.

13.3 The main requirements of the regulations

The regulations place duties on employers, the self-employed and any person who controls the work of others (e.g. facilities managers or building owners who may contract others to work at height) to the extent that they control the work. As with other regulations, there is a hierarchy, and this is illustrated in Fig. 13.2.

The regulations require duty holders to ensure that:

- all work at height is properly planned and organised (clearly, it should be proportional to the task, e.g. step ladder or 100m chimney);
- all work at height takes account of weather conditions, e.g. maintenance on an icy roof, work on ladders in high winds, etc.;
- people involved in work at height are trained and competent;
- equipment used is suitable for the job and is properly maintained and inspected;
- risks from fragile surfaces are properly controlled, e.g. work on fragile roofs, etc;
- the place where work is done at height is safe, e.g. any scaffolds used are safe to work from;
- injuries resulting from falling objects are prevented.

Working at Height

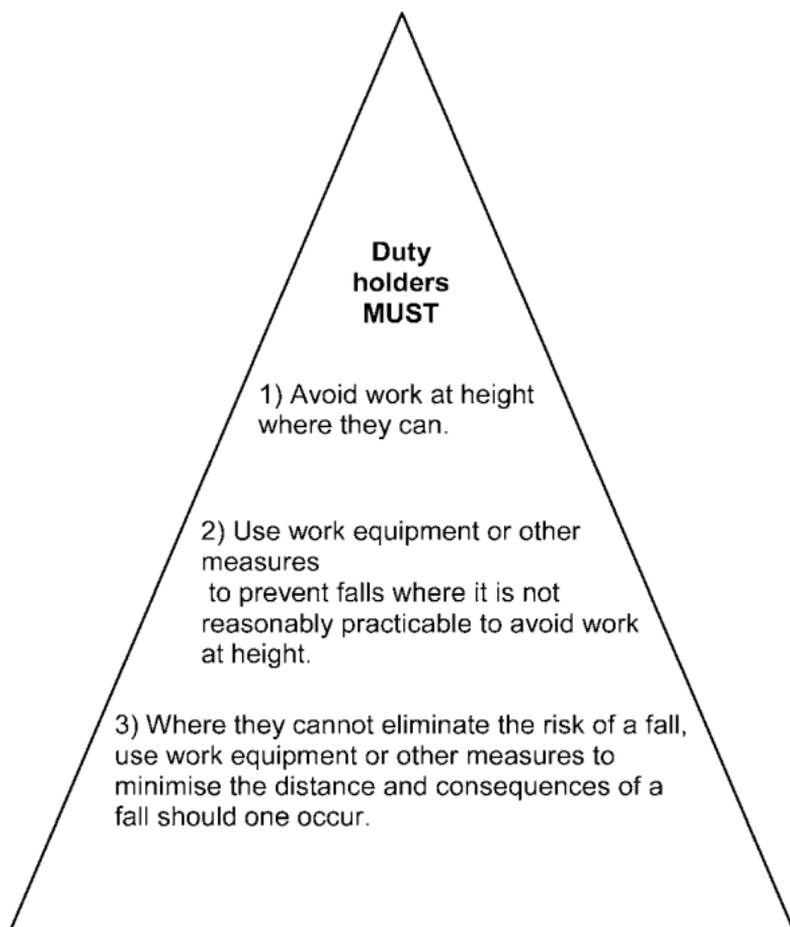


Figure 13.2 The regulations hierarchy for duty holders

13.4 What to do about working from ladders

When these regulations came into force there was much discussion on the radio and in the press suggesting that working from ladders would effectively be prohibited, no more window cleaners with ladders, etc. Working off ladders is still permissible when other ways are not reasonably practicable. Of course, the ladders and stepladders need to be used safely, and people who use them should be instructed in their safe use. There are numerous sources of advice on ladder safety; your own trade association may have guidance leaflets, etc. The HSE has a well-illustrated pamphlet: **Safe**

Use of Ladders and Stepladders INDG402. Ladders and stepladders need to be kept in good safe condition, of course, and require proper maintenance and inspection:

- have a list of ladders and stepladders – give each one a number;
- inspect each of them regularly in line with your experience of deterioration – say once per year.



AVOID THIS

Use only for light work

Not really suitable for heavy work

Don't overreach

Move the ladder instead

Try and use tool belts

Minimise the need to carry things in your hand

Make sure the ladder has a good footing

Make sure it is long enough

Ladders used for access to another level should be tied and should extend about 1 metre above any platform you need to access

Ladder angle with ground should be about 75°

That is about 1 in 4

Don't use the top three rungs on ladders

Don't use the top two rungs on stepladders

Unless there is something to hold onto

Check ladders are in good condition before use

No missing rungs, no serious damage, etc.

Figure 13.3 Some safety points in using ladders

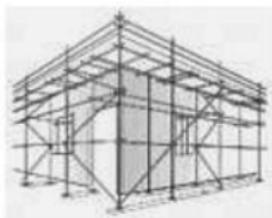
13.5 What to do about fragile roofs

Falling through fragile roofs and elevated surfaces has caused numerous serious injuries and deaths. Employers must ensure that no one under their control (this is wider than just employees) goes on to or near a fragile roof or elevated surface unless it is the only reasonably practicable way of carrying out the work. If anyone does, employers must ensure (so far as it is reasonably practicable) that suitable platforms, coverings, guardrails and the like are provided (and used) to minimise the risk. If after doing this there remains a risk of a fall, then employers must do all that is reasonably practicable to minimise the distance and effect of a fall.

If you have any fragile roofs at your workplace, then you must have warning signs positioned so that anyone approaching the roof/surface is warned that it is a fragile surface, i.e. not strong enough to walk on.

13.6 What to do about scaffolds and mobile access towers

Scaffolds and mobile access towers clearly have to be constructed by people who are competent. Perhaps more



If more than 2 m high then

- It must be inspected in position before use (and this must not be more than 7 days before use)
- It must be inspected every 7 days thereafter
- Records of these inspections must be kept for 3 months

Figure 13.4 Requirements for scaffolds more than 2 m high

importantly, only competent people should modify them. Employers must ensure that any platform used for (or for access to) construction work and from which a person could fall more than 2 m is inspected in place before use (and not more than 7 days before use) and inspected every 7 days thereafter. These inspections need to be recorded and records maintained for 3 months.

13.7 What to do about falling objects

You must ensure that nothing is stored at height in such a way that movement is likely to cause it to fall and injure someone. Similarly, nothing should be thrown or tipped from a height if it is likely to injure someone. If a workplace is in a location where there is a risk of people being struck by falling objects, then you must fence off or clearly cordon off the area and place suitable warning signs. In other words, do everything reasonably practicable to prevent people being placed in danger.

Chapter 14

VDUs

14.1 Overview

VDUs (visual display units) are now part of everyday life in industry, commerce and all public and private sector activities. Frequent and habitual use of VDUs sometimes cause problems such as:

- fatigue/stress;
- temporary eye strain;
- back ache;
- repetitive strain injuries (RSI) of fingers, hands, wrists, arms, necks, etc.

While health problems such as these are rarely serious, they can nonetheless be painful and even debilitating. Persons suffering from such problems will also probably make more mistakes in their work and be generally less productive, although considerations such as these are not of importance with respect to the legislation.

14.2 The regulations

The applicable regulations employers need to comply with are **The Health and Safety (Display Screen Equipment) Regulations 1992 [and amendments in The Health and Safety (Miscellaneous Amendments) Regulations 2002]**. These regulations implemented EEC Directive 90/270/EEC in the UK.

These regulations require employers to ensure that health problems associated with VDUs are avoided. They apply to all *users* of *display screen equipment*. A *user* is defined as ‘*an employee who habitually uses display screen equipment as a significant part of his normal work*’. Display screen equipment is defined as ‘*any alphanumeric or graphical display screen, regardless of the display process involved*’, i.e. any computer screen, TV screen, etc.

14.3 Do the VDU regulations apply to me?

The regulations do not define the number of hours per day a person must be working at a VDU before he or she can be classified as a 'user'. Guidance from the HSE suggests that persons working in continuous spells of about 1 h or more each day should be considered 'users' and will therefore fall within the remit of these regulations. This is probably a conservative guidance figure; sources other than the HSE may suggest a guidance figure of 2 h. Remember, if there are no habitual users of display screen equipment, then these regulations do not apply.

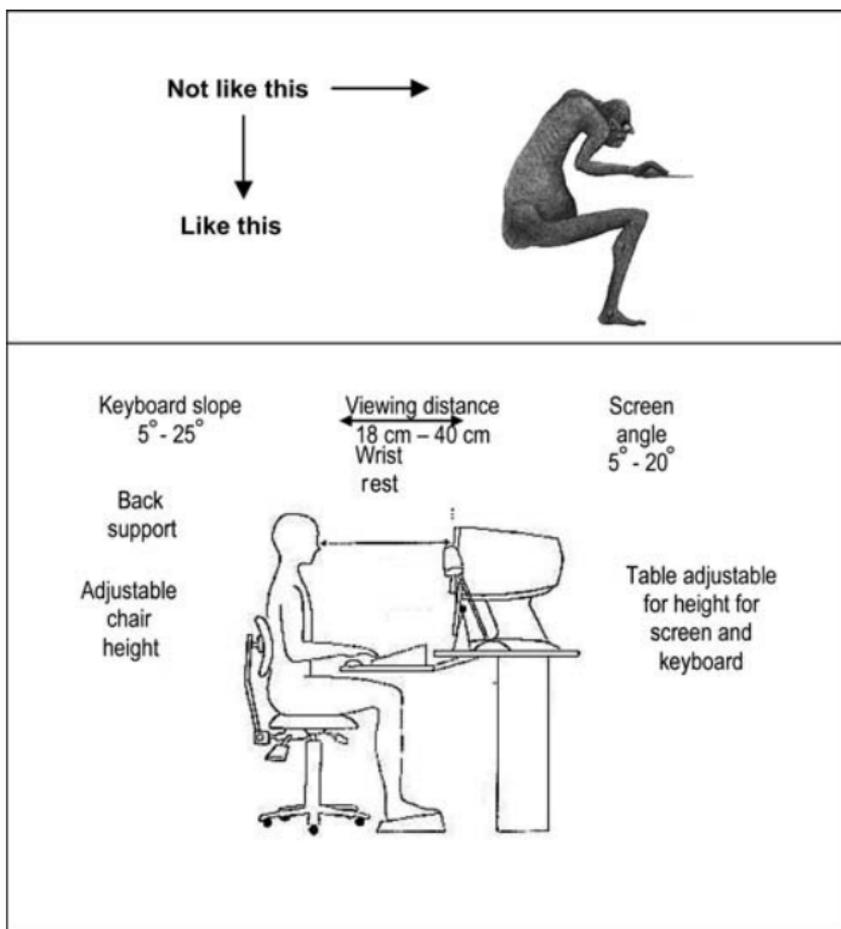


Figure 14.1 Good VDU positioning

14.4 What you have to do to comply with the regulations

The main requirements of the regulations are that employers shall:

- assess workstations and reduce risk for *users*;
- ensure that workstations meet minimum requirements;
- ensure that *users* (operators) are able to take breaks or have changes of activity;
- provide an eyesight test on request and special spectacles if needed;
- provide information and training.

Display screens:

- Are the characters clear and readable?
- Is the text size/graphics display comfortable to read without straining?
- Is the image free from flicker and jitter?
- Is the brightness and contrast adjustable?
- Does the screen swivel and tilt?
- Is the screen free from glare and reflections?

Keyboards:

- Is the keyboard separate from the screen (except in the case of portables)?
- Does the keyboard have tilt facility?
- Is it possible for the user to find a comfortable keying position?
- Are the characters on the keys easily readable?

Mouse, trackball etc.

- Can the device be positioned to suit the user?
- Is there support for the device's user's wrist and forearm?
- Does the device work smoothly at a speed that suits the user?
- Can the user easily adjust software settings for speed and accuracy of the pointer?

Figure 14.2 Things to consider when doing a VDU assessment – screens, keyboards and mouses

Furniture

- Is the workspace large enough for the necessary equipment, papers, etc.?
- Can the user comfortably reach all the equipment and papers they need to use?
- Is the chair suitable and stable?
- Does it have height and tilt adjustment, seat height adjustment, swivel mechanism, castors or glides?
- Is the small of the back supported by the chair's backrest?
- Are the forearms horizontal when using keyboard or mouse and are the eyes roughly the same height as the VDU?
- Are the feet on the floor, without too much pressure from the seat on the backs of the legs?

Environment

- Is there enough room to change position and vary movement?
- Is the lighting suitable, e.g. not too bright or too dim to work comfortably?
- Is the user able to rest their eyes by looking into the distance when they raise their eyes from the screen?
- Is the user able to take periodic breaks from working on the screen?

Training and instruction

- Have users been adequately trained?
- Are they aware of the Regulations and how they apply to them?

Figure 14.3 Things to consider when doing a VDU assessment – furniture, environment and training

Employers must make an assessment of the workstations and, if there are more than five employees, the assessment must be recorded. Clearly, any deficiencies identified by the assessment should be put right.

Figures 14.2 and 14.3 outline some of the points that the HSE recommend are considered in an assessment. The majority of these points are not listed in the legislation as

specific requirements, but they are listed in HSE guidance documents as representing good practice.

If you use the lists in Figs 14.2 and 14.3 as a guide, then clearly a 'yes' answer to all points means that there are probably no problems. A 'no' answer will suggest that there may be a need to do something. Apply some common sense and remember the objective is to avoid health problems for the users.

Allowing users to take breaks from working at a VDU is a requirement of the regulations (Regulation 4). It is also good sense from a business point of view. While there is no stipulated figure, a 10–15 min break every 2 h can be considered reasonable. Alternatively, a change to another (non-VDU) type of work gives the required relief from working at a screen.

14.5 Eye tests and provision of spectacles (required by Regulation 5)

Employees should be made aware that, if they are users, then they are entitled to request an eye test at no cost to themselves, i.e. the employer must pay. The optician carrying out the eye test may recommend that the person needs special spectacles comfortably to operate a VDU. In such a case the employer shall meet the cost of providing these spectacles. Repeat eye tests at sensible periods, usually recommended by the optician, are also a requirement.

If a person requires spectacles for general purposes or reading, and if the optician considers that they are suitable for working at a VDU, then no further spectacles need be provided by the employer. The employer is not obliged by the regulations to provide time off work for the eye test. Any special spectacles provided at the employer's cost must clearly be fit for purpose. They need not, however, be equipped with expensive 'designer' frames. Again, this is rightly left to the good sense and judgement of the employer.

14.6 Provision of information and training (required by Regulation 6)

Employees need to be informed/instructed in the safe and effective use of VDU equipment and computer workstations and their entitlements under these regulations. Unless the employer has in-house facilities, it would be sensible to make available the HSE guidance booklet on the subject:

The law on VDUs – An easy guide

ISBN 0-7176-2602-4

Published by the Health and Safety Executive

14.7 Enforcement

The enforcing authorities, whether it be the local authority or the HSE, are likely to adopt an inform-and-advise approach in those instances where employers are in breach of the regulations. Repeated failure to provide eye tests, for example, would no doubt receive a more robust response from the enforcing authorities.

It is unlikely that minor breaches of these regulations will be treated as seriously as, say, a failure adequately to guard dangerous machinery.

Chapter 15

What to do About Protecting Employees

Protection of employees and people is the prime objective of all H&S legislation and regulations. In this chapter brief mention is made of employer's duties with regard to:

- first aid;
- personal protective equipment (PPE);
- lone working;
- emergency plans.

15.1 First aid

The Health and Safety (First-Aid) Regulations 1981 require employers to provide adequate and appropriate equipment, facilities and people to enable first aid to be given to employees if they are injured or become ill at work. What is adequate and appropriate? This will depend on your workplace type and circumstances, but the minimum in any workplace is:

- a suitably stocked first-aid box;
- an appointed person to take charge of first-aid arrangements.

An appointed person is someone appointed to take charge when someone is injured or falls ill, e.g. call the ambulance and look after and restock the first-aid box. Appointed persons need not be trained to give first aid because that is not part of their duties; if they are trained, then, of course, they can give first aid.

If you employ, say, 20 or more people in light engineering or light manufacturing, then you will probably need to have at least one person trained in first aid on the premises at all working times when there are 20+ working. A trained first aider is someone who has been trained to administer first aid

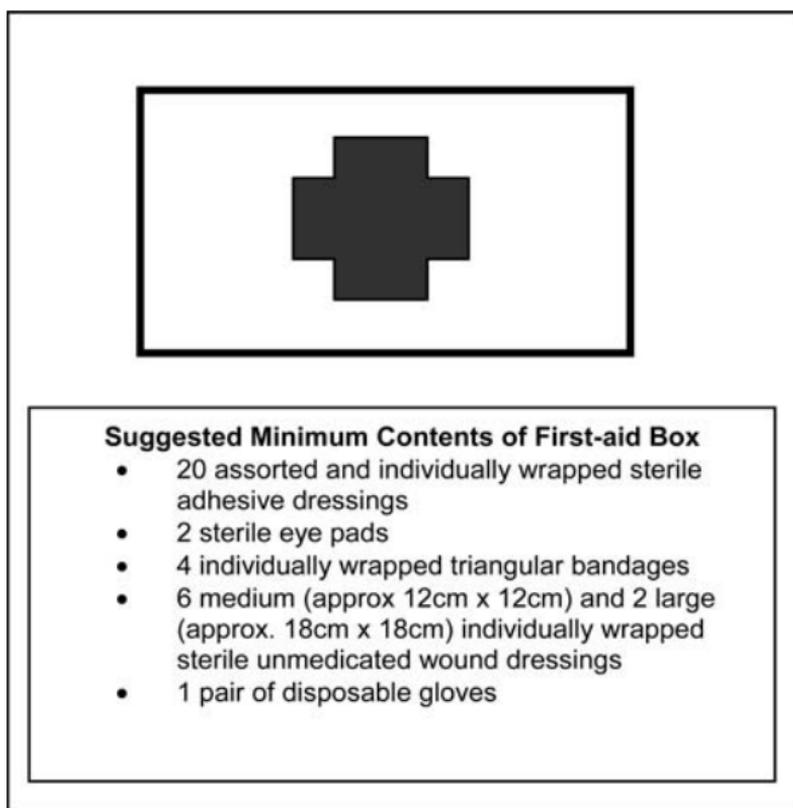


Figure 15.1 First-aid box – suggested minimum contents

at work and holds a current first aid at work certificate. (Lists of first-aid training providers in your area can be obtained from the HSE or your local authority.)

First-aid arrangements need to be in place whenever people are working, e.g. during overtime, weekend work, night shifts, etc. If the number of people working overtime/night shift is lower than the trigger level, then there need not be a first aider on site.

15.2 Personal protective equipment

In virtually all H&S law and regulations the first requirement is to remove the hazard if reasonably practicable. If this cannot be done, then you have to reduce the risk to an acceptable level. If, after all this, there remains a risk, then,

Suggested Numbers of First-aid Personnel (To be available at all times people are at work)		
Category of Risk	Number employed at the location	Suggested number of first-aid personnel
Lower Risk (e.g. shops and offices)	< 50	At least 1 appointed person
	50 – 100	At least 1 first aider
	>100	1 additional first aider for every 100
Medium Risk (e.g. light engineering and manufacturing, etc.)	< 20	At least 1 appointed person
	20 - 100	At least 1 first aider
	> 100	1 additional first aider for every 100
Higher Risk (e.g. construction sites, chemical factories, industries using dangerous machinery, etc.)	< 5	At least 1 appointed person
	5-50	At least 1 first aider
	> 50	1 additional first aider for every 50
The above is not mandatory. They are HSE suggestions. The mandatory requirement is to provide what is <i>adequate and appropriate.</i>		

Figure 15.2 Suggested numbers of first-aid personnel

where appropriate, employees must be provided with personal protective equipment to protect them against injury or health hazards. The relevant regulations are **The Personal Protective Equipment at Work Regulations 1992**. Any necessary PPE must be provided free to the employee.

In the regulations '*personal protective equipment*' means *all equipment (including clothing affording protection against the weather) which is intended to be worn or held by a person at work and which protects him against one or more risks to his health or safety, and any addition or accessory designed to meet that objective*.

It is the duty of the employer to assess the risks to the employee and determine who is exposed to what and for how long. The employer must then select and provide suitable and adequate PPE and instruct employees in its correct use and its limitations. PPE should comply with **The Personal Protective Equipment Regulations 2002**, any relevant British or European Standards and carry the **CE** mark.

When providing PPE, employers must consider the users and ensure that it is suitable for them, for example:

- the size is right for the person;
- it fits the person in a way that enables it to work properly;
- the weight is appropriate for the user;
- it takes into account the physical attributes of the person (Will a particular type of face mask work on a person with a beard? Will a particular type of eye protection work on someone who wears spectacles?).

In addition to providing the PPE, employers must also ensure that it is

- maintained in an effective condition
- replaced when necessary

and suitable storage is provided for the PPE when not in use.

Ordinary working clothes, which do not specifically protect the health and safety of the wearer, are not regarded

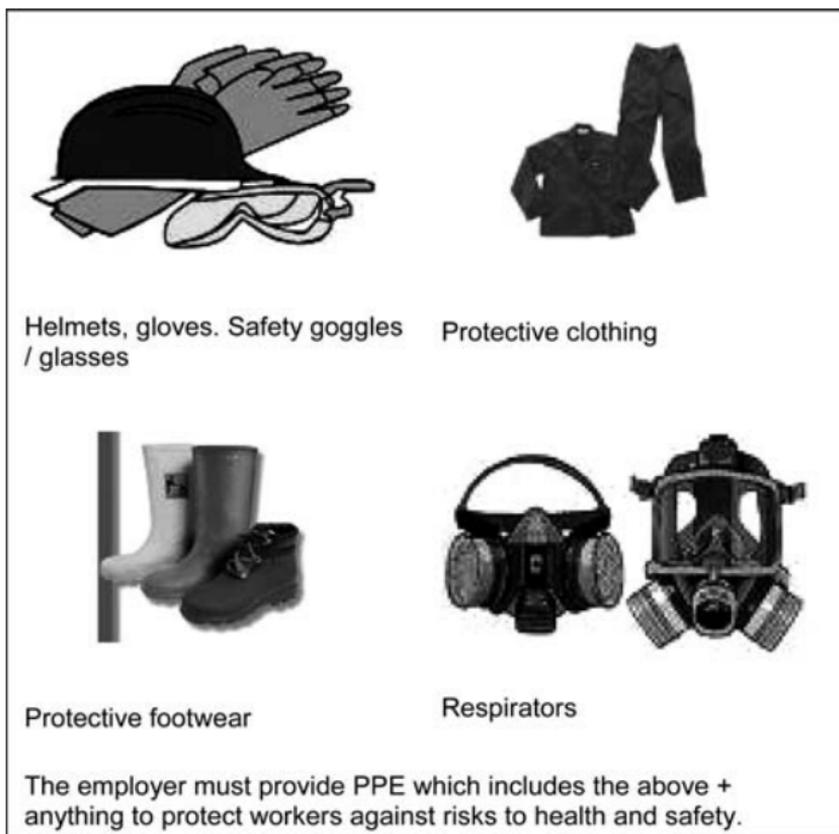


Figure 15.3 PPE (personal protective equipment)

as PPE in the context of these regulations. Employers are not therefore obliged to provide such clothes.

15.3 Working alone (lone working)

Although there is no general legal prohibition on working alone, the broad duties of the HSW Act (duty of care) and MHSW Regulations (assessment of risk) still apply. There are clearly many people whose normal work involves significant periods of lone working because it is the norm for the job, e.g.:

- cleaners;
- security staff;
- filling station attendants;

- maintenance staff;
- drivers.

Employers are required to assess any undue risks from this lone working and, where necessary, make appropriate arrangements to minimise these risks. These might include provision of emergency communication, periodic check-in or non-employment of people with certain medical problems. As a minimum, the owner/manager/supervisor/security guard should always be aware that someone is or will be 'lone working' on the premises. An awareness of what is considered normal and good practice in the industry/activity will be a good guide to employers on what is considered to be acceptable.

There are some activities where the risks of working alone will normally be unacceptable, and employers will need to complete a robust risk assessment before allowing it. Such activities will include:

- working in confined spaces (or anywhere) where there is need for someone outside the confined space to be available for assistance or rescue;
- tasks that include working on live electrical conductors or live equipment operating at dangerous voltages (certainly 240 V and above);
- people working with dangerous chemicals or substances that give off dangerous vapours and fumes or are asphyxiates;
- working on or with dangerous machinery;
- activities where the necessary safety equipment cannot easily be used or operated by one person.

Employers should check their employers' liability insurance to make sure it covers people working alone.

HSE guidance document **Working Alone in Safety** INDG73 gives further advice on this subject.



- Is the person OK to work alone? (medical reasons, etc.)
- Is the work dangerous for a person on their own?
- Can a lone person operate any necessary safety equipment on his or her own?

- Be aware that someone is working alone
- Have some means of communication (both ways)

Figure 15.4 Lone working

15.4 Emergency plans (like the fire drills)

All workplaces need to have plans and procedures in place to deal with emergencies. As a minimum, you will need to have a practised plan known and understood by all employees on what to do in the event of a fire. Your local fire prevention officer will be happy to visit your workplace and discuss and advise on the best procedure for your situation. He will also give advice on the number and type of appliances (fire extinguishers) you need in the workplace.

Fire escape routes must be clearly and obviously indicated, and they must never be obstructed.

Depending on your business, you may need other emergency plans to deal with, for example:

- chemical spillage/release within the workplace or spillage and release that goes beyond your boundary, into public drains or the atmosphere;
- emergency shutdown procedure of processes, so that shutdown is safely effected in the event of an emergency.

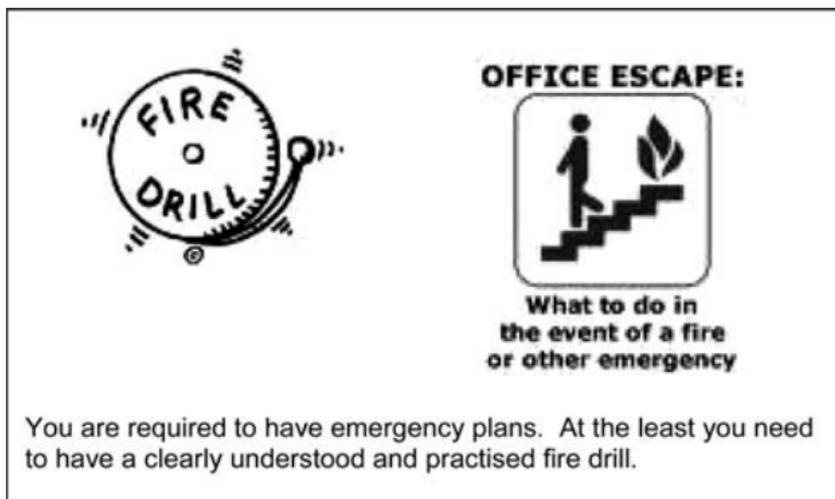


Figure 15.5 Fire drill

Chapter 16

Other Health and Safety Matters

In this chapter we will briefly cover:

- general H&S points that may not be prescribed in regulations but are either implicit requirements or simply good practice;
- some other regulations that have less universal interest but are nonetheless important.

16.1 Slips, trips and falls

The HSE preaches that over one-third of all major injuries each year are caused by slips, trips and falls. The resulting injuries are probably not well reported in the press, etc., because they are mundane and have little news value. They are, however, the biggest single cause of injuries, and they are estimated to cost employers over £500 million per year.

Three pieces of legislation are particularly relevant here:

- **The Health and Safety at Work Act 1974** (employers' duty of care);
- **The Workplace (Health, Safety and Welfare) Regulations 1992** (a requirement for floors to be free from obstructions and in good condition);
- **The Management of Health and Safety at Work Regulations** (requirement for employers to assess risks).

In recent years, a civil court action was brought by a person who tripped, fell and suffered injuries to his back which prevented him continuing to work as a carpenter. The man had been carrying a timber assembly along a designated and fenced path over a construction site. The object he was carrying obscured his view, and he tripped over a surveyor's string line that had been laid across the path. The plaintiff was suing the person's employer, the employer of the surveyor and the owner of the worksite. The man won his

case and was awarded significant damages against two of the defendants. The judge had decided that, even though the person was carrying something that obscured his view, he was walking along a designated footpath and should not have expected there to be trip hazard such as a surveyor's string line. Had there been no designated footpath and the carpenter had therefore walked across the general construction site, he probably would not have been successful. (On a construction site, you should expect trip hazards and should therefore look carefully where you are going at all times.)

Keep your walkways, corridors, footpaths and stairways clear of trip hazards.

Some things to look out for	Is it mainly a hardware thing or behaviour thing?
Trailing cables	Both
Spills causing slippery surfaces	Behaviour
Small changes in level	Hardware
Poor lighting	Hardware
Storage of stuff or clutter in walkways, on stairs etc. Poor housekeeping / untidiness.	Behaviour
Running up or down stairs and not holding handrails (love the energy and enthusiasm but please hold the handrail)	Behaviour
Floor mats or coverings that wrinkle or curl up	Hardware

Figure 16.1 Slips, trips and falls

Minimising slips, trips and falls is really a question of common sense, good housekeeping and the will to do something about it. Doing regular workplace safety tours and including trip hazards on the list of things to look for will go some way to reducing the risks. Correcting people's 'risky' behaviour will achieve better results because the root cause of most slips, trips and fall accidents is the careless or unthinking action of someone. As an example, it is now becoming common practice for some large employers to insist that people hold handrails when using the stairs (close your eyes when you see prime ministers and presidents skipping down an aircraft's disembarkation stairs).

16.2 Permits to work and lock off

16.2.1 What is a permit to work (PTW) system – do I need one?

Imagine a medium-sized manufacturing company on an industrial estate. The maintenance of the machinery is contracted out and a technician from the contract company arrives to carry out some work on one of the machines. He arrives at the factory and the receptionist tries to contact the foreman to let him know that the technician has arrived. No-one answers the phone and the technician explains that he knows the factory and the machine and suggests that he just go through and get on with the job. He goes into the factory and to the machine he needs to work on. He lets one of the factory operators know what he is going to do, then goes to the electrical isolator, located remotely from the machine, and switches it off. Then one of the other operators needs to start the machine. He is unaware that a technician is maintaining it, so he switches the isolator on and starts the machine. The technician is seriously injured when moving parts trap his hands.

An imaginary scenario, but one that has almost certainly happened. You can think of innumerable similar scenarios, and you can be confident in the fact that most of them will actually have happened.

In the above scenario the employer has not operated a **safe system of work** and could well be prosecuted under **The Health and Safety at Work Act, The Management of Health and Safety at Work Regulations** and other regulations. The key points are that the operator who de-isolated and switched on the machine was not aware that he was putting someone in danger, the supervisor/foreman was not aware that the machine was being maintained and the electrical isolator was not locked off and did not even have a sign on it saying ‘machine under maintenance – do not switch on’.

If the company had been operating a **PTW** system and had robust isolation lock-off practices, then the accident would not have happened.

A PTW system is really quite straightforward and simple. It is a way of making sure that people doing work, other than the normal production/day-to-day work, are protected. It helps ensure:

- supervisor and relevant staff are aware that the work is going on;
- any necessary isolations are identified and isolated, and the isolation made secure;
- any other necessary safety precautions are identified and implemented;
- the supervisor/foreman knows when the work is finished and normal operations are safe to restart.

All that you need for a PTW system is to:

- appoint one or more people who are authorised to issue permits to work;
- have a simple form recording the important information relevant to the work;
- have a designated place where permits are kept/displayed so they can be seen by all;
- instruct all employees and visiting contractors that a PTW system operates and that ‘non-normal’ work **MUST** not

be carried out unless there is a current permit to work issued.

An example of a permit to work form is shown in Fig. 16.2. You can devise your own and tailor it to your own situation.

Having a PTW system is not a specific requirement of H&S law, but it is considered by all (including the HSE) to be a good system for managing safety and this is a requirement.

16.2.2 Isolations and lock-off

When work is carried out on machines and equipment, it is frequently necessary to effect isolations in order to make it safe to work on. The most frequent isolation required is electrical supply, but there are many others such as, steam, water, compressed air, chemical supplies or feeds, solids inflow, etc.

With all these isolations it may be possible to remove the feeder cable, feed pipe/duct, etc. This will surely be safe but is frequently impractical or not reasonably practicable. Hence, we normally switch or turn something off – an electrical isolator, a valve, etc. Having switched or turned it off, we need now to make sure that it is not switched/turned on again until it is safe to do so once the work is complete. It is generally considered good practice to lock the switch/valve in the closed position using a padlock, chain and padlock or other lockable devices. The best person to hold the **unique key** is the person or supervisor of the person/people who are doing the work and being protected by the isolation or the **authorised person** who has issued a PTW. This type of isolation lock-off is very well used in the process, chemical and power industries and is to be recommended. It is, however, a fact that not all isolation devices are suitable or easily adapted to locking off, in which case you will need to adopt another approach.

The attaching of a suitable sign to an isolator or valve saying something like ‘Equipment under maintenance DO NOT SWITCH ON’ may be acceptable if the sign is clear, unambiguous, securely attached to the isolation device AND

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Company xyz PERMIT TO WORK					
Section A – to be completed by the building manager / user / supervisor (The Authorised Person)					
1	Location of the work:				
2	Validity of permit From: To:	Date: Date:	Time: Time		
3	Description of work:				
4	Hazards:				
5	Safety precautions to be taken:				
6	Isolations made: (identify the supplies to the "work" that have been isolated in order to make the "work" safe to work on)	Electricity:	N/A	Yes	No
		Compressed Air:			
		Fuel Gas:			
		Water:			
		Steam:			
		Specify others:			
7	I certify that it is safe to carry out the work subject to the precautions identified in 5 and 6 above. Name of Authorised Person issuing the Permit: Signature: Date: Time:				
Section B - to be completed by the person who will do the work or the supervisor of the people doing the work:					
8	Trade safety precautions:				
9	Isolations that the trade will make for themselves	Identify any isolations that the trade will make for themselves:			
10	I understand the safety precautions and isolations identified in 5, 6 and 7 above. Name of person / supervisor doing the work Signature: Date: Time:				
Section C Sign off on completion of the work					
11	The work covered by this permit has been completed and all operatives / tradesmen have left the work area. Name of person / supervisor doing the work Signature: Name of Authorised Person closing the Permit Signature Date: Time:				

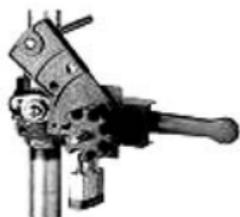
Figure 16.2 Permit to work – example



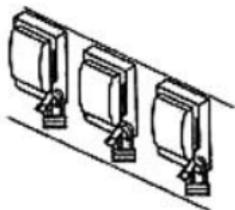
System of multi-padlocks – 1 lock for each person being protected by the isolation. (Probably the best and most secure system – more appropriate to high hazard chemical processing type facilities and the like)



Padlocked cover on a valve



Padlocked valve



Padlocked electrical isolator

Figure 16.3 Locked-off isolations

there is a well-managed and disciplined system in place that results in strict application and observance of such warnings. The HSE are quite rightly very robust in their response to accidents or injuries that have been caused by either failure to isolate or any inadvertent de-isolation causing harm.

16.3 Shift handover – do you have one?

If you operate a work situation that involves shift work where one set of employees/operators hands over to another, you may have some managed handover procedure. If your procedure is for the outgoing shift to wave nicely at the oncoming shift as they pass each other and you have absolutely no safety issues at your workplace, then that's OK. It is lousy business, but if there are no H&S issues it's your business. If there are H&S issues that require one shift to pass information to the next, then this must be done in a managed way. In the event of an accident or injury it is no excuse to say, 'I didn't know. No one told me'. H&S law requires employers to have safe systems of work.



Is this how you do your shift handovers? I hope not.

Figure 16.4 Shift handover

Good practice, good business and good safety would be, for example, the supervisor of the new shift to arrive some time before the start of the next shift so that the outgoing supervisor can advise on the current status of any H&S issues as well as business/production/operational issues.

16.4 Working in confined spaces – this is serious

Now consider this scenario. A worker enters a steel tank via the manhole in the lid in order to coat the internal surface with some special resin-type coating. The tank is empty, and all pipes connected to the tank have been isolated either by disconnection or by valves being closed and locked off. One colleague stays outside the tank in order to pass materials in, generally keep an eye out and be a ‘helper’. After a time the outside man notices his colleague has slumped on the tank floor. He quickly enters the tank via the manhole and goes down the ladder to help. In his exertions to try and lift his colleague he also becomes affected by the fumes in the tank. He too collapses, and both are found dead a few hours later.

This kind of situation has happened a number of times and will happen again. Don’t let it happen to you or your employees. **The Confined Spaces Regulations 1997** are specifically designed to prevent such incidents occurring.

16.4.1 What are confined spaces and why are they dangerous?

Confined spaces are defined as any spaces of an enclosed nature where there is a risk of death or serious injury from hazardous substances or dangerous conditions (e.g. lack of oxygen). In general, they are enclosures with limited openings.

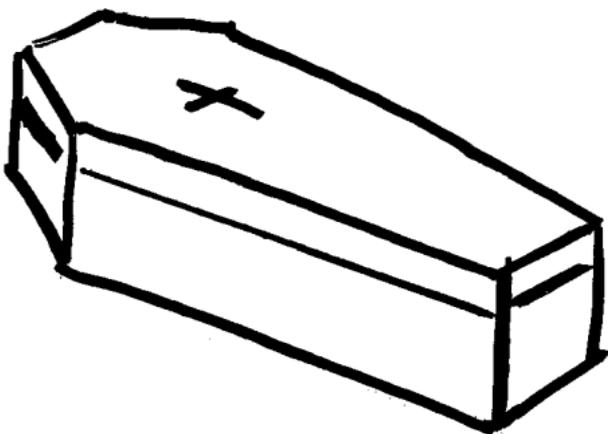
They are dangerous because they are spaces where dangerous/toxic gases or fumes can accumulate and build up if there is inadequate ventilation. They are spaces that can easily suffer from a depletion of oxygen, resulting in asphyxiation.

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Is someone responsible for the safety?	Someone needs to be responsible for making sure that all the safety precautions are in place and working.
Isolations?	Make sure they have been identified and carried out.
Condition inside the confined space?	Are there any residues left that need to be cleaned/removed? Is the air inside fit to breath? – test if necessary.
Entrance and exit.	Is the entry point big enough? More important, is the exit big enough and easy enough to get out easily and quickly or for a rescue?
Dangerous gases or fumes generated by the work.	Consider this closely – some things are OK in the “fresh air” but can be deadly in confined spaces. Never use internal combustion engines inside confined spaces.
Ventilation	Will natural ventilation be sufficient or will some form of forced (fan) ventilation be required? Do you need to remove dangerous gases or fumes given off by the work? Will the temperature inside get too hot/humid for safety?
Special tools and equipment	Will the work and atmosphere inside require special tools and equipment such as non-spark tools or electrical equipment suitable for flammable atmospheres?
Communication and alarm	Make sure there is a way of regularly communicating with the person(s) inside – e.g. watchman outside whose job is to call for help and not go inside himself to suffer the same fate.
Rescue in emergency	What do you need (people and equipment) to make a rescue safely? (Hoist – safety harness and rope – breathing apparatus – etc.)

This is not an exhaustive check – list

Figure 16.5 Confined space risk assessment – some things to consider



Confined spaces can be deadly

Some examples of confined spaces:

- storage tanks
- pressure vessels
- silos
- reaction vessels
- enclosed drains
- sewers
- open-topped chambers / vats
- combustion chambers in furnaces etc.
- ductwork
- unventilated or poorly ventilated small rooms

Figure 16.6 Confined spaces

16.4.2 What to do about work in confined spaces

If it is reasonably practicable to avoid work in confined spaces, then avoid it. If it is not, then you must make a risk assessment and take the necessary action and precautions required to reduce risk to acceptable levels.

You must have a safe system of work and a preplanned system for rescuing anyone inside the confined space who gets injured or ill. You must check that the atmosphere inside

the space is safe from dangerous or explosive gases or fumes and if necessary carry out tests of the atmosphere before entry and periodically thereafter. You must also ensure that the space has been effectively isolated if there are any pipe/ducting connections to the space.

16.5 RIDDOR and accident and injury reporting

The Reporting of Injuries and Dangerous Occurrences Regulations 1995 (RIDDOR) requires employers to report:

- major injuries or death;
- injuries to people not ‘at work’ but injured as consequence of the work;
- ‘over-three-day’ injuries;
- ‘dangerous occurrences’;
- some work-related diseases.

Examples of major injuries are shown in Fig. 16.7.

An ‘over-three-day’ injury is when an injury to a person at work results in the person’s absence from work or inability to carry out normal work duties for a period of 3 days. The 3 days include any days they would not normally work, such as weekends, rest days or holidays. The day of the injury itself is not counted.

Dangerous occurrences are certain listed dangerous events that must be reported, even if no actual harm has been caused. Examples of reportable dangerous occurrences are given in Fig. 16.8.

Some of the work-related illnesses that need reporting under RIDDOR are:

- some poisonings;
- some skin diseases such as occupational dermatitis;
- lung diseases including occupational asthma, farmer’s lung, pneumoconiosis, asbestosis and mesothelioma;
- some infections such as legionellosis and tetanus.

Reports of the above need to be submitted to either the HSE or your local authority, depending on your workplace/business.

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- fractures other than to fingers, thumbs or toes;
- amputation;
- dislocation of the shoulder, hip, knee or spine;
- loss of sight either temporary or permanent;
- chemical or hot metal burns to the eye or any penetrating injury to the eye;
- injury from electric shock or electrical burn leading to unconsciousness or requiring resuscitation or admittance to hospital for more than 24 hours;
- any other injury: leading to hypothermia, heat induced illness or unconsciousness; or requiring resuscitation; or requiring admittance to hospital for more than 24 hours;
- unconsciousness caused by asphyxia or exposure to a harmful substance or biological agent;
- acute illness requiring medical treatment, or loss of consciousness arising from absorption of any substance by inhalation, ingestion or through the skin;
- acute illness requiring medical treatment, or loss of consciousness arising from absorption of any substance, ingestion or through the skin;
- acute illness requiring medical treatment where there is reason to believe that this resulted from exposure to a biological agent or its toxins or infected material.

Figure 16.7 Examples of major injuries that need to be reported under RIDDOR

16.6 Employee training records

Virtually all the H&S legislation and regulations require employers to provide adequate and appropriate training. In the HSW Act the words used are: *the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees.*

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- collapse, overturning or failure of load-bearing parts of lifts and lifting equipment;
- explosion, collapse or bursting of any closed vessel or associated pipework;
- failure of any freight container or any of its load-bearing parts;
- plant or equipment coming into contact with overhead power lines;
- electrical short circuit or overload causing fire or explosion;
- any unintentional explosion, misfire, failure of demolition to cause the intended collapse, projection of material beyond a site boundary, injury caused by explosion;
- failure of industrial radiography or irradiation equipment to de-energise or return to its safe position after the intended exposure period;
- malfunction of breathing apparatus while in use or during testing immediately after use;
- failure or endangering of diving equipment, the trapping of a diver, an explosion near a diver, or an uncontrolled ascent;
- collapse or partial collapse of a scaffold over 5 metres high, or erected near water where there could be a risk of drowning after a fall;
- unintended collision of a train with any vehicle;
- dangerous occurrence at a well (other than a water well);
- dangerous occurrence at a pipeline;
- failure of any load-bearing fairground equipment, or derailment or unintended collision of cars or trains;
- a road tanker carrying a dangerous substance overturns, suffers serious damage, catches fire or the substance is released;

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- a dangerous substance being conveyed by road is involved in a fire or is released;
- unintended collapse of: a building or structure under construction, alteration or demolition where over five tonnes of material falls; a wall or floor in a place of work; any false-work;
- explosion or fire causing suspension of normal work for over 24 hours;
- sudden uncontrolled release in a building of:
 - 100kg or more of flammable liquid;
 - 10 kg or more of a flammable liquid above its boiling point;
 - 10 kg or more of a flammable gas;
 - 500kg of these substances if the release is in the open air.

Figure 16.8 Examples of dangerous occurrences reportable under RIDDOR

You will need some records of the training that employees have received in order to:

- know who has been trained in what, and who hasn't;
- plan training;
- be able to demonstrate appropriate training in the event of a challenge from the enforcing authorities.

Records can be kept on paper or computer, but, whichever method is used, they should be kept up to date.

You may wish to consider using a personal employee training 'passport' to capture and record any less formal or even all training/instruction given. This document might be used to record, for example:

- Induction to the workplace, including:
 - instruction on any emergency procedures, fire precautions and drills;
 - what PPE is required and where it is to be used.
- Instruction in the safe use of certain equipment or machines.
- Instruction in the basics of good manual handling.

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Company XYZ
Personal training record for: <i>Fred Bloggs</i>
Training / Instruction received (brief description)
Induction into the workplace – safety rules, fire escape and fire drill
Training given by: <i>Joan Smith</i> Job Title: <i>Supervisor</i>
Date: <i>25/07/xx</i>
Signature of trainee: <i>Fred Bloggs</i>
Basic manual handling instruction. Copy of HSE leaflet on manual handling worked through.
Training given by: <i>A Blake</i> Job Title: <i>Foreman</i>
Date: <i>29/07/xx</i>
Signature of trainee: <i>Fred Bloggs</i>
Etc. etc.
Training given by: Job Title:
Date:
Signature of trainee:
You may choose to give each employee a small booklet like this in which to record the training received. The booklet could incorporate your safety rules and other basic site rules. (You had better keep an office record as well though in case the person loses his / hers.)

Figure 16.9 Example of a personal training record book

The record contains basic information such as:

- subject of training/instruction received;
- name of person giving the training/instruction;
- signature of person who has received training/instruction;
- date.

16.7 Employee consultation on H&S matters

Employers must consult employees on matters to do with their health and safety at work, including any changes that may substantially affect their health and safety. They must be given information on the likely risks and dangers arising from their work and the necessary measures to reduce or get rid of the risks. Employers should also consult on the planning of H&S training.

If an employer recognises a trade union and that trade union has appointed safety representatives under **The Safety Representatives and Safety Committee Regulations (SRSCR) 1977**, then the employer must consult those safety representatives on matters affecting the group or groups of employees represented.

Any employees not in groups covered by trade union safety representatives must be consulted by their employers under the **The Health and Safety (Consultation with Employees) Regulations (HSCER) 1996**. The employer can choose to consult them either directly or through elected representatives. If the employer consults employees directly, he or she can choose whichever method suits everyone best. If the employer decides to consult his or her employees through an elected representative, then employees have to elect one or more people to represent them.

16.8 Other regulations

In Chapter 1, most of the more generally relevant health and safety regulations were listed, and most of these have been expanded on in the previous chapters. We will now very briefly outline the main points of some other regulations that have not yet been covered.

16.8.1 The Gas Safety (Installations and Use) Regulations 1998

The regulations cover gas systems; gas appliances and flues in certain domestic premises; commercial premises such as offices; shops and hotels; and holiday homes, e.g. chalets, caravans, mobile homes and boats on inland waterways. They are not specifically targeted at factories, although the general principles will apply to all workplaces.

The primary duty for employers is to ensure that only qualified and competent people work on gas systems and appliances (e.g. CORGI registered).

16.8.2 Construction (Design and Management) Regulations 1994 (CDM Regulations)

CDM Regulations deal with the management of safety on construction and demolition projects. They place specific safety duties on clients, planning supervisors, designers and architects and contractors. They apply to construction work that lasts for more than 30 days or that will involve more than 500 person days of work, and to work that involves five people or more on site at any one time. If you are involved in such work, then you will need to be aware of the regulations in some detail.

Client	To appoint a competent Planning Supervisor and Principal Contractor for the project
Planning Supervisor	To prepare, review and amend as necessary a health and safety file for the project and deliver it to the client.
Principal Contractor	To ensure co-operation between contractors, comply with the health and safety plan, exclude unauthorised persons from the site and dis-cooperation between contractors and display the appropriate safety notices and signs.

Figure 16.10 Some of the main duties in the CDM Regulations

16.8.3 Control of Asbestos at Work Regulations 2002

Owners or occupiers of non-domestic premises are required to find out whether their building contains asbestos and what condition it is in, assess the risk and make a plan to manage that risk.

Places you are most likely to find asbestos are:

- sprayed insulation coating on steelwork and concrete;
- lagging on pipes and boilers;
- insulation board on doors and ceilings.

If you find asbestos, don't disturb it and seek advice.

Be very careful here – there are several types of asbestos and asbestos-containing materials, some very dangerous if disturbed and others not really dangerous at all. Asbestos removal is very expensive and lucrative for the specialist contractors who undertake it. You are wise not to rely solely on advice given by a single removal contractor. The less scrupulous ones may advise you on an expensive removal operation that is unnecessary.

16.8.4 Ionising Radiations Regulations 1999 (IRR 99)

The IRR requires all steps to be taken in order to ensure that radiation exposures to workers and members of the public are at the lowest risk possible. This is achieved by imposing duties on employers to protect employees and other persons against ionising radiation arising from work with radioactive substances and other sources of ionising radiation, and by imposing certain duties on employees.

16.8.5 Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP)

If you are a supplier of chemicals, then you are required to provide certain H&S information. You will need to study the CHIP regulations.

16.8.6 Petroleum Acts

You may need a license if you store > 15 litres of petrol or petroleum mixtures. Consult your local authority.

Chapter 17

Will You be Prosecuted?

In Chapter 2 we discussed the enforcement of H&S law and its numerous regulations. It was explained that the enforcement authorities (HSE and local authorities) generally apply a proportionate and graded response to breaches of the law and the regulations, and that their response might be as follows:

- provision of information and advice (both face-to-face and in writing);
- issuing of warnings (usually written);
- issuing of improvement notices, e.g. ‘do x by date y’;
- issuing of prohibition notices, e.g. ‘stop doing or operating x immediately’;
- issuing of formal written cautions;
- initiation of prosecutions for serious breaches.

While the prime reason for adopting good H&S practices should be to avoid injury and ill health to people, and not simply to avoid prosecution, you need to know how the prosecution system works.

17.1 Investigation and the decision to prosecute

First point, the enforcing authorities do not have to wait for an accident or injury to happen before starting an investigation or prosecution. A known or suspected breach of H&S law that poses a significant risk is all they require in order to justify and take further action. Generally, however, investigations are usually triggered by accidents and injuries.

Let us assume that the enforcing authority (HSE or local authority) has been made aware of an accident/incident/injury that warrants further investigation. The enforcing authority will visit the site of the incident and conduct an investigation. In conducting their investigation, they will

almost certainly conduct interviews with managers, employees and anyone else who may have relevant information.

Remember that enforcing authorities must take action if an employee or member of the general public makes a credible report of a breach or incident, and employers are required to report certain events under RIDDOR:

- **Voluntary statements.** Employees and others may offer voluntarily to tell what they know about the incident and the situation leading up to it. This information will be written down and the person will be asked to sign a declaration that the statement is true. Proceedings can be taken against anyone who signs such a statement knowing it to be untrue.
- **Compulsory statements.** If a person refuses to provide relevant information voluntarily, then HSE inspectors have the power to require that person to answer the inspector's questions. This information is recorded and the person will be required to sign a declaration that it is true. The key point here is that this statement cannot be used in evidence against the person who made it.

The situation is different if a **person is suspected of having committed an offence**, e.g. Section 37(1) of the HSW Act ... *Where an offence under any of the relevant statutory provisions committed by a body corporate is proved to have been committed with the consent or connivance of, or to have been attributable to any neglect on the part of, any director, manager, secretary or other similar officer of the body corporate or a person who was purporting to act in any such capacity, he as well as the body corporate shall be guilty of that offence and shall be liable to be proceeded against and punished accordingly.*

In this situation the person will be advised and cautioned by the inspector before any questions are asked. The formal caution will be the well-known one: 'You do not have to say anything, but it may harm your defence if you do not mention, when questioned, something upon which you later

Will You be Prosecuted?

rely on in court'. The decision to prosecute will clearly depend on the seriousness of the breach and the likelihood of obtaining a conviction.

17.2 What events will trigger a prosecution?

The Health and Safety Commission's guidance to the enforcing authorities sets down some of the circumstances when it would be appropriate to recommend prosecution. These are:

- following a death that resulted from a breach of the legislation;
- where the gravity of the offence coupled with the seriousness of any actual or potential harm warrants it;
- where there has been reckless disregard of H&S requirements;
- where there have been repeated breaches of H&S law or regulations that give rise to significant risk or persistent and significant poor compliance;
- where a duty holder's standard of managing health and safety is found to be far below what is required by H&S law and to be giving rise to significant risk;
- where there has been a failure to comply with an improvement notice or prohibition notice, or there has been a repetition of a breach that was subject to a formal caution;
- where false information has been wilfully supplied, or there has been intent to deceive, in relation to a matter that gives rise to significant risk;
- where enforcing authority inspectors have been intentionally obstructed in the lawful course of their duties.

Again, please note that it is not necessary for an injury to have occurred in order for a prosecution to be brought. A serious breach of H&S law with a high risk is itself sufficient cause.

As mentioned in Chapter 2, prosecution is, in the main, an action of last resort. The enforcing authorities will normally

give guidance, issue warnings, improvement notices and then prohibition notices before prosecution is considered. However, as indicated above, there are circumstances where immediate prosecution may be warranted.

17.3 Some examples of prosecutions

The following, fairly randomly selected, examples of recent prosecutions are given in order to give you a 'feel' for the kind of breach that may result in a prosecution:

- An **employee** was prosecuted for failing to take reasonable care of the health and safety of another employee. The employee driving a fork-lift truck asked an employee with learning disabilities to sit on a pallet, to stabilise it. As the pallet was lifted, the load became unstable and threw the victim to the ground. The driver pleaded guilty and was fined in the Magistrates Court (examples of prosecution of employees are not common but they do happen).
- A 16-year-old agency employee trapped his hand in a conveyor. An identical accident had occurred 2–3 months earlier, which was investigated by the company. The conveyor was not suitably guarded or adapted to prevent injury. The company was prosecuted under The Health and Safety At Work etc. Act 1974, Section 3, Subsection 1, and fined.
- An employee was injured while being lifted on a pallet on the forks of a lift truck. The employer failed to provide and maintain a safe method of work. HSW Act, Section 2 (1). Fine £20 000.
- A fatal accident involving the death of a roofer falling through a fragile roof-light. Lights were not initially covered and nets did not extend underneath to the work area. The principal contractor was prosecuted under The Health and Safety At Work etc. Act 1974, Section 3, Subsection 1. £50 000 fine.
- An employee was working on an area occupied by a lead bath. The adjacent lead bath was not drained and was full

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of molten lead. There were no barriers or similar to stop anyone from falling into the molten lead. The injured person fell into the molten lead while balancing on brickwork between the two tanks. No risk assessment or method statement had been prepared for the work. The company was prosecuted under The Health and Safety At Work etc. Act 1974, Section 2, Subsection 1. £4000 fine.

- An employee sustained serious injury to his left arm as a result of a failure to prevent access to a dangerous nip point at conveyor-system tensioning rollers. Prosecution under The Provision and Use Of Work Equipment Regulations 1998 (No. 11), Para 1. £3300 fine.
- An employee injured his fingers while operating a bag machine. Prosecution was initiated because the bag machine had an override facility for interlocked guards and it was foreseeable that the employee would have to lift guards to release jammed bags, without knowing that the guards had been overridden by the setter. Prosecution under PUWER 1998, Reg. 11. £3000 fine.
- A 5 m high top-heavy elevator fell over when an untrained and unlicensed operator attempted to lift it with a fork-lift truck. It hit two persons. One suffered eight broken ribs, a broken shoulder and a collapsed lung, the other suffered bruising. Work had been organised in an ad hoc way and the method statement and risk assessment were too general. Prosecuted under The Health and Safety At Work etc. Act 1974, Section 2, Subsection 1. £4000 fine.
- A company failed to ensure the safety of an employee who suffered serious injuries when he fell 6 m from a blending beam he was dismantling. No risk assessment or method statement had been made, and there were inadequate precautions to reduce risk of falling. There was inadequate training and supervision. Prosecuted under The Health and Safety At Work etc. Act 1974, Section 2, Subsection 1. £14 000 fine.
- A self-employed plumber carried out gas work in breach of a prohibition notice issued by the enforcing authorities.

He was not CORGI registered. Prosecuted under The Health and Safety At Work 1974 and The Gas Safety (Installation and Use) Regulations 1998. The plumber received a custodial sentence.

- An employee suffered an amputated thumb from a rotary valve at the base of a dust extraction hopper. There was no risk assessment, no safe system of work, inadequate guarding, no isolation and lock-off procedures and inadequate information/instruction/training/supervision and monitoring. Prosecuted under The Health and Safety At Work etc. Act 1974, Section 2. £14 000 fine.
- An employee trapped his arm in a powered roller when feeding a machine. Prosecution was brought because (a) the company had been given past advice, followed by enforcement on inadequately guarded machines, and (b) the circumstances of the accident were repeatable some 3 weeks after the accident, the only action taken being to instruct the employees to be more vigilant. Prosecuted under the HSW Act, Section 2(1). £3500 fine.

While the above examples are a random selection of prosecutions, there are clear general messages to be drawn:

- Do not disregard cautions, improvement notices or prohibition notices.
- Be sure you pay attention to the proper guarding of machinery.
- Pay attention to your systems of work and isolation procedures – make sure they are safe.
- Pay attention to fragile roofs and dangerous work at height.
- Do not use inappropriate equipment (such as fork-lift trucks) as a platform for work at height.

17.4 Prosecution under The Health and Safety at Work Act or other regulations

You will see from the above examples that prosecutions are, in the main, brought under the relevant section of The Health

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and Safety at Work Act 1974, even when one of the more specific H&S regulations was also breached. One reason for this is that the HSW Act places an overriding duty on employers and others to ensure, so far as is reasonably practicable, the health, safety and well-being of employees and others affected by the work – the exercise of due diligence. Being prosecuted is something you really don't want to experience.

17.5 Who will prosecute?

In England and Wales the decision to proceed with a prosecution rests with the enforcing authorities. In Scotland the Procurator Fiscal decides whether to bring a prosecution. This may be on the basis of a recommendation by an enforcing authority, although The Procurator Fiscal can act independently of any enforcing authority.

Enforcing authorities will prosecute or recommend prosecution of individuals if they consider that a prosecution is warranted. In particular, they will consider the management chain and the role played by individual directors and managers, and they will probably take action against them where the investigation reveals that the offence was committed with their consent or connivance, or to have been attributable to neglect on their part.

If there has been a breach of the H&S laws leading to a

- 206,000 regulatory contacts made
- Investigated nearly 28,000 incidents and complaints
- Issued 11, 295 improvement and prohibition notices
- Brought 982 prosecution cases
- 89% of cases prosecuted led to a conviction
- Average fine per case prosecuted by HSE is approximately £14,000

Figure 17.1 Some data on HSE activities and prosecutions 2003/04

death at work, then the enforcing authorities will advise the police. If the circumstances might justify a charge of manslaughter, then in England and Wales the police will decide whether to pursue a manslaughter investigation and whether to refer the case to the Crown Prosecution Service (CPS) to consider possible manslaughter charges. In Scotland, responsibility for investigating sudden or suspicious deaths and the decision to bring charges rests with the Procurator Fiscal.

17.6 What are the penalties?

The Health and Safety at Work Act 1974 sets out the offences and the penalties under H&S legislation:

For failure to comply with an improvement notice, a prohibition notice or a court remedy order:

- lower court maximum – £20 000 and/or 6 months imprisonment;
- higher court maximum – unlimited fine and/or 2 years imprisonment.

For breach of sections 2 to 6 of The Health and Safety at Work Act (i.e. the duties of employers, self-employed persons, manufacturers and suppliers to ensure, so far as is reasonably practicable, the health and safety of people at work and members of the public affected by the work):



Don't go there. It is not an experience to be recommended.

Figure 17.2 Final word

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- lower court maximum – £20 000 fine;
- higher court maximum – unlimited fine.

For other breaches of The Health and Safety at Work Act and other H&S regulations:

- lower court maximum – £5 000 fine;
- higher court maximum – unlimited fine.

References

Further Reading – Other Sources of Information

Laws and Regulations

- UK H&S legislation and statutory instruments (regulations) can be viewed on the web:
www.opsi.gov.uk/stat.htm
Just type the title of the Act or regulation in the search box.

Enforcement Policy and Guidelines

- The HSE enforcement policy can be viewed on the web:
www.hse.gov.uk/pubns/hsc
- H&S enforcement guidelines for local authorities can be viewed on the web:
www.hse.gov.uk/lau/lacs/index.htm

Prosecutions

- Summaries of successful H&S prosecutions can be viewed on the web:
www.hse.gov.uk/prosecutions

Accident Statistics

- Yearly statistics issued by the HSE can be viewed on the web:
www.hse.gov.uk/statistics.htm

Health and Safety Executive Publications

- The HSE publish a very large number of booklets/guides on almost all the relevant topics. A full list of their publications + ability to view many of the documents is accessible:
www.hse.gov.uk/pubns/hsc

The Royal Society for the Prevention of Accidents (ROSPA) website:

www.rosipa.co.uk

The Health and Safety Commission publish all the following references and sources of information, except those shown in ***bold italics***:

Abbreviations used:

- ACOP - Approved Code of Practice;
- EH – Guidance Note: Environmental Health;
- GS – Guidance Note: General Series;
- HSG - Health and Safety (Guidance) booklet;
- HSE – Health and Safety Executive leaflet;
- HSC – Health and Safety Commission leaflet;
- INDG – Industry Advisory (General) leaflet;
- L – Legal Series;
- PM – Guidance Note: Plant and Machinery.

References marked with an asterisk * can be obtained free.

Management of Health and Safety

- Management of Health and Safety at Work Regulations 1999 – ACOP – ISBN 0 7176 1488 9;
- Managing Health and Safety in Construction (CDM Regulations) – ACOP – HSG224 – ISBN 0 7176 2139 1;
- Successful health and safety management – HSG65 – ISBN 0 7176 1276 7;
- Safety representatives and safety committees – HSE L87 – ISBN 0 7176 1220 1;
- Managing contractors: a guide for employers – ISBN 0 7176 1196 5;
- What to expect when a health and safety inspector calls* – HSC14;
- Management of health and safety: five steps to success* – INDG275;
- Reduce risks – cut costs. The real costs of accidents and ill health at work* – INDG355;
- Fire safety: an employer's guide – ISBN 0 11 341229 0;
- Permit to work systems* – INDG98(rev3);
- Signpost to Health and Safety (Safety Signs and Signals) Regulations 1996* – INDG184;
- New and expectant mothers at work: a guide for employers – HSG122 – ISBN 0 7176 2583 4.

Risk Assessment

- Five steps to risk assessment* – INDG16(rev1);
- A guide to risk assessment requirements: common provisions in health and safety law* – INDG218.

The Workplace

- Workplace (Health, Safety and Welfare) Regulations 1992 – ACOP – ISBN 0 7176 0413 6;
- Workplace health, safety and welfare: a short guide for managers* – INDG244;
- Health and safety in motor vehicle repair – HSG67 – ISBN 0 7176 0483 7;
- Health and safety in retail and wholesale warehouses – HSG76 – ISBN 0 11 885731 2;
- Health and safety in engineering workshops – HSG129 – ISBN 0 7176 1717 3;
- Thermal comfort in the workplace: guidance for employers – HSG194 – ISBN 0 7176 2468 4;
- Welfare at work: guidance for employers on welfare provisions* – INDG293;
- Health and safety in construction – HSG150 – ISBN 0 7176 1148 5;
- A guide to the Construction (Health, Safety and Welfare) Regulations 1996* – INDG220.

Machinery and Work Equipment

- Provision and Use of Work Equipment Regulations 1998 – ACOP – L22 – ISBN 0 7176 1626 6;
- Provision and Use of Work Equipment Regulations 1998 as applied to power presses – L112 – ACOP – ISBN 0 7176 1627 4;
- Provision and Use of Work Equipment Regulations 1998 as applied to woodworking machinery – L114 – ACOP – ISBN 0 7176 1630 4;
- Drilling machines guarding of spindles and attachments – PM83 – ISBN 0 7176 1546 4;
- Simple guide to the Provision and Use of Work Equipment Regulations 1998 – INDG291;

- Safety in the use of abrasive wheels – HSG17 – ISBN 0 7176 1739 4;
- Safety in the use of metal cutting guillotines and shears – HSG42 – ISBN 0 11 885455 0;
- Safety in working with lift trucks – HSG6 – ISBN 0 7176 1718 5;
- Safety in gas welding, cutting and similar processes* – INDG297.

Pressure Equipment

- *Pressure Systems Safety Regulations by Clifford Matthews – Professional Engineering Publishing Limited – ISBN 1 86058 430 6;*
- Pressure Systems Safety Regulations 2000 – L122 – ACOP – ISBN 0 7176 1767 X;
- Pressure systems: safety and you* – INDG261(rev1);
- Safety in pressure testing – GS4 – ISBN 0 7176 1629 0;
- Compressed air safety – HSG39 – ISBN 0 7176 1531 6.

Lifting and Handling

- Manual Handling Operations Regulations 1992. Guidance on Regulations – L23 – ISBN 0 7176 2415 3;
- Lifting Operations and Lifting Equipment Regulations 1998 – L113 – ACOP – ISBN 0 7176 1628 2;
- Simple guide to the Lifting Operations and Lifting Equipment Regulations 1998* – INDG290;
- Safe working with overhead travelling cranes – PM55 – ISBN 0 11 883524 6;
- Getting to grips with MANUAL HANDLING – INDG143(rev2).

Noise

- Sound solutions: techniques to reduce noise at work – HSG138 – ISBN 0 7176 0791 7;
- Reducing noise at work: guidance on the Noise at Work Regulations 1989 – L108 – ISBN 0 7176 1511 1;
- Noise at work: advice for employers* – INDG362.

Hazardous Substances

- Control of Substances Hazardous to Health Regulations 2002 – ACOP – ISBN 0 7176 2534 6;
- Control of Asbestos at Work Regulations 2002 – ACOP – ISBN 0 7176 2562 1;
- Control of lead at work – ACOP – L132 – ISBN 0 7176 2565 6;
- COSHH: a brief guide to the regulations – INDG136rev3;
- A step by step guide to COSHH assessment – HSG97 – ISBN 0 7176 1446 8;
- Occupational exposure limits (updated annually) – ISBN 0 7176 2083 2;
- Working with asbestos in buildings* – INDG289;
- The storage of flammable substances in containers – HSG51 – ISBN 0 7176 1471 9;
- The safe use and handling of flammable liquids – HSG140 – ISBN 0 7176 0967 7;
- Use of LPG in small bulk tanks* – CHIS4;
- Small scale use of LPG in cylinders* – CHIS5;
- Working safely with solvents: a guide to safe working practices* – INDG273;
- Read the label: how to find out if chemicals are dangerous* – INDG352;
- Dust: general principles of protection – EH44 – ISBN 0 7176 1435 2.

Electricity

- Electricity at work safe working practices – HSG85;
- Avoidance of danger from overhead electric lines – GS6 – ISBN 0 716 1348 8;
- Electricity at work: safe working practices – HSG85 – ISBN 0 7176 2164 2;
- Maintaining portable and transportable electrical equipment – HSG107 – ISBN 0 7176 0715 1;
- Maintaining portable electrical equipment in offices and other low-risk environments – INDG236.

Work at Height

- Health and safety in roof work – HSG33 – ISBN 0 7176 1425 5;
- Working on roofs* – INDG284;
- Safe use of ladders and stepladders: an employer's guide – INDG402.

VDU – Display Screen Equipment

- The law on VDUs: an easy guide – HSG 90.

First Aid

- First aid at work. Health and Safety (First Aid) Regulation 1981 – L74 – ISBN 0 7176 1050 0;
- First aid at work: your questions answered* – INDG214.

PPE

- Personal Protective Equipment at Work Regulations 1992. Guidance on Regulations – L25 – ISBN 0 7176 0415 2;
- Construction (Head Protection) Regulations 1989 – Guidance on Regulations – L102 – ISBN 0 7176 1478 6;
- A short guide to the Personal Protective Equipment at Work Regulations 1992* – INDG174.

Confined Spaces

- Safe work in confined spaces – L101 – ISBN 0 7176 1405 0.

RIDDOR and Accident Reporting

- RIDDOR explained – HSE 31 (rev1);
- Accident Book – HSE publication BI 510.

Others

- Managing vehicle safety at the workplace – INDG 199;
- An introduction to health and safety* – INDG259(rev1);
- Slips and trips: guidance for employers on identifying hazards and controlling risks – HSG155 – ISBN 0 7176 1145 0;
- Gas Safety (Installation and Use) Regulations 1998 – L56 – ACOP – ISBN 0 7176 1635 5;
- Working alone in safety* – INDG73(rev1).

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