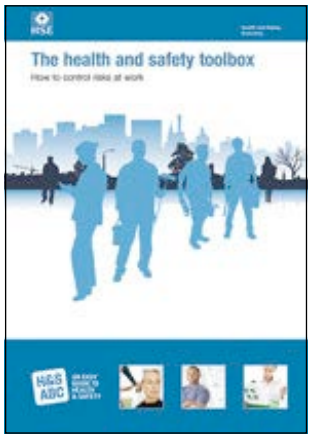
The health and safety toolbox

How to control risks at work



This is a free-to-download, web-friendly version of HSG268 (published 2014). You can order a printed version at www.hse.gov.uk/pubns/books/hsg268.htm or visit the website at www.hse.gov.uk/toolbox.

Packed with sound advice to put you on the right track, *The health and safety toolbox: How to control risks at work* covers the most common workplace hazards. It shows how most small to medium-sized businesses can put measures into place to control the risks.

The book is easy to use and will help you comply with the law and prevent workplace accidents and ill health. It's great value for those starting up or running a small business, or those who have been appointed as a safety representative in a larger organisation, or want additional advice on how to control workplace hazards. Whatever line of work you're in, it will help you run a safe and healthy workplace.

It replaces HSE's most popular guidance book *Essentials of health and safety at work* and builds on that title's success by including:

- case studies showing how accidents and cases of ill health have occurred, with helpful tips on how to avoid similar things happening in the future;
- simplified advice on key duties to make it easier for you to comply with the law and run your business;
- helpful lists of 'dos and don'ts' for key hazards which summarise the actions you need to take;
- updates on legal changes;
- detailed lists of useful websites and sources of advice.

H&S ABC AN EASY GUIDE TO HEALTH & SAFETY

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This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

Contents

Introduction

Why use this book?

In general, health and safety laws apply to all businesses, no matter how small. As an employer, or a self-employed person, you are responsible for health and safety in your business. You need to take the right precautions to reduce the risks of workplace dangers and provide a safe working environment.

Health and safety management should be a straightforward part of managing your workplace as a whole. It involves practical steps that protect people from harm and at the same time protect the future success and the growth of your business. Good practice in health and safety makes sound business sense.

This book explains what the law requires and helps you put it into practice.

What are the main causes of ill health and accidents at work?

Each year people are killed at work and many are injured or suffer ill health. The most common causes of serious injury at work are slips and trips and falls from height. There are health conditions that can be caused or made worse by work and working environments, including cancer, asthma, skin complaints, stress and musculoskeletal disorders such as back pain.

The law and guidance

The main law governing health and safety at work in the United Kingdom is the Health and Safety at Work etc Act 1974 (HSW Act). This places general duties on you to do what is 'reasonably practicable' (see page 12) to ensure health and safety.

Other regulations supporting the HSW Act set out more detailed legal duties for specific activities or industries. The relevant regulations are set out in 'The law' sections in each chapter.

The Health and Safety Executive (HSE) has produced publications to help you understand what the duties mean in practice (http://books.hse.gov.uk).

Information about useful publications and websites is given in 'Find out more' sections throughout the book.

How to use this book

This book is easy to use and will help you comply with the law and prevent workplace accidents and ill health.

It is aimed at those starting up or running a small to medium-sized business, those who have been appointed as a safety representative in a larger organisation, employees and those who want additional advice on how to control workplace hazards. Whatever line of work you're in, it will help you run a safe and healthy workplace.

Chapter 1 suggests how you can tackle the basics of health and safety. It shows how you can identify, assess and control the activities that might cause harm in your business.

Chapters 2, 3 and 4 cover issues to consider when looking at how you operate your business and things you need to take account of regarding your workers' health and safety.

Chapters 5 to 19 are for anyone who needs to know more about tackling a particular hazard. They tell you what you need to do to work safely, as well as which laws apply. The Contents pages (3–5) will help you find the topics most relevant to you, including electricity, gas, harmful substances etc.

Looking at your workplace in the way this book suggests will help you and your workers stay safe and healthy. It will also go a long way to satisfying the law – including the risk assessment that you must do under the Management of Health and Safety at Work Regulations 1999.

1 How to manage health and safety

Managing health and safety is an integral part of managing your business. You need to do a risk assessment to find out about the risks in your workplace, put sensible measures in place to control them, and make sure they stay controlled.

This chapter provides information on what you need to consider when managing health and safety and assessing the risks in your workplace. It shows how you can follow a 'Plan, Do, Check, Act' approach.

PLAN
Describe how you manage health and safety in your business (your legally required policy) and plan to make it happen in practice.
DO
Prioritise and control your risks – consult your employees and provide training and information.
CHECK
Measure how you are doing.
ACT
Learn from your experience.

Planning for health and safety

Planning is the key to ensuring your health and safety arrangements really work. It helps you think through the actions you have set out in your policy and work out how they will happen in practice. Consider:

- what you want to achieve, eg how you will ensure that your employees and others are kept healthy and safe at work;
- how you will decide what might cause harm to people and whether you are doing enough or need to do more to prevent that harm;
- how you will prioritise the improvements you may need to make;
- who will be responsible for health and safety tasks, what they should do, when and with what results;
- how you will measure and review whether you have achieved what you set out to do.

The law

Under the Health and Safety at Work etc Act 1974 you have to ensure, so far as reasonably practicable (see page 12), the health and safety of yourself and others who may be affected by what you do or do not do. It applies to all work activities and premises and everyone at work has responsibilities under it, including the self-employed.

Employees must take care of their own health and safety and that of others who may be affected by their actions at work. They must also co-operate with employers and co-workers to help everyone meet their legal requirements.

The Management of Health and Safety at Work Regulations 1999 also apply to every work activity and workplace and require all risks to be assessed and, where necessary, controlled.

Find out more

If you want more information to help you put suitable arrangements in place to manage health and safety, see www.hse.gov.uk/managing.

Writing a health and safety policy

Your business must have a health and safety policy, and if you have five or more employees, that policy must be written down.

Most businesses set out their policy in three sections:

- **The statement of general policy on health and safety at work** sets out your commitment to managing health and safety effectively, and what you want to achieve.
- **The responsibility section** sets out who is responsible for specific actions.
- **The arrangements section** contains the detail of what you are going to do in practice to achieve the aims set out in your statement of health and safety policy.

To help you structure your policy, there is an example and an interactive template on the HSE website (www.hse.gov.uk/risk).

The arrangements section should say how you will meet the commitments you have made in your statement of health and safety policy. Include information on how you are going to eliminate or reduce the risks of hazards in your workplace.

What do we mean by 'hazard' and 'risk'?

A **hazard** is something in your business that could cause harm to people, such as chemicals, electricity and working at height. A **risk** is the chance – however large or small – that a hazard could cause harm.

Additional arrangements

The additional actions you take to manage health and safety should be set out in the arrangements section of your policy. They could include:

- staff training;
- using signs to highlight risks;
- improved safety equipment such as guards or additional personal protective equipment including goggles, safety boots or high-visibility clothing;
- replacing hazardous chemicals with less harmful alternatives;
- improved lighting;
- anti-slip flooring.

Focus your attention on the activities that could present a risk to people or cause serious harm.

Controlling the risks

As part of managing the health and safety of your business, you must control the risks in your workplace. To do this you need to think about what might cause harm to people and decide whether you are doing enough to prevent that.

This process is known as risk assessment and it is something you are required by law to carry out. If you have fewer than five employees you don't have to write anything down.

Risk assessment is about identifying and taking sensible and proportionate measures to control the risks in your workplace, not about creating huge amounts of paperwork.

You are probably already taking steps to protect your employees, but your risk assessment will help you decide whether you should be doing more.

Think about how accidents and ill health could happen and concentrate on real risks – those that are most likely and which will cause the most harm.

For some risks, other regulations require particular control measures. Your assessment can help you identify where you need to look at certain risks and these particular control measures in more detail.

These control measures do not have to be assessed separately but can be considered as part of, or an extension of, your overall risk assessment.

Identify the hazards

One of the most important aspects of your risk assessment is accurately identifying the potential hazards in your workplace.

A good starting point is to walk around your workplace and think about any hazards. In other words, what is it about the activities, processes or substances used that could injure your employees or harm their health?

When you work in a place every day it is easy to overlook some hazards, so here are some tips to help you identify the ones that matter:

- **Check manufacturers' instructions** or data sheets for chemicals and equipment as they can be very helpful in explaining the hazards and putting them in their true perspective.
- **Look back at your accident and ill-health records** – these often help to identify the less obvious hazards.
- **Take account of non-routine operations** (eg maintenance, cleaning operations or changes in production cycles).
- **Remember to think about long-term hazards to health** (eg high levels of noise or exposure to harmful substances).

There are some hazards with a recognised risk of harm, for example working at height, working with chemicals, machinery, and asbestos. Depending on the type of work you do, there may be other hazards that are relevant to your business.

Who might be harmed?

Then think **how** employees (or others who may be present such as contractors or visitors) might be harmed. Ask your employees what they think the hazards are, as they may notice things that are not obvious to you and may have some good ideas on how to control the risks.

For each hazard you need to be clear about who might be harmed – it will help you identify the best way of controlling the risk. That doesn't mean listing everyone by name, but rather identifying groups of people (eg 'people working in the storeroom' or 'passers-by'). Remember:

- Some workers may have particular requirements, for example new and young workers, migrant workers, new or expectant mothers, people with disabilities, temporary workers, contractors, homeworkers and lone workers (see Chapter 3).
- Think about people who might not be in the workplace all the time, such as visitors, contractors and maintenance workers.
- Take members of the public into account if they could be harmed by your work activities.
- If you share a workplace with another business, consider how your work affects others and how their work affects you and your workers. Talk to each other and make sure controls are in place.
- Ask your workers if there is anyone you may have missed.

Evaluate the risks

Having identified the hazards, you then have to decide how likely it is that harm will occur, ie the level of risk and what to do about it.

Risk is a part of everyday life and you are not expected to eliminate all risks. What you must do is make sure you know about the main risks and the things you need to do to manage them responsibly. Generally, you need to do everything 'reasonably practicable' to protect people from harm.

> ***What does 'so far as reasonably practicable' mean?***
>
> This means balancing the level of risk against the measures needed to control the real risk in terms of money, time or trouble. However, you do not need to take action if it would be grossly disproportionate to the level of risk.

Your risk assessment should only include what you could reasonably be expected to know – you are not expected to anticipate unforeseeable risks. Look at what you're already doing and the control measures you already have in place. Ask yourself:

- Can I get rid of the hazard altogether?
- If not, how can I control the risks so that harm is unlikely?

Some practical steps you could take include:

- trying a less risky option;
- preventing access to the hazards;
- organising your work to reduce exposure to the hazard;
- issuing protective equipment;
- providing welfare facilities such as first-aid and washing facilities;
- involving and consulting with workers.

Improving health and safety need not cost a lot. For instance, placing a mirror on a blind corner to help prevent vehicle accidents is a low-cost precaution considering the risks. Failure to take simple precautions can cost you a lot more if an accident does happen.

Involve your workers, so you can be sure that what you propose to do will work in practice and won't introduce any new hazards. You can find more advice on HSE's website (www.hse.gov.uk/involvement).

If you control a number of similar workplaces containing similar activities, you can produce a 'model' risk assessment reflecting the common hazards and risks associated with these activities.

You may also come across 'model' assessments developed by trade associations, employers' bodies or other organisations concerned with a particular activity. You may decide to apply these 'model' assessments at each workplace, but you can only do so if you:

- satisfy yourself that the 'model' assessment is appropriate to your type of work;
- adapt the 'model' to the detail of your own work situations, including any extension necessary to cover hazards and risks not referred to in the 'model'.

Record your findings

Make a record of your significant findings – the hazards, how people might be harmed by them and what you have in place to control the risks. Any record produced should be simple and focused on controls.

If you have fewer than five employees you don't have to write anything down. But it is useful to do this so you can review it at a later date, for example if something changes. If you have five or more employees you are required by law to write it down.

Any paperwork you produce should help you to communicate and manage the risks in your business. For most people this does not need to be a big exercise – just note the main points down about the significant risks and what you concluded.

An easy way to record your findings is to use the risk assessment template on HSE's website (www.hse.gov.uk/risk). When writing down your results keep it simple, for example 'fume from welding – local exhaust ventilation used and regularly checked'.

A risk assessment must be 'suitable and sufficient', ie it should show that:

- a proper check was made;
- you asked who might be affected;
- you dealt with all the obvious significant hazards, taking into account the number of people who could be involved;
- the precautions are reasonable, and the remaining risk is low;
- you involved your employees or their representatives in the process.

Where the nature of your work changes fairly frequently or the workplace changes and develops (eg a construction site), or where your workers move from site to site, your risk assessment may have to concentrate more on a broad range of risks that can be anticipated.

Take a look at our selection of example risk assessments. They show you what a completed risk assessment might look like for your type of workplace. You can use these as a guide when doing your own.

We have also developed online risk assessment tools, to help employers complete and print off their own records. The example risk assessments and online tools can be found at www.hse.gov.uk/risk.

If your risk assessment identifies a number of hazards, you need to put them in order of importance and address the most serious risks first.

Identify long-term solutions for the risks with the biggest consequences, as well as those risks most likely to cause accidents or ill health. You should also establish whether there are improvements that can be implemented quickly, even temporarily, until more reliable controls can be put in place.

Remember, the greater the hazard the more robust and reliable the control measures to control the risk of an injury occurring will need to be.

Regularly review your risk assessment

Few workplaces stay the same. Sooner or later, you will bring in new equipment, substances and procedures that could lead to new hazards. So it makes sense to review what you are doing on an ongoing basis, look at your risk assessment again and ask yourself:

- Have there been any significant changes?
- Are there improvements you still need to make?
- Have your workers spotted a problem?
- Have you learnt anything from accidents or near misses?

Make sure your risk assessment stays up to date.

Find out more

HSE's risk management website: www.hse.gov.uk/risk

Risk assessment: A brief guide to controlling risks in the workplace Leaflet INDG163(rev4) HSE Books 2014 www.hse.gov.uk/pubns/indg163.pdf

Accidents and investigations

Monitor the effectiveness of the measures you put in place to control the risks in your workplace. As part of your monitoring, you should investigate incidents to ensure that corrective action is taken, learning is shared and any necessary improvements are put in place. Investigations will help you to:

- identify why your existing control measures failed and what improvements or additional measures are needed;
- plan to prevent the incident from happening again;
- point to areas where your risk assessment needs reviewing;
- improve risk control in your workplace in the future.

Reporting incidents should not stop you from carrying out your own investigation to ensure risks in your workplace are controlled efficiently. An investigation is not an end in itself, but the first step in preventing future **adverse events** that includes:

- accident: an event that results in injury or ill health;
- incident:
  - near miss: an event not causing harm, but which has the potential to cause injury or ill health (in this guidance, the term near miss will include dangerous occurrences);
  - undesired circumstance: a set of conditions or circumstances that have the potential to cause injury or ill health, eg untrained nurses handling heavy patients;
- dangerous occurrence: one of a number of specific, reportable adverse events, as defined in the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR).

Find out more

Investigating accidents and incidents HSG245 HSE Books 2004 ISBN 978 0 7176 2827 8 www.hse.gov.uk/pubns/books/hsg245.htm

Multi-occupancy workplaces

Where employers share workplaces (whether on a temporary or permanent basis), they need to co-operate with each other to comply with their respective health and safety obligations.

Each employer needs to take all reasonable steps to co-ordinate the measures they adopt to fulfil those obligations. They also need to tell the other employers about any risks their work activities could present to their employees, both on- and off-site.

These requirements apply to self-employed people where they share a workplace with other employers or where they share a workplace with other self-employed people.

Deciding who will help you with your duties

As an employer, you must appoint someone competent to help you meet your health and safety duties. A competent person is someone with the necessary skills, knowledge and experience to manage health and safety. In many cases, you will know the risks in your own business best. This will mean that you are the competent person and can carry out the risk assessments yourself. You could appoint (one or a combination of):

- yourself;
- one or more of your workers;
- someone from outside your business.

Many businesses can develop the necessary expertise in-house and are well equipped to manage health and safety themselves. However, there are some things you may not be able to do for yourself and you may decide to get external help. Possible sources of advice include:

- trade associations;
- safety groups;
- trade unions;
- consultants registered on the Occupational Safety and Health Consultants Register (OSHCR) – see 'Find out more' below;
- local councils;
- health and safety training providers;
- health and safety equipment suppliers.

Identifying and deciding what help you need is very important. If you appoint someone to help you, you must ensure that they are competent to carry out the tasks you give them and that you provide them with adequate information and support. If you are not clear about what you want, you probably won't get the help you need.

Some points to consider when using external help

- Make sure you clearly explain what you need and check that they understand you. Ask them to explain what they understand the work to be and what they will do, when they will do it, and what they will charge you.
- Check for evidence of relevant health and safety training/knowledge, such as formal qualifications or practical experience of providing advice in your industry/area of work.
- Can they explain why they are competent to advise you on your particular problem?
- Is the person a member of a professional body? If you are in doubt, you can check with the professional body on what training, knowledge or qualifications are relevant and whether the person is listed as a member.
- Shop around to find the right help at the right price. If you were buying equipment or another service, you wouldn't always accept the first offer, so do the same with health and safety advice. You should also check that the person you choose is adequately insured.
- Consider whether you have received the help you needed. Do you have a practical, sensible solution to your problem? Or have you ended up with something completely 'over the top' or a mountain of useless paperwork? If you are not happy with the solution, ask for an explanation and whether there may be a simpler alternative.
- You can find consultants through OSHCR, an independent online directory to help you find sensible health and safety advice. Registered members have met set standards within their professional bodies, and are bound by a code of practice. They give proportionate advice, specific to your business needs, by topic, industry or location.

Try to make sure that you get a good follow-up service and are able to get further advice on any issues that arise from implementing their recommendations.

Find out more

Occupational Safety and Health Consultants Register (OSHCR): www.hse.gov.uk/oshcr

If you need help with technical issues or very specific health and safety risks, you may need to consult external specialists. See HSE's website (www.hse.gov.uk/business/competent-advice.htm).

Consulting your employees

Workplaces where employees are involved in taking decisions about health and safety are safer and healthier. Collaboration with your employees helps you to manage health and safety in a practical way by:

- helping you spot workplace risks;
- making sure health and safety controls are practical;
- increasing the level of commitment to working in a safe and healthy way;
- providing you with feedback on the effectiveness of your health and safety arrangements and control measures.

You must consult all your employees, in good time, on health and safety matters. In workplaces where a trade union is recognised, this will be through union health and safety representatives. In non-unionised workplaces, you can consult either directly or through other elected representatives.

Representatives' main role is to talk to their employer about issues affecting the health and safety of employees they represent in the workplace. You should ensure that any representatives receive paid time off during normal working hours so they can carry out their duties. They should also receive suitable training and access to any facilities needed to help them in their role.

Consultation involves employers not only giving information to employees but also listening to them and taking account of what they say before making decisions on health and safety. You have to give employees or their representatives information to allow full and effective participation in consultation. This should include:

- risks arising from their work;
- proposals to manage and/or control these risks;
- what to do if employees are exposed to a risk;
- the best ways of providing information and training.

Find out more

For more information on consulting with your employees, see HSE's worker involvement website: www.hse.gov.uk/involvement

Consulting employees on heath and safety: A brief guide to the law Leaflet INDG232(rev2) HSE Books 2013 www.hse.gov.uk/pubns/indg232.htm

The law

Safety Representatives and Safety Committees Regulations 1977 (as amended)

Health and Safety (Consultation with Employees) Regulations 1996

Providing training and information

Everyone who works for you needs to know how to work safely and without risks to health. You must provide clear instructions, information and adequate training for your employees.

Don't forget contractors and self-employed people who may be working for you and make sure everyone has information on:

- hazards and risks they may face;
- measures in place to deal with those hazards and risks;
- how to follow any emergency procedures.

Some employees may have particular training needs, for example:

- new recruits need basic induction training in how to work safely, including arrangements for first aid, fire and evacuation;
- people changing jobs or taking on extra responsibilities need to know about any new health and safety implications;
- young employees are particularly vulnerable to accidents and you need to pay particular attention to their needs, so their training should be a priority. It is also important that new, inexperienced or young employees are adequately supervised;

- employee representatives or safety representatives will require training that reflects their responsibilities;
- some people's skills may need updating by refresher training.

Your risk assessment should identify any further training needs associated with specific risks. If you have identified danger areas in your workplace, you must ensure that your employees receive adequate instruction and training on precautions they must take before entering them.

You need to think about any legal requirements for specific job training, eg for operating forklift trucks. Remember that if you introduce new equipment, technology or changes to working practices/systems, your employees will need to know about any new health and safety implications.

Employees also have responsibilities under health and safety law to:

- take care of their own health and safety and that of others;
- co-operate with you to help you comply with health and safety legislation;
- follow any instructions or health and safety training you provide;
- tell you about any work situations that present a serious and imminent risk;
- let you know about any other failings they identify in your health and safety arrangements.

Find out more

Health and safety training: A brief guide Leaflet INDG345(rev1) HSE Books 2012
www.hse.gov.uk/pubns/indg345.htm

Providing supervision

You must provide an adequate and appropriate level of supervision for your workers:

- Supervisors need to know what you expect from them in terms of health and safety. They need to understand your health and safety policy, where they fit in, and how you want health and safety managed.
- Supervisors may need training in the specific hazards of your processes and how you expect the risks to be controlled.
- New, inexperienced or young people, as well as those whose first language is not English, are very likely to need more supervision than others. Make sure workers know how to raise concerns and supervisors are familiar with the possible problems due to unfamiliarity, inexperience and communication difficulties.
- Supervisors need to ensure that workers in their charge understand risks associated with the work environment and measures to control them.
- Supervisors will need to make sure the control measures to protect against risk are up to date and are being properly used, maintained and monitored.
- Make sure you have arrangements in place to check the work of contractors is being done as agreed.

Effective supervision can help you monitor the effectiveness of the training that people have received, and whether employees have the necessary capacity and competence to do the job.

Find out more

For advice on those new to the job see Chapter 3 and HSE's website: www.hse.gov.uk/vulnerable-workers/new-to-the-job.htm

For advice on young people at work see Chapter 3 and HSE's website: www.hse.gov.uk/youngpeople

Young people and work experience: A brief guide to health and safety for employers Leaflet INDG364(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg364.htm

First aid

You need to assess your first-aid requirements to help you decide what equipment and facilities you need, and how many first-aid personnel you should provide. The minimum first-aid provision in any workplace is:

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

You also need to put up notices telling your employees where they can find:

- the first-aiders or appointed persons;
- the first-aid box.

Your assessment may also indicate that you should provide a first-aid room, particularly where your work involves certain hazards, including some of those found in chemical industries and on large construction sites.

If you are self-employed, you should have equipment to be able to provide first aid to yourself at work. You should make an assessment of the hazards and risks in your workplace and establish an appropriate level of first-aid provision.

If you carry out low-risk activities (eg clerical work) in your own home, you only need to provide first-aid equipment appropriate to your normal domestic needs. If your work involves driving long distances or you are continuously on the road, your assessment may identify the need to keep a personal first-aid kit in your vehicle.

Find out more

See HSE's first aid site for more information: www.hse.gov.uk/firstaid

First aid at work: Your questions answered Leaflet INDG214(rev1) HSE Books 2009 www.hse.gov.uk/pubns/indg214.htm

The law

Health and Safety (First Aid) Regulations 1981

Emergency procedures

Workplaces need a plan for emergencies that can have a wider impact. Special procedures are needed for emergencies such as serious injuries, explosion, flood, poisoning, electrocution, fire, release of radioactivity and chemical spills.

Quick and effective action may help to ease the situation and reduce the consequences. However, in emergencies people are more likely to respond reliably if they:

- are well trained and competent;
- take part in regular and realistic practice;
- have clearly agreed, recorded and rehearsed plans, actions and responsibilities.

Write an emergency plan if a major incident at your workplace could involve risks to the public, rescuing employees or co-ordinating emergency services.

Where you share your workplace with another employer, you should consider whether your emergency plans and procedures should be co-ordinated.

Points to include in emergency procedures

- Consider what might happen and how the alarm will be raised. Don't forget night and shift working, weekends and times when the premises are closed, eg holidays.
- Plan what to do, including how to call the emergency services. Help them by clearly marking your premises from the road. Consider drawing up a simple plan showing the location of hazardous items.
- If you have 25 tonnes or more of dangerous substances, you must notify the fire and rescue service and put up warning signs.
- Decide where to go to reach a place of safety or to get rescue equipment. You must provide suitable forms of emergency lighting.
- You must make sure there are enough emergency exits for everyone to escape quickly, and keep emergency doors and escape routes unobstructed and clearly marked.
- Nominate competent people to take control (a competent person is someone with the necessary skills, knowledge and experience to manage health and safety).
- Decide which other key people you need, such as a nominated incident controller, someone who is able to provide technical and other site-specific information if necessary, or first-aiders.
- Plan essential actions such as emergency plant shutdown, isolation or making processes safe. Clearly identify important items like shut-off valves and electrical isolators etc.
- You must train everyone in emergency procedures. Don't forget the needs of people with disabilities and vulnerable workers.
- Work should not resume after an emergency if a serious danger remains. If you have any doubts ask for assistance from the emergency services.

The law

The Management of Health and Safety at Work Regulations 1999 cover emergencies.

The Dangerous Substances (Notification and Marking of Sites) Regulations 1990 cover sites holding at least 25 tonnes of dangerous substances.

Reporting accidents, incidents and diseases

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) require employers, or in certain circumstances others who control or manage the premises, to report to the relevant enforcing authority and keep records of:

- work-related deaths;
- work-related accidents which cause certain specified serious injuries to workers, or which result in a worker being incapacitated for more than seven consecutive days (see www.hse.gov.uk/riddor);
- cases of those industrial diseases listed in RIDDOR;
- certain 'dangerous occurrences' (near-miss accidents);
- injuries to a person who is not at work, such as a member of the public, which are caused by an accident at work and which result in the person being taken to hospital from the site for treatment.

Reports to the enforcing authority of all of the above categories, except over-seven-day injuries, must be made immediately by the quickest practicable means and followed up by a written notification within ten days. Reports of over-seven-day injuries must be sent to the enforcing authority within 15 days.

In addition, **records** must be kept of all 'over-three-day injuries', which are those where a person who is injured at work is incapacitated for more than three consecutive days. Over-three-day injuries do not, however, have to be reported to the enforcing authority. If you are an employer who must keep an accident book under the Social Security (Claims and Payments) Regulations 1979, an entry about an over-three-day injury is a sufficient record for the purposes of RIDDOR.

A person is incapacitated if they are unable to carry out the activities they would reasonably be expected to do as part of their normal work. The period of time for an over-three-day injury or an over-seven-day injury does not include the day of the accident, but it does include any weekends or rest days.

Why report and record?

Reporting and recording are legal requirements. The report tells the enforcing authorities for occupational health and safety (HSE and local authorities) about serious incidents and cases of disease. This means they can identify where and how risks arise and whether they need to be investigated. It also allows HSE and local authorities to target their work and provide advice on how to avoid work-related deaths, injuries, ill health and accidental loss.

Information on accidents, incidents and ill health can be used as an aid to risk assessment, helping to develop solutions to potential risks. Records also help to prevent injuries and ill health, and control costs from accidental loss.

You must keep a record of:

- any reportable death, injury, occupational disease or dangerous occurrence;
- all work-related injuries that result in a worker being away from work or unable to do their full range of normal duties for more than **three** consecutive days (not counting the day of the accident but including any weekends or other rest days).

Find out more

There is more about RIDDOR (including reporting gas incidents) on HSE's website: www.hse.gov.uk/riddor

RIDDOR applies to all work activities but not all incidents are reportable. HSE's website has a full list of the types of injuries, dangerous occurrences, gas incidents and occupational diseases that must be reported under RIDDOR: www.hse.gov.uk/riddor/reportable-incidents.htm

Reporting accidents and incidents at work: A brief guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)
Leaflet INDG453(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg453.htm

The law

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)

The health and safety law poster

If you employ anyone, you must display the health and safety law poster, or provide each worker with a copy of the approved leaflet or equivalent pocket card. You must display the poster where your workers can easily read it.

The poster outlines British health and safety laws and includes a straightforward list that tells workers what they and their employers need to do. You can also add details of any employee safety representatives or health and safety contacts if you wish to do so.

The poster was updated in 2009 and all employers must display this new version, or provide each worker with a copy of the equivalent leaflet or pocket card, by no later than 5 April 2014.

Employers can use the older poster or leaflet until then. You can download free copies of the leaflet and pocket card (www.hse.gov.uk/pubns/books/lawposter.htm), where you can also buy them in priced packs, or buy the law poster itself.

The law

Health and Safety Information for Employees Regulations 1989

Safety signs

Employers must provide safety signs if there is a significant risk that can't be avoided or controlled in any other way, such as through safe systems of work or engineering controls.

There is no need to provide safety signs if they don't help reduce the risk or if the risk isn't significant. This applies to all places and activities where people are employed.

Employers must, where necessary:

- use road traffic signs in workplaces to regulate road traffic;
- maintain the safety signs they provide;
- explain unfamiliar signs to their employees and tell them what they need to do when they see safety signs.

Find out more

Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations 1996. Guidance on Regulations L64 (Second edition) HSE Books 2009 ISBN 978 0 7176 6359 0 www.hse.gov.uk/pubns/books/l64.htm

The law

Health and Safety (Safety Signs and Signals) Regulations 1996

Insurance

If your business has employees you are likely to be required by law to have employers' liability insurance.

If an employee is injured or becomes ill as a result of the work they do for you, they may claim compensation from you. Complying with health and safety legislation does not have to be difficult. As long as you have taken reasonable steps to prevent accidents or harm to your employees (and the injury or illness was caused after 1 October 2013), you should not have to pay compensation. However, if you are held to be liable, employers' liability insurance will enable you to meet the cost of any compensation for your employees' injuries or illness.

Only a few businesses are not required to have employers' liability insurance. If you have no employees, or are a family business and all employees are closely related to you, you may not need it. You can find more details in HSE's leaflet *Employers' Liability (Compulsory Insurance) Act 1969: A brief guide for employers* (see 'Find out more' below).

How do you get employers' liability insurance?

You can buy employers' liability insurance through insurers or intermediaries, like brokers or trade associations. You may find that it often comes as part of an insurance package designed to cover a range of business needs.

Your policy must be with an authorised insurer and the Financial Conduct Authority (FCA) has a list of these. You can check their register on the FCA website (www.fca.org.uk).

Find out more

Employers' Liability (Compulsory Insurance) Act 1969: A brief guide for employers Leaflet HSE40(rev4) HSE Books 2012 www.hse.gov.uk/pubns/hse40.htm

Inspectors and the law

Health and safety laws applying to your business are enforced by HSE inspectors or by officers from your local authority.

An inspector's role is to:

- investigate (when accidents have happened or a complaint is made) whether people are at risk, to find out if something has gone wrong;
- require you to take action to control risks properly if you are not already complying with the law;
- take appropriate enforcement action in relation to any non-compliance, ranging from advice on stopping dangerous work activities to potentially taking prosecutions where people are put at serious risk;
- provide advice and guidance to help you comply with the law and avoid injuries and ill health at work.

Inspectors have the right of entry to your premises as well as the right to talk to employees and safety representatives, and exercise powers to help them fulfil their role.

HSE operates a Fee for Intervention (FFI) cost recovery scheme. If you are breaking health and safety laws, HSE may recover its costs from you by charging a fee for the time and effort it spends on helping you to put the matter right, such as investigating and taking enforcement action.

If an HSE inspector visits your premises and you want to confirm their identity, they all carry identification and you can ask to see this.

Inspectors and local authority officers prioritise the highest risks and those businesses which fail to manage health and safety properly.

Find out more

How HSE enforces health and safety law: www.hse.gov.uk/enforce

Fee for Intervention: www.hse.gov.uk/fee-for-intervention

What to expect when a health and safety inspector calls: A brief guide for businesses, employees and their representatives Leaflet HSC14(rev1) HSE Books 2013 www.hse.gov.uk/pubns/hsc14.htm

2 Your organisation

This chapter covers issues that can affect your workers and may need action at an organisational level.

Each section explains how factors in your workplace can have an impact, either because of the nature of the work or the way it is managed. The sections relate to hazards and health issues you may need to assess and take action to deal with – they could be included in your health and safety policy.

Ergonomics and human factors

People are involved in all aspects of work. That is why HSE recognises the important role ergonomics and human factors can play in helping to avoid accidents and ill health at work.

Human factors are concerned with three interrelated areas:

- what people are being asked to do (**the job** and its characteristics);
- who is doing it (**the individua**l and their competence);
- where they are working **(the organisation** and its attributes).

The job

This includes the nature of the task, the workload, the working environment, the design of displays and controls, and training to carry out the job.

The individual

This includes their competence, skills, personality, attitude, and risk perception. Individual characteristics influence behaviour in complex ways. Some characteristics (such as personality) are fixed, whereas others (such as skills and attitudes) may be changed or enhanced.

The organisation

This includes work patterns, the culture of the workplace, resources, communications, leadership etc. Such factors are often overlooked during the design of jobs but have a significant influence on individual and group behaviour.

Find out more

More advice on human factors: www.hse.gov.uk/humanfactors/introduction.htm

Ergonomics and human factors at work: A brief guide Leaflet INDG90(rev3) HSE Books 2013 www.hse.gov.uk/pubns/indg90.htm

Shift work and fatigue

Irregular hours of work and work patterns that include night and early morning shifts can lead to disruption of the internal body clock, sleeping difficulties and fatigue.

If workers are fatigued, they will be less alert, their reaction time will be slower, they will find it harder to concentrate and they may make poor decisions. This can lead to accidents and injuries.

What do I have to do?

If you operate a shift work system or your employees are required to work irregular hours, you should assess any risks that arise from their working pattern and take action to tackle any problems you identify.

Factors to consider during risk assessment are:

- the workload;
- the work activity;
- shift timing and duration;
- direction of shift rotation. It is better for the shifts to run in a 'forward rotation', ie morning/afternoon/night;
- the number and length of breaks within a shift;
- rest periods between shifts.

Find out more

More advice on managing shift work:
www.hse.gov.uk/humanfactors/topics/fatigue.htm

Managing shift work: Health and safety guidance HSG256 HSE Books 2006
ISBN 978 0 7176 6197 8 www.hse.gov.uk/pubns/books/hsg256.htm

Health surveillance

Health surveillance is not needed for most workers, but in some work situations and for some exposures/activities it is required by law.

This means having a system to look for early signs of ill health caused by substances and other hazards at work. It includes keeping health records for individuals and may involve routine self-checks, questionnaires or medical examinations to inform the employer (or self-employed person) if corrective action is needed.

Corrective action may involve referral for treatment and/or adaptations to work for individuals affected. More importantly, as an indication that controls may be failing, it should ensure review of risk management and action to prevent further harmful exposures.

What do I have to do?

If you need to have health surveillance arrangements in place, these should be appropriate for the health risks your workers are exposed to. You must decide whether the work you do needs health surveillance. Ask yourself whether any of your workers is at risk from, for example:

- noise or vibration;
- solvents, fumes, dusts, biological agents and other substances hazardous to health;
- asbestos, lead or work in compressed air;
- ionising radiations or commercial diving – these require a particular type of high-level medical surveillance, which must be carried out by a doctor appointed for these purposes by HSE.

If you do need to put in place a health surveillance system, involve your workers and their representatives at an early stage, so they understand its purpose and their roles and responsibilities in any resulting health surveillance programme.

Ask for advice from a competent person if you need to, such as an occupational health professional.

Find out more

HSE's health surveillance site: www.hse.gov.uk/health-surveillance

Work-related stress

Pressure is part of work and keeps us motivated and productive. But too much pressure, or pressure that lasts for a long time, can lead to stress, which undermines performance, is costly to employers, and can damage both physical and mental health.

Common causes of work-related stress include too much or too little work, lack of control over the work being done, eg process or target-led tasks, conflicting priorities and major change. There are actions you can take to reduce the pressure these things can cause.

What do I have to do?

Where stress may be a problem, you should include it in your risk assessment and take action to tackle it.

An effective risk assessment approach to tackling stress should include the following:

- Measure the current situation (using surveys and/or other techniques).
- Work in partnership with employees and their representatives to make practical improvements.
- Agree and share an action plan with employees and their representatives.
- Regularly review the situation to ensure it continues to improve.

HSE has developed the Management Standards (www.hse.gov.uk/stress/standards) for dealing with work-related stress. They are supported by tools designed to identify and tackle stressors, ie the things that cause stress at work.

The Management Standards provide a step-by-step process for tackling stress. They have been designed to be useful to all organisations, whatever the size or type.

The Standards identify six factors that cause stress at work, help you think about whether they are present in your business, and give you ideas on how to control them and produce an action plan. The six factors are:

- **Demands** – including issues such as workload, work patterns and the work environment.
- **Control** – how much say the person has in the way they do their work.
- **Support** – including the encouragement, sponsorship and resources provided by the organisation, line management and colleagues.
- **Relationships** – including promoting positive working to avoid conflict and dealing with unacceptable behaviour.
- **Role** – whether people understand their role within the organisation and whether the organisation ensures that they do not have conflicting roles.
- **Change** – how organisational change (large or small) is managed and communicated.

Find out more

HSE's stress site: www.hse.gov.uk/stress

How to tackle work-related stress: A guide for employers on making the Management Standards work Leaflet INDG430 HSE Books 2009 www.hse.gov.uk/pubns/indg430.pdf

Working together to reduce stress at work: A guide for employees Leaflet INDG424 HSE Books 2008 www.hse.gov.uk/pubns/indg424.pdf

Drugs and alcohol

Abuse of alcohol, drugs and other substances can affect health, work performance and safety. As an employer, you must ensure the health, safety and welfare of your workers in the workplace. Here are some things to consider:

- Workers also have a duty to take reasonable care of themselves and others who could be affected by their actions while they are at work.
- You may wish to involve organisations that can offer help and support, or give your workers their contact details.
- If you decide that strict standards are needed because of safety-critical jobs, then agree procedures with workers in advance.
- If you decide that workplace drug testing is appropriate, you may need to consider the type of testing, how the sample is collected and how to prevent its contamination.
- Disciplinary procedures may be needed where safety is critical.

Find out more

HSE's alcohol and drugs site: www.hse.gov.uk/alcoholdrugs

Violence at work

Work-related violence is not just physical – it includes verbal abuse and threats. It is more common in those jobs where workers have face-to-face contact with the public.

When physical violence is involved, the injuries to those workers affected are obvious. However, those subjected to constant and repeated verbal abuse and threats may suffer stress, anxiety and depression.

Workers who interact directly with the public, particularly where money is involved or where age-restricted goods are sold, are more likely to face aggressive or violent behaviour.

What can I do if violence at work is an issue?

- Consider whether the layout of the work area adds to the problem:
  - Is there a safe area to count cash?
  - Are there areas where attacks could take place without being witnessed?
  - Can entry be controlled and do you know who is in the workplace?
- Ask your employees whether they ever feel threatened and encourage them to report incidents. Keep detailed records, including those of verbal abuse and threats.
- Try to predict what might happen – there may be a known pattern of violence linked to certain work situations.
- Train your employees so they can spot the early signs of aggression and avoid it.
- Consider physical security measures, eg CCTV or alarm systems and coded security locks.
- Support victims, eg with debriefing or specialist counselling and time off work to recover.

Find out more

HSE's violence site: www.hse.gov.uk/violence

Work-related violence: Case studies – Managing the risk in smaller businesses
HSG229 HSE Books 2002 ISBN 978 0 7176 2358 7
www.hse.gov.uk/pubns/books/hsg229.htm

3 Your workers

Everyone who works for you needs to know how to work safely and without risks to health.

As an employer, giving your workers the right information, instruction, training and necessary competence is not only a legal duty but can also contribute to the success of your business.

Your responsibilities

It is your responsibility to provide:

- **information** that is easy to understand and follow so workers are aware of the hazards and risks they face, the measures in place to control the risks, and how to follow any emergency procedures;
- **clear instructions** so everyone working for you knows what they are expected to do;
- **adequate health and safety training** that is relevant and effective. This should take place during work hours and must be provided free of charge;
- **an appropriate level of supervision**, which is particularly vital for new, inexperienced and young workers.

Find out more

Your health, your safety: A brief guide for workers Leaflet INDG450 HSE Books 2013 www.hse.gov.uk/pubns/indg450.htm

Leading health and safety at work: Leadership actions for directors and board members Leaflet INDG417(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg417.htm

New and expectant mothers

When carrying out your general risk assessment, take into account female employees of childbearing age, including new or expectant mothers (ie employees who are pregnant, have given birth within the last six months or are breastfeeding).

You should consider the risks that may arise from any process, working condition, or physical, biological or chemical agents. Some of the more common risks are:

- lifting or carrying heavy loads;
- standing or sitting for long periods;
- exposure to infectious diseases;
- exposure to lead;
- work-related stress;
- workstations and posture;
- exposure to radioactive material;
- long working hours;
- exposure to toxic chemicals.

If any significant risks have been identified, you must take the appropriate action as soon as you are notified, in writing, that an employee is a new or expectant mother, to ensure that she is not further exposed.

If you are unable to avoid or control any risks that go beyond the level of risk found outside the workplace, then you must take appropriate action. This might include altering working conditions and/or hours of work or finding suitable alternative work.

If the risks can't be avoided or alternative work found, you should suspend the employee on paid leave for as long as necessary to avoid the risks to them.

Find out more

More advice on managing new and expectant mothers at work:
www.hse.gov.uk/mothers

New and expectant mothers who work: A brief guide to your health and safety
Leaflet INDG373(rev2) HSE Books 2013
www.hse.gov.uk/pubns/indg373.htm

Agency/temporary workers

Businesses and self-employed people using temporary workers must provide the same level of health and safety protection for them as they do for employees.

Providers of temporary workers and employers using them need to co-operate and communicate clearly with each other to ensure risks to those workers are managed effectively.

You need to agree who does what. Don't assume the 'other side' will take responsibility:

- make sure, before temporary workers start, that they are covered by risk assessments, and they know what measures have been taken to protect them;
- make sure they understand the information and instructions they need to work safely, and have had any necessary training;
- consider the language needs of temporary workers who do not speak English well or at all (see the advice on migrant workers later in this chapter);
- check, before they start, that they have any occupational qualifications or skills needed for the job;
- agree on arrangements for providing/maintaining any personal protective equipment, display screen equipment eyesight tests, and any necessary health surveillance;
- agree on arrangements for reporting relevant accidents to the enforcing authority (usually HSE or the local authority).

Under the Conduct of Employment Agencies and Employment Businesses Regulations 2003, agencies and businesses that use workers supplied by them must exchange the information they both need to ensure the safety of workers.

New to the job and young workers

Workers are at particular risk of injury in the first six months of a job, when they are more likely to be unaware of existing or potential risks. Young people will often be in this category.

Six steps to protect new workers

- Assess the new starter's capabilities.
- Plan and provide an induction.
- Make sure control measures to protect against risks are up to date, and being properly used and maintained.
- Provide relevant information, instruction and training.
- Provide adequate supervision.
- Check workers have understood the information, instruction and training they need to work safely.

Young workers

In health and safety law, a young person is anyone under 18 and a child is anyone who has not yet reached the official minimum school leaving age.

As an employer, in addition to your health and safety responsibilities to all your employees, you are responsible for ensuring a young person is not exposed to risk due to:

- lack of experience;
- being unaware of existing or potential risks;
- lack of maturity.

Before deciding whether you can employ a young person, you must consider some specific risks which are summarised below:

- the fitting-out and layout of the workplace and the particular site where they will work;
- the nature of any physical, biological and chemical agents they will be exposed to, for how long and to what extent;
- what types of work equipment will be used and how this will be handled;
- how the work and processes involved are organised;
- the level of health and safety training given to young people;
- risks from the particular agents, processes and work (see 'Find out more' below).

You should also be aware that students and trainees (including children) on work experience are regarded in health and safety law as employees. You must provide them with the same health, safety and welfare protection as other employees.

You must let the parents/guardians of any child know the key findings of the risk assessment and the control measures taken **before** the child starts work or work experience.

Find out more

Advice on protecting and inducting workers who are new to the job:
www.hse.gov.uk/vulnerable-workers/new-to-the-job.htm

Young people and work experience: A brief guide to health and safety for employers Leaflet INDG364(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg364.htm

More information on young people at work: www.hse.gov.uk/youngpeople

Frequently asked questions on young people at work: www.hse.gov.uk/youngpeople/faqs.htm

Migrant workers

If you employ migrant workers you should focus on four main areas to ensure their health and safety:

- **Training**: They may be completely unfamiliar with workplace risks, and may have never done the sort of work you're asking them to do – so make sure induction training is clear and simple.
- **Communication**: They may have problems communicating in English. Make sure you communicate clearly and effectively, for example by providing information in other languages, visual formats or simple English if necessary. Ensure workers understand what is required of them and they know how, and with whom, they can raise concerns.
- **Competence**: This may be unclear. Before they start at your workplace, check that they have the occupational qualifications or skills needed for the job, and assess skill levels gained from overseas qualifications (eg for forklift driving).
- **Attitude to health and safety**: They may have different expectations about health and safety responsibilities. So make sure they understand the importance of health and safety in your workplace, how it's managed, and that effective supervision can address any weaknesses in understanding instruction/ training. Workers from some cultures may assume accidents are their own fault, or just inevitable, which can affect commitment to reducing and controlling risks.

Find out more

HSE's migrant workers website: www.hse.gov.uk/migrantworkers

Information for workers in other languages: www.hse.gov.uk/languages

Lone workers

Establishing a healthy and safe working environment for lone workers can be different from organising the health and safety of other employees. They should not be put at more risk than other people working for you.

It will often be safe to work alone. However, the law requires employers to think about and deal with any health and safety risks **before** people are allowed to do so.

Things you could consider to help ensure lone workers are not put at risk include:

- assessing areas of risk including violence, manual handling, the medical suitability of the individual to work alone and whether the workplace itself presents a risk to them;
- requirements for training, levels of experience and how best to monitor and supervise them;
- making sure you know what is happening, including having systems in place to keep in touch with them.

Find out more

Working alone: Health and safety guidance on the risks of lone working Leaflet INDG73(rev3) HSE Books 2013 www.hse.gov.uk/pubns/indg73.htm

Advice on personal security when working alone is also available from the Suzy Lamplugh Trust: www.suzylamplugh.org

Homeworkers

Employers are required to protect the health, safety and welfare of homeworkers who are employees. If you employ homeworkers you should carry out a risk assessment of the work activities and take appropriate measures to reduce any associated risks.

A lot of work carried out at home is going to be low-risk, office-type work. Of the work equipment used at home, you are only responsible for the equipment you supply.

If your employees work at home, doing activities such as working with adhesives or soldering, you need to consider the particular risks involved in these activities. For example, you need to check that any equipment you supply to them is in good condition and that they have the correct personal protective equipment if needed.

Find out more

Homeworkers: Guidance for employers on health and safety Leaflet INDG226(rev1) HSE Books 2011 www.hse.gov.uk/pubns/indg226.pdf

Useful information for some activities at home involving more risk
Working with substances that could be hazardous to health (for work involving adhesives etc): www.hse.gov.uk/coshh

Working with lead (for soldering work): www.hse.gov.uk/lead

Transient workers

A transient worker, sometimes also known as a peripatetic worker, is defined as someone who works away from their normal work base either for part or all of their work. It can also refer to someone who has no fixed work base. Risk assessments for transient workers will need to take into account the type of work they are doing away from the normal work base – this would usually include:

- working alone;
- late, evening and nightshift work;
- working in confined spaces;
- violence towards staff;
- safe use and maintenance of tools and equipment;
- working with harmful substances, manual handling and other health requirements such as health surveillance;
- provision, use and maintenance of personal protective equipment;
- first aid and emergencies.

People with disabilities

If you employ people with disabilities you have a duty under the Equality Act 2010 to make reasonable adjustments to your workplace for them.

Your health and safety risk assessment should help you decide what adjustments may be required. These can include:

- changing the way things are done;
- making changes to overcome physical barriers;
- providing extra equipment.

Find out more

The Equality Act 2010 – Guidance for employers can be found on the Equality and Human Rights (EHRC) website: www.equalityhumanrights.com/advice-and-guidance/guidance-for-employers

HSE's disability pages: www.hse.gov.uk/disability

Contractors

If you have a contractor working for you, then both you and the contractor will have duties under health and safety law. This also applies when a contractor employs subcontractors.

When employing contractors you should:

- select a suitable subcontractor – ensure they have sufficient skills and knowledge to do the job safely and without risks to health and safety;
- assess the risks of the work – the level of risk will depend on the nature of the job. Whatever the risk, you will need to consider the health and safety implications;
- do a risk assessment – you and the contractor should be aware of its findings. You should already have a risk assessment for the work activities of your own business. The contractor must assess the risks for the contracted work and then both of you must get together to consider any risks from each other's work that could affect the health and safety of the workforce or anyone else;
- provide information, instruction and training to your employees. You should also provide any information to contractors on the risks from your activities and the controls you have in place. It may also be beneficial to consider, with the contractor, what instruction and training contractors will need;
- set up liaison arrangements for co-operation and co-ordination with all those responsible to ensure the health and safety of everyone in the workplace;
- decide what you need to do to manage and supervise the work of contractors and agree the nature of the controls before work starts.

Contracting construction work

If you are contracting construction work you have duties as a client under the Construction Design and Management Regulations 2007 (CDM).

A client is someone who is having construction or building work carried out, unless they are a domestic client, ie someone who lives, or will live, in the premises where the work is carried out.

Find out more

Using contractors: A brief guide Leaflet INDG368(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg368.htm

Managing health and safety in construction. Construction (Design and Management) Regulations 2007. Approved Code of Practice L144 HSE Books 2007 ISBN 978 0 7176 6223 4 www.hse.gov.uk/pubns/books/l144.htm

More advice on clients and the CDM Regulations: www.hse.gov.uk/construction/areyou/client.htm

The law

Management of Health and Safety at Work Regulations 1999

The Construction, Design and Management Regulations contain further details on managing subcontractors: www.hse.gov.uk/construction/cdm.htm

4 Your workplace

You must provide a safe and healthy environment for all your workers and take their welfare needs into account.

This applies to a very wide range of workplaces – not only factories, shops and offices but also schools, hospitals, hotels and places of entertainment etc.

What does the workplace cover?

The workplace means any premises or part of a premises which are made available to any person as a place of work. It does not cover domestic premises.

The term workplace also includes the common parts of shared buildings, private roads and paths on industrial estates and business parks.

You must consider, for example, lighting, ventilation, temperature, toilets and washing facilities.

You must also consider the needs of people with disabilities who may have specific needs, for example adapted toilet and washing facilities, wide doorways and gangways.

A safe place of work

You must:

- make sure your buildings are in good repair;
- maintain the workplace and any equipment so that it is safe and works efficiently;
- put right any dangerous defects immediately, or take steps to protect anyone at risk;
- take precautions to prevent people or materials falling from open edges, eg fencing or guard rails;
- fence or cover floor openings, eg vehicle examination pits, when not in use;
- have enough space for safe movement and access;
- provide safety glass, if necessary;
- make sure floors, corridors and stairs etc are free of obstructions, eg trailing cables;
- provide good drainage in wet processes;
- make sure any windows capable of being opened can be opened, closed or adjusted safely;
- make sure all windows and skylights are designed and constructed so that they may be cleaned safely (you may also need to fit anchor points if window cleaners have to use harnesses);
- minimise risks caused by snow and ice on outdoor routes, eg use salt or sand and sweep them.

Lighting

You must provide:

- good light – use natural light where possible but try to avoid glare;
- a good level of local lighting at workstations where necessary;
- suitable forms of emergency lighting;
- well-lit stairs and corridors;
- well-lit outside areas – for pedestrians and to help with work activities such as loading/unloading at night.

Moving around the premises

You must have:

- safe passage for pedestrians and vehicles – separate routes may be necessary;
- level, even floors and surfaces without holes or broken boards;
- hand-rails on stairs and ramps where necessary;
- safely constructed doors and gates;
- floors and surfaces which are not slippery.

Cleanliness

You must:

- provide clean floors and stairs, with effective drainage where necessary;
- provide clean premises, furniture and fittings;
- provide containers for waste materials;
- remove dirt, refuse and trade waste regularly;
- clear up spillages promptly;
- keep internal walls or ceilings clean.

Hygiene and welfare

You must provide:

- clean toilets and hand basins, with running hot and cold or warm water, soap and towels or another suitable means of drying;
- drinking water;
- somewhere to rest and eat meals, including facilities for eating food which would otherwise become contaminated;
- showers for dirty work or emergencies;
- drying facilities for wet work clothes, if practical and necessary;
- accommodation or hanging space for personal clothing not worn at work (and somewhere to change if special clothing is worn for work);
- rest facilities for pregnant women and nursing mothers.

In some circumstances your risk assessment will highlight the need to provide additional specific controls, for example:

- skin cleansers, with nail brushes;
- barrier cream and skin-conditioning cream where necessary;
- certain facilities for workers working away from base, eg chemical toilets in some circumstances.

Comfortable conditions

You must provide:

- a reasonable working temperature within workplaces inside buildings (usually at least 16 °C, or 13 °C for strenuous work, unless it is impractical to do so, eg in the food industry);
- local heating or cooling where a comfortable temperature cannot be maintained throughout each workroom (eg hot and cold processes);
- good ventilation – a sufficient supply of fresh, clean air drawn from outside or a ventilation system;
- heating systems which do not give off dangerous or offensive levels of fume into the workplace;
- enough workspace, including suitable workstations and seating.

Working outdoors

For work outdoors you should consider things such as the weather, temperature (both hot and cold) and sun exposure.

Find out more

Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice L24 (Second edition) HSE Books 2013 ISBN 978 0 7176 6583 9 www.hse.gov.uk/pubns/books/l24.htm

HSE's managing for health and safety website: www.hse.gov.uk/managing

The law

Under the Workplace (Health, Safety and Welfare) Regulations 1992, you have a legal duty to ensure, so far as reasonably practicable, the health, safety and welfare at work of your employees. See page 12 for a definition of 'so far as reasonably practicable'.

The Management of Health and Safety at Work Regulations 1999 require you to assess and control risks to protect your employees.

Designing workstations

Good workstation design can help reduce the incidence of injury or ill health in the workplace.

Employers should ensure that workstations are designed to help employees carry out their tasks with ease of access to controls on equipment. For example, if seating is required it should be suitable for the task and have:

- support for the small of the back;
- fully adjustable height settings;
- footrests available if necessary.

Display screen equipment

You must assess the risks to employees (users) and self-employed contractors (operators) who work at employer workstations and regularly use display screen equipment like computers and laptops as a significant part of their normal work (daily for continuous periods of an hour or more).

Some workers may experience posture problems and pain, discomfort or injuries, eg to their hands/arms, from overuse or improper use or from poorly designed workstations or work environments. Headaches or sore eyes can also occur, for example if the lighting is poor.

What do I have to do?

- Identify what display screen equipment you have and which users and operators are covered.
- Assess all workstations and ensure they meet the minimum requirements for them.
- Plan the work so there are breaks or changes of activity.
- On request, provide eye and eyesight tests and special corrective spectacles if they are necessary.
- Provide training and information.
- If they use 'hot-desking', workers will still need to check their workstation and adjust it to their requirements. It may be helpful to provide a checklist of what they need to consider, and this could be attached to the desk or workstation.

Find out more

More advice on musculoskeletal disorders (MSDs) and display screen equipment: www.hse.gov.uk/msd/dse

Working with display screen equipment (DSE): A brief guide Leaflet INDG36(rev4) HSE Books 2013 www.hse.gov.uk/pubns/indg36.htm

The law

The Health and Safety (Display Screen Equipment) Regulations 1992 (as amended) apply where employees use computers and other display screens as a significant part of their normal day-to-day work.

5 Electrical safety

Electricity can kill or severely injure people and cause damage to property. However, you can take simple precautions when working with or near electricity and electrical equipment to significantly reduce the risk of injury to you, your workers and others around you. This chapter provides a summary of those precautions.

CASE STUDY

A 19-year-old man was electrocuted and killed when he touched a refrigerated display cabinet in a café. Investigation showed that the 13A plug had been incorrectly refitted to the cabinet's main lead.

This meant the metalwork of the cabinet, which should have been safe to touch, was dangerously live at mains voltage. The man's sister received two shocks from the cabinet before realising what had happened to her brother.

How to avoid similar accidents

Even wiring a plug incorrectly can have serious consequences. You must ensure that your electrical installation and equipment is safe. Don't cut corners – electrical installations must be installed by someone who has the necessary training, skills and experience to carry out the work safely.

What are the hazards?

The main hazards of working with electricity are:

- electric shock and burns from contact with live parts;
- injury from exposure to arcing, fire from faulty electrical equipment or installations;
- explosion caused by unsuitable electrical apparatus or static electricity igniting flammable vapours or dusts, for example in a spray paint booth.

Electric shocks can also lead to other types of injury, for example by causing a fall from ladders or scaffolds etc.

What do I have to do?

You must ensure an assessment has been made of any electrical hazards, which covers:

- who could be harmed by them;
- how the level of risk has been established;
- the precautions taken to control that risk.

The risk assessment should take into consideration the type of electrical equipment used, the way in which it is used and the environment that it is used in.

You must make sure that the electrical installation and the electrical equipment is:

- suitable for its intended use and the conditions in which it is operated;
- only used for its intended purpose.

In wet surroundings, unsuitable equipment can become live and make its surroundings live too. Fuses, circuit-breakers and other devices must be correctly rated for the circuit they protect. Isolators and fuse-box cases should be kept closed and, if possible, locked.

Cables, plugs, sockets and fittings must be robust enough and adequately protected for the working environment. Ensure that machinery has an accessible switch or isolator to cut off the power quickly in an emergency.

Maintenance

So far as reasonably practicable (see page 12), you must make sure that electrical equipment and installations are maintained to prevent danger.

Users of electrical equipment, including portable appliances, should carry out visual checks. Remove the equipment from use immediately and check it, repair it or replace it if:

- the plug or connector is damaged;
- the cable has been repaired with tape, is not secure, or internal wires are visible etc;
- burn marks or stains are present (suggesting overheating).

Repairs should only be carried out by a competent person (someone who has the necessary skills, knowledge and experience to carry out the work safely).

Have more frequent checks for items more likely to become damaged (eg portable electrical tools and equipment that is regularly moved, or used frequently or in arduous environments). Less frequent checks are needed for equipment less likely to become damaged (eg desktop computers etc).

Visual checks are not usually necessary for small, battery-powered items, or for equipment that works from a mains-powered adaptor (laptops or cordless phones etc). However, the mains-powered adaptor for such equipment should be visually checked.

Consider whether electrical equipment, including portable appliances, should be more formally inspected or tested by a competent person. Also think about the intervals at which this should be done.

An HSE leaflet *Maintaining portable electric equipment in low-risk environments* can help you decide whether and when to test portable appliances (see ‘Find out more’ on page 44).

Make arrangements for inspecting and testing fixed wiring installations, ie the circuits from the meter and consumer unit supplying light switches, sockets, wired-in equipment (eg cookers, hairdryers) etc, to be carried out regularly so there is little chance of deterioration leading to danger. This work should normally be carried out by a competent person, usually an electrician.

When is someone competent to do electrical work?

In this context, a competent person is someone who has the suitable training, skill and knowledge for the task to be undertaken to prevent injury to themselves and others.

A successfully completed electrical apprenticeship, with some post-apprenticeship experience, is one way of demonstrating technical competence for general electrical work.

More specialised work, such as maintenance of high-voltage switchgear or control system modification, is almost certainly likely to require additional training and experience.

Key points to remember

- Ensure that workers know how to use the electrical equipment safely.
- Make sure enough sockets are available. Check that socket outlets are not overloaded by using unfused adaptors as this can cause fires.
- Ensure there are no trailing cables that can cause people to trip or fall.
- Switch off and unplug appliances before cleaning or adjusting them.
- Ensure everyone looks for electrical wires, cables or equipment near where they are going to work and check for signs warning of dangers from electricity (see www.hse.gov.uk/electricity), or any other hazard. Checks should be made around the job, and remember that electrical cables may be within walls, floors and ceilings etc (especially when drilling into these locations).
- Make sure anyone working with electricity has sufficient skills, knowledge and experience to do so. Incorrectly wiring a plug can be dangerous and lead to fatal accidents or fires.
- Stop using equipment immediately if it appears to be faulty – have it checked by a competent person.
- Ensure any electrical equipment brought to work by employees, or any hired or borrowed, is suitable for use before using it and remains suitable by being maintained as necessary.
- Consider using a residual current device (RCD) between the electrical supply and the equipment, especially when working outdoors, or within a wet or confined place – see HSE's electrical safety at work site (www.hse.gov.uk/electricity).

Overhead electric lines

- Be aware of the dangers of working near or underneath overhead power lines. Electricity can flash over from them, even though machinery or equipment may not touch them.
- Don't work under them when equipment (eg ladders, a crane jib, a tipper-lorry body or a scaffold pole) could come within a minimum of six metres of a power line without getting advice. Speak to the line owner, eg the electricity company, railway company or tram operator, before any work begins.

Underground cables

- Always assume cables will be present when digging in the street, pavement and/or near buildings.
- Consult local electricity companies and service plans to identify where cables are located.

Find out more

HSE's electrical safety at work site: www.hse.gov.uk/electricity

More advice on simple precautions: www.hse.gov.uk/electricity/precautions.htm

Electrical safety and you: A brief guide Leaflet INDG231(rev1) HSE Books 2012 www.hse.gov.uk/pubns/indg231.htm

Maintaining portable electric equipment in low-risk environments Leaflet INDG236(rev3) HSE Books 2013 www.hse.gov.uk/pubns/indg236.htm

Electricity at work: Safe working practices HSG85 (Third edition) HSE Books 2013 ISBN 978 0 7176 6581 5 www.hse.gov.uk/pubns/books/hsg85.htm

The law

Electricity at Work Regulations 1989

6 Fire safety

Most fires are preventable. Those responsible for workplaces and other buildings to which the public have access can avoid them by taking responsibility for and adopting the right behaviours and procedures.

This chapter covers general advice on fire safety and also provides guidance on substances that cause fire and explosion.

CASE STUDY

A shopkeeper regularly threw packing waste by the back door of his shop as he quickly stocked the shelves after a delivery. His workers sometimes opened the back door to have a cigarette break outside.

One week he'd left the pile of rubbish for several days and a discarded cigarette butt caused it to catch fire. By the time the fire was spotted and put out, it had caused substantial damage to his back door and his shelving units. There was a significant cost in damaged stock and repairs.

How the fire could have been prevented

This fire could have been easily prevented if the shopkeeper had completed his risk assessment and taken simple steps to control the risks.

General fire safety hazards

Fires need three things to start – a source of ignition (heat), a source of fuel (something that burns) and oxygen:

- sources of ignition include heaters, lighting, naked flames, electrical equipment, smokers' materials (cigarettes, matches etc), and anything else that can get very hot or cause sparks;
- sources of fuel include wood, paper, plastic, rubber or foam, loose packaging materials, waste rubbish and furniture;
- sources of oxygen include the air around us.

What do I have to do?

Employers (and/or building owners or occupiers) must carry out a fire safety risk assessment and keep it up to date. This shares the same approach as health and safety risk assessments and can be carried out either as part of an overall risk assessment or as a separate exercise.

Based on the findings of the assessment, employers need to ensure that adequate and appropriate fire safety measures are in place to minimise the risk of injury or loss of life in the event of a fire.

To help prevent fire in the workplace, your risk assessment should identify what could cause a fire to start, ie sources of ignition (heat or sparks) and substances that burn, and the people who may be at risk.

Once you have identified the risks, you can take appropriate action to control them. Consider whether you can avoid them altogether or, if this is not possible, how you can reduce the risks and manage them. Also consider how you will protect people if there is a fire.

- Carry out a fire safety risk assessment.
- Keep sources of ignition and flammable substances apart.
- Avoid accidental fires, eg make sure heaters cannot be knocked over.
- Ensure good housekeeping at all times, eg avoid build-up of rubbish that could burn.
- Consider how to detect fires and how to warn people quickly if they start, eg installing smoke alarms and fire alarms or bells.
- Have the correct fire-fighting equipment for putting a fire out quickly.
- Keep fire exits and escape routes clearly marked and unobstructed at all times.
- Ensure your workers receive appropriate training on procedures they need to follow, including fire drills.
- Review and update your risk assessment regularly.

Find out more

The Department for Communities and Local Government (DCLG) has advice on the legislation, including premises-specific guidance documents designed to help you meet your responsibilities under the Regulatory Reform (Fire Safety) Order 2005: www.gov.uk/workplace-fire-safety-your-responsibilities

The Welsh Government website also provides information: http://wales.gov.uk

The Scottish Government provides similar information to help you meet your responsibilities under the Fire (Scotland) Act 2005: www.scotland.gov.uk/topics

HSE's website has guidance on fire safety in the construction industry: www.hse.gov.uk/construction/safetytopics/fire.htm

The law

The Regulatory Reform (Fire Safety) Order 2005 covers general fire safety in England and Wales.

In Scotland, requirements on general fire safety are covered in Part 3 of the Fire (Scotland) Act 2005, supported by the Fire Safety (Scotland) Regulations 2006.

In the majority of premises, local fire and rescue authorities are responsible for enforcing this fire safety legislation. HSE has enforcement responsibility on construction sites, for nuclear premises, and on ships under construction or undergoing repair.

Dangerous substances that cause fire and explosion

Work which involves the storage, use or creation of chemicals, vapours, dusts etc that can readily burn or explode is hazardous. Each year people are injured at work by flammable substances accidentally catching fire or exploding.

This chapter does not cover explosives – HSE's website has more detailed information on explosives (www.hse.gov.uk/explosives) and similar substances.

Chapter 7 has information on gas safety and you can find more advice at www.hse.gov.uk/gas.

What are the hazards?

Many substances found in the workplace can cause fires or explosions. These range from the obvious, such as flammable chemicals, petrol, cellulose paint thinners and welding gases, to the less obvious – engine oil, grease, packaging materials, dusts from wood, flour and sugar.

It is important to be aware of the risks and to control or get rid of them to prevent accidents.

CASE STUDY

A worker was using highly flammable cellulose thinners in an open-topped container to wash paint-spraying equipment. He knocked the container over, splashing the thinners over his trouser leg and shoe.

He went into a nearby room to clean himself up, but the room happened to contain drying ovens. These ignited the flammable vapours coming from the thinners, which set his trouser leg and shoe on fire, causing serious burns to his leg and foot.

How this incident could have been avoided

It could have been easily prevented if the employer had carried out a risk assessment to identify that cellulose thinners should not have been used in this way, and instructed the worker accordingly.

What do I have to do?

To help prevent accidental fires or explosions, you first need to identify:

- what substances, materials, processes etc have the potential to cause such an event, ie substances that burn or can explode and what might set them alight;
- the people who may be at risk/harmed.

Once you have identified the risks, you should consider what measures are needed to reduce or remove the risk of people being harmed. This will include measures to prevent these incidents happening in the first place, as well as precautions that will protect people from harm if there is a fire or explosion.

Key points to remember

- Think about the risks of fire and explosions from the substances you use or create in your business and consider how you might remove or reduce the risks.
- Use supplier safety data sheets as a source of information about which substances might be flammable.
- Consider reducing the amount of flammable/explosive substances you store on site.
- Keep sources of ignition (eg naked flames, sparks) and substances that burn (eg vapour, dusts) apart.
- Get rid of flammable/explosive substances safely.
- Review your risk assessment regularly.
- Maintain good housekeeping, eg avoid build-up of rubbish, dust or grease that could start a fire or make one worse.

You also need to consider the presence of dangerous substances that can result in fires or explosions as part of your fire safety risk assessment. This is required under the Regulatory Reform (Fire Safety) Order 2005 (in England and Wales) and under Part 3 of the Fire (Scotland) Act 2005.

The Fire and Rescue Authorities deal with general fire safety matters in workplaces apart from on construction sites including shipbuilding where these are dealt with by HSE or its agents. Enforcement responsibility for fire safety where dangerous substances are kept and used generally lies with HSE (or local authorities if they inspect the premises).

Find out more

Guidance on flammable/explosive substances:www.hse.gov.uk/fireandexplosion

Controlling fire and explosion risks in the workplace: A brief guide to the Dangerous Substances and Explosive Atmospheres Regulations
Leaflet INDG370(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg370.htm

The law

The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) require employers to assess the risk of fires and explosions arising from work activities involving dangerous substances, and to eliminate or reduce these risks.

7 Gas safety

If gas appliances, such as ovens, cookers and boilers, are not properly installed and maintained, there is a danger of fire, explosion, gas leaks and carbon monoxide (CO) poisoning.

Employers need to comply with the relevant regulations to help ensure worker and public safety. You can do this by following our advice on maintaining and servicing gas appliances, and by using a Gas Safe registered engineer or a competent person.

CASE STUDY

The importance of being Gas Safe registered

A plumber who was not Gas Safe registered, and had previously been served with a prohibition notice by HSE, persisted in carrying out illegal gas work in a shop. He was caught on CCTV doing so, was prosecuted for two breaches of health and safety law and was sentenced to two concurrent terms of six months in prison.

How accidents like this can be avoided

Working with gas appliances is difficult, specialised and potentially very dangerous. Only competent engineers should attempt it (see 'Who is competent to work on gas fittings?' below). If unregistered workers try to bypass the law, they are not only putting themselves at risk of prosecution and a large fine or even imprisonment, they are also putting their customers' lives at risk.

Who is competent to work on gas fittings?

Domestic properties, schools etc

In domestic properties and workplaces such as shops, restaurants, schools and hospitals, this must be carried out by someone on the Gas Safe Register who is qualified to work on gas appliances.

It is illegal for an unregistered person to carry out work on any domestic gas appliance. You can check this by contacting the Gas Safe Register online (www.gassaferegister.co.uk) or by calling them on 0800 408 5500.

All those who are registered carry a Gas Safe ID card, which shows the type of work they are qualified to do and whether their qualifications are up to date.

Factories, mines etc

In factories, mines, quarries, agricultural premises, construction site huts and sewage works, work on gas fittings must be carried out by a competent person. It is your responsibility to check that they are competent. If the engineer is on the Gas Safe Register, with the qualifications to do the work required, then they will be a competent person.

Work in any parts of these premises used as domestic, residential or sleeping accommodation must be carried out by someone on the Gas Safe Register.

What do I have to do?

The basics

- Use a competent engineer to install, maintain or repair your appliances.
- Ensure that your gas pipework, appliances and flues are regularly maintained.
- Check that all rooms with gas appliances have adequate ventilation – don't block air inlets to prevent draughts, and don't obstruct flues and chimneys.

Gas

- If you suspect a leak, turn off the supply and immediately call the National Gas Emergency Service on 0800 111 999 for natural gas. For liquefied petroleum gas (LPG), call your LPG supplier.
- If in doubt, evacuate the building and inform the police as well as the National Gas Emergency Service or your gas supplier.
- Don't turn a gas supply back on until a leak has been dealt with by a competent person.

Appliances and pipework

- Use a competent engineer to install, maintain or repair your appliances.
- Ensure that your gas pipework, appliances and flues are regularly maintained.
- Don't use any appliance you know or suspect is unsafe.
- Check that the room has adequate ventilation – don't block air inlets to prevent draughts and don't obstruct flues and chimneys.

Industrial and commercial plant

Explosions can be caused by the ignition of unburnt gas.

- Consider the need for explosion relief and/or flame-failure protection as necessary.
- Make sure that the gas supply is interlocked with the ventilation of the appliance.
- The equipment should be designed, operated and maintained to make sure dangerous levels of carbon monoxide (CO) are not produced. It should not be used in poorly ventilated spaces.
- There should be enough ventilation to remove combustion products.
- Make sure the operators are fully trained – use a safe procedure for purging, lighting up and shutting down the plant.

CASE STUDY

Maintaining gas systems

Twenty-five pupils and two members of teaching staff were evacuated from a classroom in a primary school when they were overcome by dangerous levels of carbon monoxide.

The investigation found that carbon monoxide was being produced by an inadequately maintained boiler and was leaking into the classroom above. The employer was fined a total of £10 000 and ordered to pay costs of £6830.

The employer did have a maintenance system but poor practices had crept in, which they did not identify until after the incident. The consequences could have been much more serious.

How such incidents can be avoided

It's important that employers make sure their gas appliances are maintained in a safe condition by a competent person and in line with manufacturers' instructions and appropriate standards.

Find out more

HSE's gas webpages: www.hse.gov.uk/gas

HSE's fire and explosion webpages: www.hse.gov.uk/fireandexplosion

Gas appliances: Get them checked – keep them safe Leaflet INDG238(rev3) HSE Books 2009 www.hse.gov.uk/pubns/indg238.pdf

Safety in the installation and use of gas systems and appliances. Gas Safety (Installation and Use) Regulations 1998. Approved Code of Practice and guidance L56 (Fourth edition) HSE Books 2013 ISBN 978 0 7176 6617 1 www.hse.gov.uk/pubns/books/l56.htm

The law

Health and Safety at Work etc Act 1974
The general duties of the Act cover work on gas fittings in factories, mines, quarries, agricultural premises, construction site huts, sewage works and gas-fitting testing premises.

In these premises, work on gas fittings must be carried out by a competent person. If any part of these premises are used as domestic, residential or sleeping accommodation, work on gas fittings must be carried out by someone on the Gas Safe Register.

Gas Safety (Installation and Use) Regulations 1998
These Regulations cover work on gas fittings, both natural and LPG in other premises, eg domestic properties, shops, restaurants, schools and hospitals. In these premises the work on gas fittings must be carried out by someone on the Gas Safe Register.

8 Harmful substances

Many materials or substances used or created at work could harm your health. These could be dusts, gases or fumes that you breathe in, or liquids, gels or powders that come into contact with your eyes or skin. There could also be harmful micro-organisms that can cause infection, an allergic reaction or are toxic.

Harmful substances can be present in anything from paints and cleaners to flour dust, solder fume, blood or waste. Ill health caused by these substances used at work is preventable. Many substances can harm health but, used properly, they almost never do.

CASE STUDY

A hairdresser was diagnosed as suffering from irritant contact dermatitis caused by wet work. His hands were painfully itchy, and they would also scab over and bleed.

What the employer has done

The employer has introduced a hand-care regime. This includes wearing suitable gloves when washing clients' hair and using chemicals.

Employees understand about good hand care, including washing chemicals from their skin promptly, drying their hands thoroughly and moisturising them throughout the day. The staff have regular skin checks to make sure any problems are spotted and treated early on.

These measures have helped to control the dermatitis and allowed the hairdresser to continue working in the job he loves.

What are the hazards?

Some substances can cause asthma or other diseases, including cancer. Many can damage the skin, and some can cause serious long-term damage to the lungs.

The effect can be immediate, such as dizziness or stinging eyes, or can take many years to develop, such as lung disease. Many of the long-term or chronic effects cannot be cured once they develop.

What do I have to do?

The law requires you to adequately control exposure to materials in the workplace that cause ill health. This is COSHH (the Control of Substances Hazardous to Health Regulations) and means:

- identifying which harmful substances may be present in the workplace;
- deciding how workers might be exposed to them and be harmed;
- looking at what measures you have in place to prevent this harm and deciding whether you are doing enough;
- providing information, instruction and training;
- in appropriate cases, providing health surveillance.

This chapter explains how to carry out a risk assessment and how to decide on control measures.

How to carry out a COSHH risk assessment

A COSHH assessment concentrates on the hazards and risks from hazardous substances in your workplace.

Remember that health hazards are not limited to substances labelled as 'hazardous'. Some harmful substances can be produced by the process you use, eg wood dust from sanding, or silica dust from tile cutting.

Identify the hazards

- Identify which substances are harmful by reading the product labels and safety data sheets (SDS).
- If you are in doubt, contact your supplier.
- Remember to think about harmful substances produced by your processes, such as cutting or grinding, or to which workers may be otherwise exposed.

Decide who might be harmed and how

- How might workers be exposed? Think about the route into the body (whether the substance can be breathed in, get onto or through the skin or can even be swallowed) and the effects of exposure by each of these routes.
- Think of how often people work with the substance and for how long.
- Think about anyone else who could be exposed.
- Don't forget maintenance workers, contractors and other visitors or members of the public who could be exposed.
- Also think about people who could be exposed accidentally, eg while cleaning, or what happens if controls fail.

Evaluate the risks and decide on precautions

Once you have carried out a risk assessment and identified which harmful substances are present, and how workers can be harmed, you need to think about preventing exposure.

- Do you really need to use a particular substance, or is a safer alternative available?
- Can you change the process to eliminate its use or avoid producing it? If this is not possible, you **must** put in place adequate control measures to reduce exposure.

The measures you adopt could include the following:

Changing the process to reduce risks

- Consider whether you can change the process you use to reduce the risk of exposure.
- For example, you could reduce the temperature of a process to reduce the amount of vapour getting into the air or use pellets instead of powders as they are less dusty.

Containment

- Enclose the process or activity as much as possible to minimise the escape or release of the harmful substance.
- Use closed transfer and handling systems, and minimise handling of materials.
- Extract emissions of the substance near the source.

Systems of work

- Restrict access to those people who need to be there.
- Plan the storage of materials, and use appropriate containers. Check that storage containers are correctly labelled and that incompatible materials, for example acids and caustics, are separated.
- Plan the storage and disposal of waste.

Cleaning

- Exposure to hazardous substances can occur during cleaning, so plan and organise the workplace so that it can be easily and effectively cleaned.
- Smooth work surfaces will allow easy cleaning.
- Have the right equipment and procedures to clear up spillages quickly and safely.
- Clean regularly using a 'dust-free' method – vacuum, don't sweep.

If you have five or more employees, you must record your assessment but, even if you have fewer than five, it makes sense to write down what steps you have taken to identify the risks. And the really important part is making a list of the actions you have taken to control the risks to workers' health.

The risk assessment should be regularly reviewed to ensure it is kept up to date to take into account any changes in your workplace.

Maintain controls

All elements of your control measures must be checked and reviewed regularly to make sure they continue to be effective. These checks should be adequate to determine whether improvements are required and will include:

- maintaining plant and equipment – all ventilation equipment must be examined and tested regularly by a competent person (someone who has the necessary skills, knowledge and experience to carry out work safely). This may involve measuring the airflow or the pressures in the system, or air sampling in the workroom. In general, all local exhaust ventilation (LEV) must be examined and tested every 14 months;
- making sure systems of work are being followed and revising them if they are not working;
- making sure personal protective equipment is suitable, used, properly fitted and (where appropriate) maintained.

You may need specialist advice, particularly for potentially serious risks or processes that are difficult to control, from someone who is competent in that area of work, eg an occupational hygienist. The British Occupational Hygiene Society (www.bohs.org) has more information.

Simple checks to control dust and mist

Fine dust and mist is invisible in normal lighting. You can make it visible with a 'dust lamp'. Used correctly, a dust lamp is a cheap, powerful tool to help you identify where dust problems such as leaks are and whether an extraction system is working effectively.

The dust lamp should be set up to observe forward-scattering of light. Point the lamp to shine through the area where you think the dust cloud is. If possible, lower the background lighting by turning off workshop lights. Lock the lamp into the 'on' position and walk around the process, looking back up the beam at a slight angle, through the airborne dust:

- Note the settlement and spread of contamination on surfaces.
- Check the airflow indicator on the extraction system.
- Check for damage and leakage from the process.
- Speak to the operator and encourage reporting of any defects.

CASE STUDY

A cook developed breathing problems after working with flour dust. She worked in a small, poorly ventilated room, with nothing to control her exposure to the flour dust. She became severely asthmatic and, after retiring early on health grounds, was awarded compensation.

What the employer has done

The employer has since installed an extraction system to remove the flour dust and introduced new ways of working such as using a scoop to transfer flour, using sprinklers to spread flour and keeping the work area clean. The risk of other workers developing occupational asthma has been reduced.

Ventilation

General ventilation

- All workplaces need an adequate supply of fresh air.
- This can be natural ventilation, from doors, windows etc or controlled, where air is supplied and/or removed by a powered fan.
- If you work in an office or shop, natural ventilation will normally be enough to control dusts and vapours from cleaning materials etc.
- Sometimes planned, powered general ventilation is an integral part of a set of control measures, eg the welding of large fabrications in a workshop.

Local exhaust ventilation

- Local exhaust ventilation (LEV), or extraction, is an engineering control solution to reduce exposures to dust, mist, fume, vapour or gas in a workplace.
- Use a properly designed LEV system that will draw dust, fume, gases or vapour through a hood or booth away from the worker.
- An extraction system should be easy for workers to use and enclose the process as much as possible.
- It should effectively capture and contain the harmful substance before it is released into the working environment.
- Air should be filtered and discharged to a safe place.
- The system should be robust enough to withstand the process and work environment. It is important to maintain it and undertake tests to ensure it is working effectively.

Things to avoid when applying LEV

Common errors in applying extraction are:

- the effectiveness of small hoods is usually overestimated – be realistic;
- the hood is usually too far away from the process;
- the hood doesn't surround the process enough;
- inadequate airflow;
- failure to check that the extraction continues to work;
- workers are not consulted, so they don't understand the importance of extraction and do not use it properly.

CASE STUDY

A worker in an electroplating factory developed occupational asthma. It was established that chemicals which can cause asthma were being used in the factory and contaminated air was reaching the workers. The worker had to take early retirement on medical grounds and was awarded compensation.

What the employer has done

The employer has since installed an extraction system to remove the chemical fumes and the risk of other workers developing occupational asthma has been reduced.

Simple steps to prevent skin damage

Use the Avoid, Protect, Check approach:

- **Avoid** direct contact between unprotected hands and substances, products and wet work where this is sensible and practical.
- **Protect** the skin. Avoiding contact will not always be possible so remind workers to wash any contamination from their skin promptly. Provide soft cotton or disposable paper towels for drying the skin. Tell workers about the importance of thorough drying after washing. Protect the skin by moisturising as often as possible and particularly at the end of the day – this replaces the natural oils that help keep the skin's protective barrier working properly.
- **Check** hands regularly for the first signs of itchy, dry or red skin – when skin problems are spotted early they can be treated, which can stop them from getting too serious.

CASE STUDY

Workers at a company using photographic chemicals developed a skin disease called 'allergic contact dermatitis'. Symptoms of this condition include skin blistering, cracking, splitting, swelling and weeping.

The company was prosecuted and fined for six separate breaches of the Control of Substances Hazardous to Health Regulations (COSHH).

What should have happened

The employer should have considered using a different photographic chemical or designed and operated a process to avoid workers coming into contact with the harmful substances.

The risk of other workers developing allergic contact dermatitis would have been removed or reduced.

Workplace exposure limits

As well as controlling exposure to substances hazardous to health, you need to be aware that legal limits have been set on the amounts of many of the substances that can be present in workplace air. These are known as workplace exposure limits (WELs). They are listed in HSE's booklet *EH40 Workplace exposure limits* – see 'Find out more' on page 59.

If the substance is known to cause cancer or asthma (check the label/safety data sheet), you must control exposure to as far below the level as 'reasonably practicable' (see page 12).

Are your controls adequate?

There are various ways of deciding this. Probably the simplest way is to use the chart in Figure 1 below, taken from HSE's guide to the COSHH Regulations (see 'Find out more' on page 59).

For many harmful substances, there is guidance available on good control practice from trade and industry associations and suppliers, as well as HSE. You may also find the simple step-by-step advice in HSE's *COSHH essentials* website useful (www.coshh-essentials.org.uk).

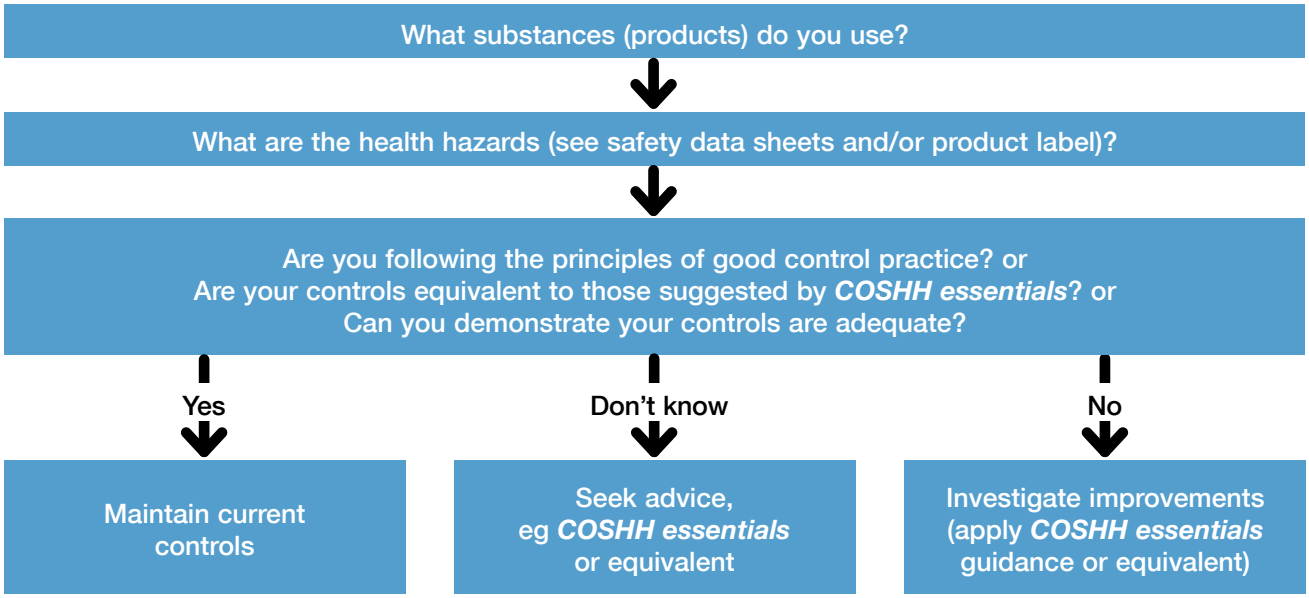


Figure 1 An assessment chart for checking your controls are adequate

Personal protective equipment

Where adequate control of exposure cannot be achieved by other means, provide personal protective clothing and equipment, in combination with other control measures.

Don't automatically opt for personal protective equipment (PPE) as a control measure. It is not as reliable or effective as other measures.

Information and training

- Employees need to understand the outcome of your risk assessment and what this means for them. Tell them what the hazards and risks are, and any workplace exposure limits, and what they need to do to protect themselves.
- Make employees aware of the results of any monitoring of exposure and the collective results of health surveillance.
- Employers should use the information contained in safety data sheets and other sources of information to train and inform employees.
- Employees should know what to do if there is an accident (eg spillage) or emergency.
- Involve your employees in developing control measures to make sure that they are suitable for the way they carry out the work. Encourage them to suggest improvements, and to report anything that they think might be going wrong.
- Employees should be trained in the correct use of controls and personal protective equipment.

- When a contractor comes into your workplace, they also need to know what the risks are and how you are controlling them. In addition, you need to know if they are bringing hazardous substances onto your premises, and how they will prevent harm to your employees.
- It is helpful to keep basic training records.

Record and review

- If you employ five or more people, you should keep a record of what you have found out about the risks to health and the appropriate control measures.
- Write down where exposures occur, what the control measures are, and how you will maintain control.
- Keep an eye on things. Changes in equipment, materials or methods may require you to review your earlier decisions.

Find out more

HSE's COSHH website: www.hse.gov.uk/coshh

Working with substances hazardous to health: A brief guide to COSHH Leaflet INDG136(rev5) HSE Books 2012 www.hse.gov.uk/pubns/indg136.htm

EH40/2005 Workplace exposure limits HSE Books 2011 ISBN 978 0 7176 6446 7 www.hse.gov.uk/pubns/books/eh40.htm

Control of substances hazardous to health. The Control of Substances Hazardous to Health Regulations 2002 (as amended). Approved Code of Practice and guidance L5 (Sixth edition) HSE Books 2013 ISBN 978 0 7176 6582 2 www.hse.gov.uk/pubns/books/l5.htm

The law

If your business uses or creates substances, or carries out processes which might cause harm to health, the law requires you to control the risks to employees. The Control of Substances Hazardous to Health Regulations (COSHH) apply to most harmful substances but lead and asbestos are covered by separate regulations, as specified later in this chapter.

If you manufacture or import chemicals you should look at the European REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Regulation No 1907/2006: www.hse.gov.uk/reach
REACH: European Chemicals Agency (ECHA): http://echa.europa.eu/reach_en.asp

If you manufacture, import or formulate chemicals for supply, you should look at the European Classification, Labelling and Packaging of substances and mixtures (CLP) Regulation No 1272/2008, and the national Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP).

The CHIP Regulations will be replaced by the CLP Regulation from 1 June 2015:
www.hse.gov.uk/chemical-classification
www.hse.gov.uk/ghs/eureg.htm
http://echa.europa.eu/clp_en.asp

If you transport chemicals, you should look at the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004 (as amended 2005) (the Carriage Regulations 2004): www.dft.gov.uk/topics/freight/dangerous-goods

Micro-organisms

Micro-organisms are bacteria and viruses (more commonly known as germs), fungi or parasites. In most workplaces, the risk of catching an infection, such as a cold or flu, is no higher than in any other public place and you do not have to take any action.

However, some people who work with animals, or provide care for people, or who clean up or handle waste materials, can be exposed to harmful micro-organisms.

These can cause an infection if they are breathed in, swallowed, or if they penetrate the skin, and can include some very serious illnesses. Some may in turn cause an allergic reaction or are toxic (they produce a poison).

What do I have to do?

Your risk assessment must consider how workers may be exposed to micro-organisms (or to blood or bodily fluids, animals or animal products or waste materials which are known to carry micro-organisms). In general, unless it has been treated, you should assume that human/animal waste materials, including sewage, may contain harmful micro-organisms that could cause an infection.

People who work outdoors should take precautions if they are working near stagnant water, which can carry harmful micro-organisms because of contamination.

You should find out about the common types of infection that are a risk for your relevant work activity (and how your employees or others might be exposed), and decide whether you are doing enough to prevent this from happening.

The good news is that controlling the risk of infection is relatively straightforward – usually simple, good personal hygiene measures are sufficient. All workers must have access to clean, adequate washing facilities. Important control measures include:

- appropriate washable/disposable clothing;
- personal protective equipment (eg impervious gloves) and/or waterproof covering for cuts and abrasions;
- the right containers and safe systems of work for handling waste, including disposal of contaminated sharps (such as needles);
- effective immunisations may be available. For example, hepatitis B vaccination is advisable if the risk arises from care work with people which might involve exposure to blood/bodily fluids.

You also need to provide information and training for employees and check safe systems of work are being followed, as above.

Find out more

HSE's micro-organisms website:
www.hse.gov.uk/biosafety/microorganisms.htm

Legionnaires' disease
www.hse.gov.uk/legionnaires

Veterinary, agricultural, zoo and other animal husbandry
www.hse.gov.uk/agriculture/topics/health.htm#zoonoses

Health and social care
The Departments for Health (England, Scotland and Wales) provide guidance on infection control for healthcare: www.hse.gov.uk/healthservices

Handling waste material
Sewage workers, cleaners, waste collection and handling, construction refurbishment and parks maintenance workers can handle waste material that may be infected with micro-organisms: www.hse.gov.uk/waste/health.htm

Beauticians and tattooists
www.hse.gov.uk/pubns/guidance/sr12.pdf

Asbestos

Asbestos is the single greatest cause of work-related deaths in the UK. Asbestos-related diseases currently kill around 4500 people a year in Great Britain (www.hse.gov.uk/statistics).

As long as asbestos is in good condition and is not disturbed or damaged there is negligible risk. However, if it is disturbed or damaged, it can become a danger to health, because asbestos fibres are released into the air and people may breathe them in.

Although it is now illegal to use asbestos in the construction or refurbishment of any premises, many thousands of tonnes of it were used in the past in such things as:

- lagging on plant and pipework;
- insulation products such as fireproof panels;
- asbestos cement roofing material;
- sprayed coatings on structural steel work to insulate against fire and noise.

Much of this material is still in place. However, buildings constructed after 2000 are unlikely to contain asbestos materials.

Managing asbestos in buildings

If you are responsible for the maintenance and repair of non-domestic premises, the Control of Asbestos Regulations 2012 require you to:

- take reasonable steps to find out if there are asbestos-containing materials present and, if so, how much material, where it is, what type it is (tile, boards, lagging etc) and what condition it is in;
- make, and keep up-to-date, a record of the location and condition of the asbestos-containing materials (or materials which are presumed to contain asbestos);
- clearly identify any areas that have not been accessed/surveyed;
- prepare a plan that sets out how the risks from these materials will be managed;
- take the necessary steps to put the plan into action;
- provide information on the location and condition of any asbestos-containing materials to anyone who is liable to work on or disturb them.

Don't disturb the asbestos. It is only dangerous when disturbed. If it is safely managed and contained, it doesn't present a health hazard. Don't remove asbestos unnecessarily as this can be more dangerous than leaving it in place and managing it.

Further information on how to manage asbestos in buildings is available on HSE's asbestos website: www.hse.gov.uk/asbestos. This includes a step-by-step online guide 'Managing my asbestos' (www.hse.gov.uk/asbestos/managing) to help you decide if asbestos is present and, if so, how to manage it.

Working with asbestos-containing materials

The Control of Asbestos Regulations 2012 apply to all types of work involving asbestos and asbestos-containing materials. They place specific duties on employers and the self-employed.

You must find out if asbestos-containing materials are present. If possible, before you start, plan any work to avoid disturbing these materials.

If you have to carry out work which may disturb asbestos-containing materials, you must:

- prevent exposure to asbestos fibres, or where this is not reasonably practicable (see page 12);
- reduce any exposure to as low as reasonably practicable by using appropriate control measures and having management systems in place.

Anyone who is going to work on asbestos-containing material must be suitably trained and supervised.

Higher-risk work, such as most asbestos removal, must only be undertaken by a licensed contractor, but any decision on whether particular work is licensable is based on an assessment of the risk.

HSE's asbestos site provides further information, including advice on:

- how to carry out work with asbestos-containing materials;
- the type of controls necessary;
- what training is required;
- what types of work must be carried out by licensed contractors.

Find out more

HSE's asbestos website: www.hse.gov.uk/asbestos

Managing asbestos in buildings: A brief guide Leaflet INDG223(rev5)
HSE Books 2012 www.hse.gov.uk/pubns/indg223.htm

Asbestos essentials: A task manual for building, maintenance and allied trades on non-licensed asbestos work HSG210 (Third edition)
HSE Books 2012 ISBN 978 0 7176 6503 7
www.hse.gov.uk/pubns/books/hsg210.htm

The law

The Control of Asbestos Regulations 2012 require dutyholders to take action to prevent workers' exposure to asbestos at work.

Lead

Work which exposes people to lead or its compounds is covered by the Control of Lead at Work Regulations 2002. Risks may arise when:

- lead dust, fume or vapour is breathed in, eg as powder or dust;
- lead is swallowed, eg if workers eat or drink without washing their hands;
- compounds are taken in through the skin, in the form of lead alkyls (an additive to petrol).

Exposure can occur when employees work in industrial processes that create lead dust, fume or vapour, such as:

- blast removal, burning and stripping of old lead paint;
- hot cutting in demolition and dismantling operations;
- recovering lead from scrap and waste;
- lead smelting, refining, alloying and casting;
- lead-acid battery manufacture and breaking and recycling;
- manufacturing lead compounds and leaded glass including using pigments, colours and ceramic glazes;
- working with metallic lead and alloys containing lead, eg soldering;
- recycling of televisions or computer monitors containing cathode ray tubes (CRTs).

What do I have to do?

- Assess the risk.
- Introduce control measures, and carry out air monitoring if the risk assessment requires it.
- Ensure high standards of personal hygiene are maintained.
- If the risk assessment requires it, you may need to place employees under medical surveillance.
- Provide employees with information, instruction and training.

Find out more

HSE's working safely with lead website: www.hse.gov.uk/lead

Lead and you Leaflet INDG305(rev2) HSE Books 2012
www.hse.gov.uk/pubns/indg305.htm

Control of lead at work. Control of Lead at Work Regulations 2002. Approved Code of Practice and guidance L132 (Third edition)
HSE Books 2002 ISBN 978 0 7176 2565 9
www.hse.gov.uk/pubns/books/l132.htm

The law

Control of Lead at Work Regulations 2002

9 Machinery, plant and equipment

This chapter covers the different safety aspects of using machinery and maintaining plant and equipment in the workplace. Employers should consider how their workers use machinery, and have adequate maintenance arrangements in place to ensure it remains safe to use.

There is also specific advice on lifting equipment and carrying out vehicle repairs.

CASE STUDY

A company were prosecuted after a worker was killed when he was crushed in the rollers of a rubber and cloth inspection machine.

Other workers heard him cry out and he was found with his left arm, shoulder, head and torso trapped between the rubberised blanket and the roller. He was pronounced dead at the scene.

What caused the accident?

The company had not assessed the risks associated with using the machine. They had not checked that it was safe to use following modifications when the nip guards were removed and an unguarded roller was inserted.

Why is machinery safety important?

Moving machinery can cause injuries in many ways:

- People can be struck and injured by moving parts of machinery or ejected material. Parts of the body can also be drawn in or trapped between rollers, belts and pulley drives.
- Sharp edges can cause cuts and severing injuries, sharp-pointed parts can cause stabbing or puncture the skin, and rough surface parts can cause friction or abrasion.
- People can be crushed, both between parts moving together or towards a fixed part of the machine, wall or other object, and two parts moving past one another can cause shearing.
- Parts of the machine, materials and emissions (such as steam or water) can be hot or cold enough to cause burns or scalds, and electricity can cause electrical shock and burns.
- Injuries can also occur due to machinery becoming unreliable and developing faults or when machines are used improperly through inexperience or lack of training.

What do I have to do?

Before you start

Before you start using any machine you need to think about what risks may occur and how these can be managed. You should therefore do the following:

- Check that the machine is complete, with all safeguards fitted, and free from defects. The term 'safeguarding' includes guards, interlocks, two-hand controls, light guards, pressure-sensitive mats etc. By law, the supplier must provide the right safeguards and inform buyers of any risks ('residual risks') that users need to be aware of and manage because they could not be designed out.
- Produce a safe system of work for using and maintaining the machine. Maintenance may require the inspection of critical features where deterioration would cause a risk. Also look at the residual risks identified by the manufacturer in the information/instructions provided with the machine and make sure they are included in the safe system of work.
- Ensure every static machine has been installed properly and is stable (usually fixed down).
- Choose the right machine for the job and do not put machines where customers or visitors may be exposed to risk.
- Note that new machines should be CE marked and supplied with a Declaration of Conformity and instructions in English.

Make sure the machine is:

- safe for any work that has to be done when setting up, during normal use, when clearing blockages, when carrying out repairs for breakdowns, and during planned maintenance;
- properly switched off, isolated or locked off before taking any action to remove blockages, clean or adjust the machine;

Also, make sure you identify and deal with the risks from:

- electrical, hydraulic or pneumatic power supplies;
- badly designed safeguards. These may be inconvenient to use or easily overridden, which could encourage your workers to risk injury and break the law. If they are, find out why they are doing it and take appropriate action to deal with the reasons/causes.

Preventing access to dangerous parts

Think about how you can make a machine safe. The measures you use to prevent access to dangerous parts should be in the following order. In some cases it may be necessary to use a combination of these measures:

- Use fixed guards (eg secured with screws or nuts and bolts) to enclose the dangerous parts, whenever practical. Use the best material for these guards – plastic may be easy to see through but may easily be damaged. Where you use wire mesh or similar materials, make sure the holes are not large enough to allow access to moving parts.
- If fixed guards are not practical, use other methods, eg interlock the guard so that the machine cannot start before the guard is closed and cannot be opened while the machine is still moving. In some cases, trip systems such as photoelectric devices, pressure-sensitive mats or automatic guards may be used if other guards are not practical.

- Where guards cannot give full protection, use jigs, holders, push sticks etc if it is practical to do so.
- Control any remaining risk by providing the operator with the necessary information, instruction, training, supervision and appropriate safety equipment.

CASE STUDY

A company were prosecuted after a worker received horrific injuries, almost severing his left arm when using a cross-cut saw.

What the employer has done

The nose guard had not been set correctly because training was inadequate. The worker had no previous experience and had only five minutes' training on the saw. This did not include any instruction about the saw guards and how to adjust them properly. In addition, the saw was unsuitable for training purposes.

Other things you should consider

- If machines are controlled by programmable electronic systems, changes to any programmes should be carried out by a competent person (someone who has the necessary skills, knowledge and experience to carry out the work safely). Keep a record of such changes and check they have been made properly.
- Ensure control switches are clearly marked to show what they do.
- Have emergency stop controls where necessary, eg mushroom-head push buttons within easy reach.
- Make sure operating controls are designed and placed to avoid accidental operation and injury, use two-hand controls where necessary and shroud start buttons and pedals.
- Don't let unauthorised, unqualified or untrained people use machinery – never allow children to operate or help at machines. Some workers, eg new starters, young people or those with disabilities, may be particularly at risk and need instruction, training and supervision.
- Adequate training should ensure that those who use the machine are competent to use it safely. This includes ensuring they have the correct skills, knowledge and experience – sometimes formal qualifications are needed, eg for chainsaw operators.
- Supervisors must also be properly trained and competent to be effective. They may need extra specific training and there are recognised courses for supervisors.
- Ensure the work area around the machine is kept clean and tidy, free from obstructions or slips and trips hazards, and well lit.

Dos and don'ts of machinery safety for workers

Do...

- check the machine is well maintained and fit to be used, ie appropriate for the job and working properly and that all the safety measures are in place – guards, isolators, locking mechanisms, emergency off switches etc;
- use the machine properly and in accordance with the manufacturer's instructions;
- make sure you are wearing the appropriate protective clothing and equipment required for that machine, such as safety glasses, hearing protection and safety shoes.

Don't...

- use a machine or appliance that has a danger sign or tag attached to it. Danger signs should only be removed by an authorised person who is satisfied that the machine or process is now safe;
- wear dangling chains, loose clothing, rings or have loose, long hair that could get caught up in moving parts;
- distract people who are using machines;
- remove any safeguards, even if their presence seems to make the job more difficult.

The law

Provision and Use of Work Equipment Regulations 1998 (PUWER)

Plant and equipment maintenance

Maintenance on plant and equipment is carried out to prevent problems arising, to put faults right, and to ensure equipment is working effectively.

Maintenance may be part of a planned programme or may have to be carried out at short notice after a breakdown. It always involves non-routine activities and can expose those involved (and others) to a range of risks.

Why is maintenance of plant and equipment important?

An effective maintenance programme will make plant and equipment more reliable. Fewer breakdowns will mean less dangerous contact with machinery is required, as well as having the cost benefits of better productivity and efficiency.

Additional hazards can occur when machinery becomes unreliable and develops faults. Maintenance allows these faults to be diagnosed early to manage any risks. However, maintenance needs to be correctly planned and carried out. Unsafe maintenance has caused many fatalities and serious injuries, either during the maintenance or to those using the badly maintained or wrongly maintained/repaired equipment.

The Provision and Use of Work Equipment Regulations 1998 (PUWER) require work equipment and plant to be maintained so it remains safe **and** the maintenance operation is carried out safely. See 'Find out more' on page 71 for sources of advice.

What do I have to do?

If you are an employer and you provide equipment for use, from hand tools and ladders to electrical power tools and larger plant, you need to demonstrate that you have arrangements in place to make sure they are maintained in a safe condition.

Think about what hazards can occur if:

- tools break during use;
- machinery starts up unexpectedly;
- there is contact with materials that are normally enclosed within the machine, ie caused by leaks/breakage/ejection etc.

Failing to correctly plan and communicate clear instructions and information before starting maintenance can lead to confusion and can cause accidents. This can be a particular problem if maintenance is during normal production work or where there are contractors who are unfamiliar with the site.

CASE STUDY

A worker received crush injuries to his head and neck while he was undertaking maintenance work, when the hoist he was working on started up.

What caused the accident?

The power supply to the hoist had not been isolated before work started. This was because workers had not been given adequate training or instruction on safe isolation procedures. It was also found that isolation by the interlocked gates could be bypassed.

Extra care is also required if maintenance involves:

- working at height or when doing work that requires access to unusual parts of the building;
- when entering vessels or confined spaces (see Chapter 18) where there may be toxic materials or a lack of air.

How can I do it?

Establishing a planned maintenance programme may be a useful step towards reducing risk, as well as having a reporting procedure for workers who may notice problems while working on machinery.

Some items of plant and equipment may have safety-critical features where deterioration would cause a risk. You must have arrangements in place to make sure the necessary inspections take place.

But there are other steps to consider:

Before you start maintenance

- Decide if the work should be done by specialist contractors. Never take on work for which you are not prepared or competent.
- Plan the work carefully before you start, ideally using the manufacturer's maintenance instructions, and produce a safe system of work. This will avoid unforeseen delays and reduce the risks.

- Make sure maintenance staff are competent and have appropriate clothing and equipment.
- Try and use downtime for maintenance. You can avoid the difficulties in co-ordinating maintenance and production work if maintenance work is performed before start-up or during shutdown periods.

Safe working areas

- You must provide safe access and a safe place of work.
- Don't just focus on the safety of maintenance workers – take the necessary precautions to ensure the safety of others who may be affected by their work, eg other employees or contractors working nearby.
- Set up signs and barriers and position people at key points if they are needed to keep other people out.

CASE STUDY

Maintenance staff removed a section of grating to gain access to plant located below a walkway. A worker fell through a gap in the walkway, seriously injuring his shoulder.

What caused the accident?

The fall happened because there was nothing to make workers aware of the dangers caused by machinery maintenance. Barriers, guards and signs should have been used to indicate that maintenance was taking place.

Safe plant and equipment

Plant and equipment must be made safe before maintenance starts.

Safe isolation

- Ensure moving plant has stopped and isolate electrical and other power supplies. Most maintenance should be carried out with the power off. If the work is near uninsulated, overhead electrical conductors, eg close to overhead travelling cranes, cut the power off first.
- Lock off machines if there is a chance the power could be accidentally switched back on.
- Isolate plant and pipelines containing pressured fluid, gas, steam or hazardous material. Lock off isolating valves.

Other factors you need to consider

- Release any stored energy, such as compressed air or hydraulic pressure that could cause the machine to move or cycle.
- Support parts of plant that could fall, eg support the blades of down-stroking bale cutters and guillotines with blocks.
- Allow components that operate at high temperatures time to cool.
- Place mobile plant in neutral gear, apply the brake and chock the wheels.
- Safely clean out vessels containing flammable solids, liquids, gases or dusts, and check them before hot work is carried out to prevent explosions. You may need specialist help and advice to do this safely.
- Avoid entering tanks and vessels where possible. This can be very high-risk work. If required, get specialist help to ensure adequate precautions are taken.
- Clean and check vessels containing toxic materials before work starts.

Dos and don'ts of plant and equipment maintenance

Do...

- ensure maintenance is carried out by a competent person (someone who has the necessary skills, knowledge and experience to do the work safely);
- maintain plant and equipment regularly – use the manufacturer's maintenance instructions as a guide, particularly if there are safety-critical features;
- have a procedure that allows workers to report damaged or faulty equipment;
- provide the proper tools for the maintenance person;
- schedule maintenance to minimise the risk to other workers and the maintenance person wherever possible;
- make sure maintenance is done safely, that machines and moving parts are isolated or locked and that flammable/explosive/toxic materials are dealt with properly.

Don't...

- ignore maintenance;
- ignore reports of damaged or unsafe equipment;
- use faulty or damaged equipment.

Safe lifting by machine

If you are an employer or a self-employed person providing lifting equipment for use at work, or if you have control of the use of lifting equipment, you must make sure it is safe.

Think about what risks there may be and how they can be managed, for example:

- damage or deterioration of the equipment caused by wet, abrasive or corrosive environments;
- trying to move weights that are too heavy and exceed the load limit of the machine;
- equipment failure;
- untrained workers planning the lift or using the equipment;
- people being struck by moving parts of the machinery or by things falling.

Safe lifting needs to be properly planned by a competent person, appropriately supervised and carried out safely. Any equipment you use must have been properly designed, manufactured and tested. Don't forget to maintain it properly too.

Factors you should consider

- What are you lifting?
- How heavy is it?
- Where is its centre of gravity?
- How will you attach it to the lifting machinery?
- Who is in control of the lift?
- What are the safe limits of the equipment?
- Could you rehearse the lift if necessary?

Dos and don'ts of lifting machinery safely

Do...

- use only certified lifting equipment, marked with its safe working load, which is not overdue for examination;
- keep the reports of thorough examination as well as any declarations of conformity or test certificates;
- make sure the load is properly attached to the lifting equipment. If necessary, securely bind the load to prevent it slipping or falling off;
- before lifting an unbalanced load, find out its centre of gravity. Raise it a few inches off the ground and pause – there should be little harm if it drops;
- use packaging to prevent sharp edges of the load from damaging slings and do not allow tackle to be damaged by being dropped, dragged from under loads or subjected to sudden loads;
- when using jib cranes, make sure any indicators for safe loads are working properly and set correctly for the job and the way the machine is configured;
- use outriggers where necessary;
- when using multi-slings, make sure the sling angle is taken into account;
- have a responsible slinger or banksman and use a recognised signalling system.

Don't...

- use unsuitable equipment, eg makeshift, damaged, badly worn chains shortened with knots, kinked or twisted wire ropes, frayed or rotted fibre ropes;
- exceed the safe working load of machinery or accessories like chains, slings and grabs. Remember that the load in the legs of a sling increases as the angle between the legs increases;
- lift a load if you doubt its weight or the adequacy of the equipment.

Find out more

HSE's work equipment and machinery website:
www.hse.gov.uk/work-equipment-machinery

Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance L22 (Third edition)
HSE Books 2008 ISBN 978 0 7176 6295 1 www.hse.gov.uk/pubns/books/l22.htm

Providing and using work equipment safely: A brief guide Leaflet INDG291(rev1)
HSE Books 2013 www.hse.gov.uk/pubns/indg291.htm

Safe use of lifting equipment. Lifting Operations and Lifting Equipment Regulations 1998. Approved Code of Practice and guidance L113 HSE Books 1998
ISBN 978 0 7176 1628 2 www.hse.gov.uk/pubns/books/l113.htm

Lifting equipment at work: A brief guide Leaflet INDG290(rev1) HSE Books 2013
www.hse.gov.uk/pubns/indg290.htm

The law

The aim of the Provision and Use of Work Equipment Regulations 1998 (PUWER) is to ensure that work equipment is safe to use, regardless of its age, condition or origin.

PUWER places duties on employers and others who control how work equipment is used. This includes those who hire it out to be used by others.

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) apply to the safe use of lifting equipment.

Vehicle repair

Motor vehicle repair work has particular dangers and the employer (or self-employed person) needs to identify and minimise the risks to both health and safety. To help you achieve this, some specific precautions should be taken:

- Make sure vehicle brakes are applied and wheels are chocked. Always start and run engines with the brakes on and in neutral gear.
- Support vehicles on both jacks and axle stands, never rely on jacks alone.
- Always prop/support raised vehicle bodies with equipment/tools designed for the task.
- Always ensure that vehicles elevated on lifting equipment are properly positioned and stable and that all arm locks (where provided) are fully engaged.
- Ensure paint sprayers who use 'two-pack' paints use air-fed respiratory equipment to protect them against isocyanate exposure, which can cause occupational asthma.
- Beware of fire and explosion risks when draining and repairing fuel tanks, and from battery gases. Never drain petrol tanks near or over a pit.
- Ensure you do not short-circuit batteries.
- Use a tyre cage when inflating commercial tyres and stand away from the trajectory zone, particularly those with multi-piece or divided wheels as explosions do happen.
- Brake and clutch pads on older cars may contain asbestos, so always use appropriate precautions.
- Wear protective clothing when handling battery acid.
- Be aware of the risk from mineral oil contamination (especially used engine oils) on hands and other parts of the body. Frequent and prolonged contact with used engine oil may cause dermatitis and other skin disorders, including skin cancer. Good personal hygiene at all times is essential and this includes making sure overalls are cleaned regularly.

Find out more

Health and safety in the motor vehicle repair industry: www.hse.gov.uk/mvr

Health and safety in motor vehicle repair and associated industries HSG261
HSE Books 2009 ISBN 978 0 7176 6308 8 www.hse.gov.uk/pubns/books/hsg261.htm

Reducing ill health and accidents in motor vehicle repair Leaflet INDG356(rev1)
HSE Books 2009 www.hse.gov.uk/pubns/indg356.htm

10 Manual handling

Manual handling causes over a third of all workplace injuries. These include work-related musculoskeletal disorders (MSDs) such as pain and injuries to arms, legs and joints, and repetitive strain injuries of various sorts.

The term manual handling covers a wide variety of activities including lifting, lowering, pushing, pulling and carrying. If any of these tasks are not carried out appropriately there is a risk of injury.

CASE STUDY

A manufacturing company kept bulk chemicals stored in heavy tubs at floor or shoulder height. This meant that the operators were continually reaching down or up, both of which increase the risk of injury.

The solution

To address the risk, the company drew up guidelines on the storage of heavy loads to ensure they are now stored at waist height, which makes lifting and handling easier.

Why is dealing with manual handling important?

Manual handling injuries can have serious implications for the employer and the person who has been injured. They can occur almost anywhere in the workplace and heavy manual labour, awkward postures, repetitive movements of arms, legs and back or previous/existing injury can increase the risk.

What do I have to do?

To help prevent manual handling injuries in the workplace, you should avoid such tasks as far as possible. However, where it is not possible to avoid handling a load, employers must look at the risks of that task and put sensible control measures in place to prevent and avoid injury.

For any lifting activity

Always take into account:

- individual capability;
- the nature of the load;
- environmental conditions;
- training;
- work organisation.

If you need to lift something manually

- Reduce the amount of twisting, stooping and reaching.
- Avoid lifting from floor level or above shoulder height, especially heavy loads.
- Adjust storage areas to minimise the need to carry out such movements.
- Consider how you can minimise carrying distances.
- Assess the weight to be carried and whether the worker can move the load safely or needs any help – maybe the load can be broken down to smaller, lighter components.

If you need to use lifting equipment

- Consider whether you can use a lifting aid, such as a forklift truck, electric or hand-powered hoist, or a conveyor.
- Think about storage as part of the delivery process – maybe heavy items could be delivered directly, or closer, to the storage area.
- Reduce carrying distances where possible.

CASE STUDY

A wholesale plant nursery dealt with very large plants and trees in pots. The plants were heavy, bulky and of varied sizes and shapes. Workers had reported severe back strain when handling these plants.

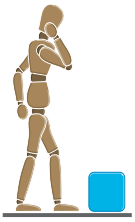
The solution

The company sourced a specialised barrow, which was adjustable to allow for moving different-shaped, large plants. The new barrow means just one person (rather than two) is needed to transport plants and workers report there is no longer a back strain issue.

Practical tips for good lifting technique

There are some simple things to do before and during the lift/carry (Figure 2 has more detail):

- Remove obstructions from the route.
- For a long lift, plan to rest the load midway on a table or bench to change grip.
- Keep the load close to the waist. The load should be kept close to the body for as long as possible while lifting.
- Keep the heaviest side of the load next to the body.
- Adopt a stable position and make sure your feet are apart, with one leg slightly forward to maintain balance.



Think before lifting/handling

Plan the lift. Can handling aids be used? Where is the load going to be placed? Will help be needed with the load? Remove obstructions such as discarded wrapping materials. For a long lift, consider resting the load midway on a table or bench to change grip.

Adopt a stable position

The feet should be apart with one leg slightly forward to maintain balance (alongside the load, if it is on the ground). Be prepared to move your feet during the lift to maintain stability. Avoid tight clothing or unsuitable footwear, which may make this difficult.

Get a good hold

Where possible, the load should be hugged as close as possible to the body. This may be better than gripping it tightly with hands only.

Start in a good posture

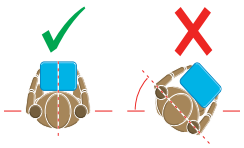
At the start of the lift, slight bending of the back, hips and knees is preferable to fully flexing the back (stooping) or fully flexing the hips and knees (squatting).

Don't flex the back any further while lifting

This can happen if the legs begin to straighten before starting to raise the load.

Keep the load close to the waist

Keep the load close to the body for as long as possible while lifting. Keep the heaviest side of the load next to the body. If a close approach to the load is not possible, try to slide it towards the body before attempting to lift it.

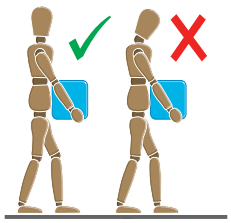


Avoid twisting the back or leaning sideways, especially while your back is bent

Shoulders should be kept level and facing in the same direction as the hips. Turning by moving the feet is better than twisting and lifting at the same time.

Keep your head up when handling

Look ahead, not down at the load, once it has been held securely.

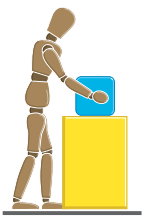


Move smoothly

The load should not be jerked or snatched as this can make it harder to keep control and can increase the risk of injury.

Don't lift or handle more than can be easily managed

There is a difference between what people can lift and what they can safely lift. If in doubt, seek advice or get help.



Put down, then adjust

If precise positioning of the load is necessary, put it down first, then slide it into the desired position.

Figure 2 Good handling techniques for lifting

Find out more

HSE's MSDs website: www.hse.gov.uk/msd

Manual handling at work: A brief guide Leaflet INDG143(rev3) HSE Books 2012 www.hse.gov.uk/pubns/indg143.htm

Manual handling. Manual Handling Operations Regulations 1992 (as amended). Guidance on Regulations L23 (Third edition) HSE Books 2004 ISBN 978 0 7176 2823 0 www.hse.gov.uk/pubns/books/l23.htm

Managing upper limb disorders in the workplace: A brief guide Leaflet INDG171(rev2) HSE Books 2013 www.hse.gov.uk/pubns/indg171.htm

The law

The Manual Handling Operations Regulations 1992 (as amended) apply to work which involves lifting, lowering, pushing, pulling or carrying.

11 Noise

Loud noise at work can damage your hearing. This usually happens gradually and it may only be when the damage caused by noise combines with hearing loss due to ageing that people realise how impaired their hearing has become.

CASE STUDY

A risk assessment revealed that the noise level at the operator's position of a metal cutting guillotine was very high, at 92 decibels (dB).

How was the problem tackled?

After taking technical advice, the employers ensured the guillotine was fully serviced and its hydraulics overhauled. In addition, a collecting tray was fitted with rollers and covered with carpet, to reduce the impact of falling offcut metal.

As a result, the noise level at the operator's position was reduced by 8 dB to 84 dB.

Why is dealing with noise important?

Noise at work can cause hearing damage that is **permanent** and **disabling**. This can be gradual, from exposure to noise over time, but damage can also be caused by sudden, extremely loud, noises. The damage is disabling in that it can stop people being able to understand speech, keep up with conversations or use the telephone.

Hearing loss is not the only problem. People may develop tinnitus (ringing, whistling, buzzing or humming in the ears), a distressing condition which can lead to disturbed sleep.

Noise at work can interfere with communications and make warnings harder to hear. It can also reduce a person's awareness of his or her surroundings. These factors can lead to safety risks – putting people at risk of injury or death.

Do I have a noise problem?

You will probably need to do something about the noise if any of the following apply:

- the noise is intrusive – like a busy street, a vacuum cleaner or a crowded restaurant, or worse than intrusive, for most of the working day;
- your employees have to raise their voices to have a normal conversation when about 2 metres apart for at least part of the day;
- your employees use noisy powered tools or machinery for more than half an hour a day;
- your sector is one known to have noisy tasks, eg construction, demolition or road repair, woodworking, plastics processing, engineering, textile manufacture, general fabrication, forging or stamping, paper or board making, canning or bottling, foundries, waste and recycling;
- there are noises due to impacts (such as hammering, drop forging, pneumatic impact tools etc), explosive sources such as cartridge-operated tools or detonators, or guns.

Situations where you will need to consider safety issues in relation to noise include where:

- you use warning sounds to avoid or alert to dangerous situations;
- working practices rely on verbal communications;
- there is work around mobile machinery or traffic.

How can I control noise?

There are many ways of reducing noise and noise exposure. Nearly all businesses can decide on practical, cost-effective actions to control noise risks, if necessary by looking at the advice available, such as HSE's noise at work website (www.hse.gov.uk/noise).

First, think about how to remove the source of noise altogether, for example housing a noisy machine where it cannot be heard by workers. If that is not possible, investigate:

- using quieter equipment or a different, quieter process;
- engineering/technical controls to reduce at source the noise produced by a machine or process;
- using screens, barriers, enclosures and absorbent materials to reduce the noise on its path to the people exposed;
- designing and laying out the workplace to create quiet workstations;
- limiting the time people spend in noisy areas.

CASE STUDY

A woman working in the textiles industry only realised something needed to be done about her hearing loss when, at the age of 40, she couldn't hear the phone ringing any more.

What should have happened?

Such hearing loss could have been prevented in the short term with hearing protection. In the longer term, other ways of reducing exposure included quieter machines, maintenance, and changing job patterns.

Choosing quieter equipment and machinery

You should consider noise alongside other factors (eg general suitability, efficiency) when hiring or buying equipment. You should compare the noise data from different machines, as this will help you to buy from among the quieter ones.

When should personal hearing protection be used?

Hearing protection should be issued to employees:

- where extra protection is needed above what has been achieved using noise control;
- for short-term protection, while other methods of controlling noise are being developed.

You should not use hearing protection as an alternative to controlling noise by technical and organisational means.

Employees to whom you provide hearing protection should receive training in how to use it.

Detecting damage to hearing

If the risk assessment indicates that there is a risk to health for employees exposed to noise, they should be placed under suitable health surveillance (regular hearing checks).

Find out more

HSE's noise at work website: www.hse.gov.uk/noise

Noise at work: A brief guide to controlling the risks Leaflet INDG362(rev2) HSE Books 2012 www.hse.gov.uk/pubns/indg362.htm

Controlling noise at work. The Control of Noise at Work Regulations 2005. Guidance on Regulations L108 (Second edition) HSE Books 2005 ISBN 978 0 7176 6164 0 www.hse.gov.uk/pubns/books/l108.htm

The law

The Control of Noise at Work Regulations 2005 require employers to take action to prevent or reduce risks to health and safety from noise at work.

12 Personal protective equipment (PPE)

Employers have duties concerning the provision and use of personal protective equipment (PPE) at work.

PPE is equipment that will protect the user against health or safety risks at work. It can include items such as safety helmets, gloves, eye protection, high-visibility clothing, safety footwear, safety harnesses and respiratory protective equipment (RPE).

CASE STUDY

A commercial gardener was using a petrol-driven strimmer to trim undergrowth. He hit a piece of unseen debris, which was thrown into the air and caught him in the eye. He lost the sight in that eye because he was not wearing protective goggles, which was advised in the manufacturer's written instructions for using the strimmer.

How similar accidents can be prevented

Ensure those operating strimmers are trained to recognise the hazards posed by unseen debris and wear appropriate PPE, including protective goggles.

Why is PPE important?

Making the workplace safe includes providing instructions, procedures, training and supervision to encourage people to work safely and responsibly.

Even where engineering controls and safe systems of work have been applied, some hazards might remain. These include injuries to:

- the lungs, eg from breathing in contaminated air;
- the head and feet, eg from falling materials;
- the eyes, eg from flying particles or splashes of corrosive liquids;
- the skin, eg from contact with corrosive materials;
- the body, eg from extremes of heat or cold.

PPE is needed in these cases to reduce the risk.

What do I have to do?

- Only use PPE as a last resort.
- If PPE is still needed after implementing other controls (and there will be circumstances when it is, eg head protection on most construction sites), you must provide this for your employees free of charge.
- You must choose the equipment carefully (see selection details below) and ensure employees are trained to use it properly, and know how to detect and report any faults.

Selection and use

You should ask yourself the following questions:

- Who is exposed and to what?
- How long are they exposed for?
- How much are they exposed to?

When selecting and using PPE:

- Choose products which are CE marked in accordance with the Personal Protective Equipment Regulations 2002 – suppliers can advise you.
- Choose equipment that suits the user – consider the size, fit and weight of the PPE. If the users help choose it, they will be more likely to use it.
- If more than one item of PPE is worn at the same time, make sure they can be used together, eg wearing safety glasses may disturb the seal of a respirator, causing air leaks.
- Instruct and train people how to use it, eg train people to remove gloves without contaminating their skin. Tell them why it is needed, when to use it and what its limitations are.

Other advice on PPE

- Never allow exemptions from wearing PPE for those jobs that 'only take a few minutes'.
- Check with your supplier on what PPE is appropriate – explain the job to them.
- If in doubt, seek further advice from a specialist adviser.

Maintenance

PPE must be properly looked after and stored when not in use, eg in a dry, clean cupboard. If it is reusable it must be cleaned and kept in good condition.

Think about:

- using the right replacement parts which match the original, eg respirator filters;
- keeping replacement PPE available;
- who is responsible for maintenance and how it is to be done;
- having a supply of appropriate disposable suits which are useful for dirty jobs where laundry costs are high, eg for visitors who need protective clothing.

Employees must make proper use of PPE and report its loss or destruction or any fault in it.

Monitor and review

- Check regularly that PPE is used. If it isn't, find out why not.
- Safety signs can be a useful reminder that PPE should be worn.
- Take note of any changes in equipment, materials and methods – you may need to update what you provide.

Types of PPE you can use

Eyes

Hazards
Chemical or metal splash, dust, projectiles, gas and vapour, radiation

Options
Safety spectacles, goggles, face screens, faceshields, visors

Note
Make sure the eye protection chosen has the right combination of impact/dust/splash/molten metal eye protection for the task and fits the user properly.

Head and neck

Hazards
Impact from falling or flying objects, risk of head bumping, hair getting tangled in machinery, chemical drips or splash, climate or temperature

Options
Industrial safety helmets, bump caps, hairnets and firefighters' helmets

Note
- Some safety helmets incorporate or can be fitted with specially-designed eye or hearing protection.
- Don't forget neck protection, eg scarves for use during welding.
- Replace head protection if it is damaged.

Ears

Hazards
Noise – a combination of sound level and duration of exposure, very high-level sounds are a hazard even with short duration

Options
Earplugs, earmuffs, semi-insert/canal caps

Note
- Provide the right hearing protectors for the type of work, and make sure workers know how to fit them.
- Choose protectors that reduce noise to an acceptable level, while allowing for safety and communication.

Hands and arms

Hazards
Abrasion, temperature extremes, cuts and punctures, impact, chemicals, electric shock, radiation, biological agents and prolonged immersion in water

Options
Gloves, gloves with a cuff, gauntlets and sleeving that covers part or all of the arm

Note
- Avoid gloves when operating machines such as bench drills where the gloves might get caught.
- Some materials are quickly penetrated by chemicals – take care in selection, see HSE's skin at work website (www.hse.gov.uk/skin).
- Barrier creams are unreliable and are no substitute for proper PPE.
- Wearing gloves for long periods can make the skin hot and sweaty, leading to skin problems. Using separate cotton inner gloves can help prevent this.

Feet and legs

Hazards
Wet, hot and cold conditions, electrostatic build-up, slipping, cuts and punctures, falling objects, heavy loads, metal and chemical splash, vehicles

Options
Safety boots and shoes with protective toecaps and penetration-resistant, mid-sole wellington boots and specific footwear, eg foundry boots and chainsaw boots

Note
- Footwear can have a variety of sole patterns and materials to help prevent slips in different conditions, including oil- or chemical-resistant soles. It can also be anti-static, electrically conductive or thermally insulating.
- Appropriate footwear should be selected for the risks identified.

Lungs

Hazards
Oxygen-deficient atmospheres, dusts, gases and vapours

Options – respiratory protective equipment (RPE)
- Some respirators rely on filtering contaminants from workplace air. These include simple filtering facepieces and respirators and power-assisted respirators.
- Make sure it fits properly, eg for tight-fitting respirators (filtering facepieces, half and full masks).
- There are also types of breathing apparatus which give an independent supply of breathable air, eg fresh-air hose, compressed airline and self-contained breathing apparatus.

Note
- The right type of respirator filter must be used as each is effective for only a limited range of substances.
- Filters have only a limited life. Where there is a shortage of oxygen or any danger of losing consciousness due to exposure to high levels of harmful fumes, only use breathing apparatus – never use a filtering cartridge.
- You will need to use breathing apparatus in a confined space or if there is a chance of an oxygen deficiency in the work area.
- If you are using respiratory protective equipment, look at HSE's publication *Respiratory protective equipment at work: A practical guide* (see 'Find out more' below).

Whole body

Hazards
Heat, chemical or metal splash, spray from pressure leaks or spray guns, contaminated dust, impact or penetration, excessive wear or entanglement of own clothing

Options
Conventional or disposable overalls, boiler suits, aprons, chemical suits

Note
- The choice of materials includes flame-retardant, anti-static, chain mail, chemically impermeable, and high-visibility.
- Don't forget other protection, like safety harnesses or life jackets.

Emergency equipment

Careful selection, maintenance and regular and realistic operator training is needed for equipment for use in emergencies, like compressed-air escape breathing apparatus, respirators and safety ropes or harnesses.

Find out more

Personal protective equipment (PPE) at work: A brief guide Leaflet INDG174(rev2) HSE Books 2013 www.hse.gov.uk/pubns/indg174.htm

Personal protective equipment at work (Second edition). Personal Protective Equipment at Work Regulations 1992 (as amended). Guidance on Regulations L25 (Second edition) HSE Books 2005 ISBN 978 0 7176 6139 8 www.hse.gov.uk/pubns/books/l25.htm

Respiratory protective equipment at work: A practical guide HSG53 (Fourth edition) HSE Books 2013 ISBN 978 0 7176 6454 2 www.hse.gov.uk/pubns/books/hsg53.htm

The law

The Personal Protective Equipment Regulations 2002 and the Personal Protective Equipment at Work Regulations 1992 (as amended) give the main requirements.

Other special regulations cover hazardous substances (including lead and asbestos), and also noise and radiation.

13 Pressure equipment

Many types of pressure equipment can be hazardous. These include steam boilers and associated pipework, pressurised hot-water boilers, air compressors, air receivers and associated pipework, autoclaves, gas (eg LPG) storage tanks and chemical reaction vessels.

When things go wrong, these types of equipment can cause serious injuries and even fatalities. However, assessing the risks and putting proper precautions in place will minimise the chances of any accidents occurring.

CASE STUDY

A company used a steam boiler in its manufacturing processes. An alteration to pipework inadvertently caused salty water to be introduced into the boiler.

The resulting build-up of scale caused its furnace to overheat and collapse internally, creating an explosion. This blew out the ends of the boiler house and the ejected boiler demolished an electrical substation hundreds of feet away before coming to rest.

How the accident could have been prevented

This accident could have been prevented by giving the maintenance staff correct information and instruction, and by adequately managing the maintenance operation.

As a result of the damage to the building, its contents and exterior damage, the company had to replace the boiler and rebuild the boiler house, with significant loss of production.

Why is pressure equipment safety important?

If a piece of pressure equipment fails and bursts violently apart, the results can be devastating to people in its vicinity.

Parts of the equipment could also be propelled over great distances, causing injury and damage to people and buildings hundreds of metres away.

What do I have to do?

Assess the risks

You need to assess the levels of risk when working with pressure equipment. The level of risk from the failure of pressure systems and equipment depends on a number of factors including:

- the pressure in the system;
- the type of liquid or gas and its properties;
- the suitability of the equipment and pipework that contains it;
- the age and condition of the equipment;
- the complexity and control of its operation;
- the prevailing conditions (eg a process carried out at high temperature);
- the skills, knowledge and experience of the people who maintain, test and operate the pressure equipment and systems.

Basic precautions

To reduce the risks you need to know (and act on) some basic precautions:

- Ensure the system can be operated safely, for example without having to climb or struggle through gaps in pipework or structures.
- Be careful when repairing or modifying a pressure system. Following a major repair and/or modification, you may need to have the whole system re-examined before allowing the system to come back into use.
- Ensure there is a set of operating instructions for all of the equipment in the system and for the control of the system as a whole, including in emergencies.
- There should be a maintenance programme for the system as a whole. It should take into account the system and equipment age, its uses and the environment in which it is being used.

Written scheme of examination

A written scheme of examination is required for most pressure systems:

- This should be drawn up (or certified as suitable) by a competent person – someone who has the necessary skills, knowledge and experience to carry out the work safely.
- It must cover all protective devices, every pressure vessel and those parts of pipelines and pipework which, if they fail, could be dangerous.
- The written scheme must specify the nature and frequency of examinations, and include any special measures that may be needed to prepare a system for a safe examination.
- Remember, a statutory examination carried out in line with a written scheme is designed to ensure your pressure system is suitable for your intended use. It is not a substitute for regular and routine maintenance.

How can I do it?

- First of all, consider whether the job can be done another way without using pressure equipment, for example using vacuum equipment for cleaning rather than compressed air. If you have to use pressure equipment, don't use high-pressure equipment when low-pressure will do.
- Ensure that you buy pressure equipment that complies with the relevant product regulations.
- Before using pressure equipment, ensure that you have a written scheme of examination if one is required. Also make sure that any inspections needed have been completed by a competent person, and that the results have been recorded.
- Always operate the equipment within the safe operating limits. If these are not provided by the manufacturer or supplier, a competent person can advise you, for example your employers' liability insurer.
- Provide instruction and relevant training for the workers who are going to operate the pressure equipment and also include what to do in an emergency.
- Ensure you have an effective maintenance plan in place, which is carried out by appropriately trained people.
- Make sure that any modifications are planned, recorded and do not lead to danger.

Find out more

HSE's website on pressure systems: www.hse.gov.uk/pressure-systems

Pressure systems: A brief guide to safety Leaflet INDG261(rev2) HSE Books 2012 www.hse.gov.uk/pubns/indg261.htm

Written schemes of examination: Pressure Systems Safety Regulations 2000 Leaflet INDG178(rev2) HSE Books 2012 www.hse.gov.uk/pubns/indg178.htm

The law

The Pressure Systems Safety Regulations 2000 deal with the safe operation of a pressure system.

The Pressure Equipment Regulations 1999 deal with the design, manufacture and supply of pressure systems.

14 Radiations

Every day in the UK, a wide range of radiation types are used in industrial, medical, research and communications applications.

Some of these applications cause harmful exposure risks that must be effectively controlled. This chapter explains how those controls can be put in place.

CASE STUDY

X-rays

A scrap metal dealer bought a hand-held X-ray fluorescence analyser (XRF gun) to analyse alloy content in scrap. These generate an intense beam of X-ray radiation at the front end of the equipment, scattering X-rays when they strike the test material. When used properly, pointing away from all parts of the body, the radiation risks to operators and others are minimal. But if the equipment is damaged, incorrectly set up, or misused, there is potential for exposure to high-radiation fields.

How the problem was tackled

The manager asked a radiation protection adviser (RPA) to help carry out a risk assessment. This recommended workers were trained in how to use the gun safely and not to operate without fully covering the X-ray aperture, or to hold the item being tested in their hand.

Users were shown what to do if the gun was dropped or damaged, and advised to buy an interlocked test box from the suppliers to test small parts safely. The RPA measured dose rates of the device to help the business meet its legal requirements. By taking this action, the employer ensured his workers and others were protected.

What are the main types of radiation?

Radiation is generally classed as either ‘ionising’ or ‘non-ionising’, with the former generally having more energy than the latter.

Ionising radiations

These include X-rays, gamma rays and particulate radiation (alpha, beta and neutron radiation) produced from X-ray sets or radioactive substances.

They are typically used in medical exposures, industrial radiography equipment and gauges used in industry for process control, but may also be produced from naturally occurring radioactive substances, including radon gas.

Non-ionising radiations

These include:

- radiofrequency and microwaves, eg from plastic welding and some communications transmitters;
- infra-red, eg from very hot, glowing sources in glass and metal production;
- ultraviolet (UV) rays, eg from welding or the sun;
- visible radiation from high-intensity light sources, eg lasers.

CASE STUDY

Radon

After media reports claiming some homes were prone to radon, the manager of a local engineering firm was approached by a number of workers wanting assurances that they were not at risk while at work.

The manager used the Health Protection Agency's website to confirm the premises were in a Radon Affected Area, and that many employees spent their working day in ground-floor rooms, where radon gas is more likely to accumulate.

How the problem was tackled

The manager used HSE's guidance (see 'Find out more' on page 91) to carry out a radon assessment, which included making measurements. The results showed very high levels (and possibly significant radiation doses) in two rooms.

He consulted a radiation protection adviser on how to reduce his employees' exposures. Following this, he contacted a radon remediation specialist, who quickly installed a simple, underfloor sump/extract system to prevent the gas entering the premises.

Repeat measurements showed this was extremely effective in affording long-term protection, as the levels of radon were now very low.

The hazards

Ionising radiations can cause dermatitis, burns, cell damage, cataracts and changes to blood.

Microwaves and radio frequencies can cause heating of any exposed part of the body, infra-red rays can cause skin burns and cataracts and UV light can cause skin burns, skin cancer, conjunctivitis and arc eye. Lasers can cause permanent, severe damage to the eyes and skin.

Exposure to ionising and UV radiation can damage DNA and can cause health effects, such as cancer, later in life. The risks are small for low levels of exposure but exposure to high levels of ionising and non-ionising radiations can cause acute effects such as burns, tissue and organ damage.

What do I have to do?

Identify all sources of ionising and non-ionising radiation in your workplace and the risks they pose. Once you have identified the significant risks, you must control them.

Try and reduce any exposure to ionising and UV radiation as far as possible. For example, you may be able to use safer alternative processes or equipment, eg ultrasonic, non-destructive testing instead of X-rays.

Dos and don'ts of radiation safety

Do…

- make sure you are aware of the different potential sources of radiation in your workplace, particularly all sources of ionising radiations, UV light and high-power lasers;
- consider getting competent advice from a radiation protection adviser (RPA) – this is a legal requirement when working with ionising radiations. Names and contact details of RPAs can be found on HSE's radiation website (www.hse.gov.uk/radiation);
- consider whether staff should be subject to medical surveillance – an RPA will help with this;
- consider radon gas exposure as part of your risk assessment. This is naturally occurring and may be present in your workplace even if you don't do any other work with radiation;
- ensure appropriate shielding and personal protective equipment is used to reduce exposure when working with ionising radiation and to protect the skin and eyes when working with hazardous sources of infra-red (eg molten metal) and UV (eg welding);
- seek expert advice where lasers are used for displays (eg bars, nightclubs and stage shows) and there could be a risk to the public.

Don't…

- override any interlocks preventing access to high-voltage electrical equipment, X-ray cabinets, laser enclosures or machinery containing lasers;
- use potentially harmful germicidal UV lamps as replacements in otherwise safe insect-killing devices or other fluorescent light fittings. Make sure you replace these with the correct type specified by the manufacturer.

Remember…

If your work with ionising radiations could produce a radiation emergency (ie an event that could lead to a member of the public receiving a dose of ionising radiation above certain levels), the Radiation (Emergency Preparedness and Public Information) Regulations 2001 may apply.

For more information, see HSE's radiation website: (www.hse.gov.uk/radiation/ionising/reppir.htm).

Businesses are required to manage general risks in the workplace – this includes sources of non-ionising radiation, such as electromagnetic fields (EMFs).

HSE currently advises employers to use the recommendations of the International Commission on Non-Ionising Radiation Protection (www.icnirp.org) as the basis for assessing the risks arising from exposures to EMFs.

Find out more

HSE's radiation website: www.hse.gov.uk/radiation

Advice on making a radon assessment:
www.hse.gov.uk/radiation/ionising/radon.htm

Work with ionising radiation. The Ionising Radiations Regulations 1999. Approved Code of Practice and guidance L121 HSE Books 2000
ISBN 978 0 7176 1746 3 www.hse.gov.uk/pubns/books/l121.htm

Guidance for employers on the Control of Artificial Optical Radiation at Work Regulations (AOR) 2010 Leaflet HSE 2010
www.hse.gov.uk/radiation/nonionising/employers-aor.pdf

Health Protection Agency (HPA): www.hpa.org.uk

The law

The Ionising Radiations Regulations 1999 apply to most work with ionising radiations, including exposure to naturally occurring radon gas.

The Control of Artificial Optical Radiation at Work Regulations 2010 require businesses with hazardous sources of bright light (eg lasers, welding processes) to ensure the eyes and skin of their workers are protected.

15 Slips and trips

Most slips occur when floors become wet or contaminated and many trips are due to poor housekeeping.

The solutions are often simple and cost-effective and a basic assessment of the risks should help to identify what you can do to tackle slips and trips risks.

CASE STUDY

An NHS trust recognised they had problems with slips and trips on wet hospital floors. In a two-year period, 100 members of staff had reported slips or trips on wet, recently cleaned floors.

How was the problem tackled?

HSE recommended a dry mopping system, using microfibre mops that reduce the amount of residue left on the floor during and after mopping. The staff were also advised to mop and dry the floor in sections before moving onto the next part of the ward, to provide safe access around the area.

Since the trust implemented the system, it has seen an 85% reduction in slips and trips from the 100 reported in the previous two years.

Why is dealing with slips and trips important?

Slips and trips are the most common cause of injury at work. On average, they cause over a third of all major injuries and can lead to other types of accidents, such as falls from height or falls into machinery.

Slips and trips also account for half of all reported injuries to members of the public in workplaces where there is public access, such as hospitals, shops and restaurants.

What do I have to do?

To help prevent these accidents you need to think about what might cause slips or trips in your workplace and decide whether you are doing enough to prevent them. Once you have identified the risks you must control them.

How can I do it?

- Prevent floors from getting wet or contaminated in the first place.
- Have procedures in place for both routine and responsive cleaning.
- If a spillage does happen, clean it up quickly.
- If floors are left wet after cleaning, stop anyone walking on them until they are dry and use the right cleaning methods and products.
- Look out for trip hazards, such as uneven floors or trailing cables, and encourage good housekeeping by your workers.
- Make sure workers wear footwear that is suitable for the environment they are working in.
- Make sure your flooring is suitable, or floors likely to get wet are of a type that does not become unduly slippery.

The law

Health and Safety at Work etc Act 1974

Management of Health and Safety at Work Regulations 1999

Workplace (Health, Safety and Welfare) Regulations 1992

Slips and Trips eLearning Package (STEP)

This is designed to help you assess and manage slip and trip hazards in the workplace. STEP (www.hse.gov.uk/slips/step/start.htm) is a great introduction to slips and trips, and covers how they are caused, why preventing them is important and how to tackle them.

It includes easy-to-follow guidance, case studies, videos, animations and quizzes. These are designed to give you the information you need to set up and maintain a safer way of working.

Find out more

HSE's slips and trips website: www.hse.gov.uk/slips

Preventing slips and trips at work: A brief guide Leaflet INDG225(rev2)
HSE Books 2012 www.hse.gov.uk/pubns/indg225.htm

16 Vibration

Hand-arm vibration (HAV) can be caused by operating hand-held power tools, such as road breakers, and hand-guided equipment, such as powered lawnmowers, or by holding materials being processed by hand-fed machines, such as pedestal grinders. Occasional exposure is unlikely to cause ill health.

Whole-body vibration (WBV) mainly affects drivers of vehicles used off-road, such as dumpers, excavators and agricultural tractors. However, it can also affect drivers of some vehicles used on paved surfaces, such as lift trucks, or on rails, such as gantry cranes.

CASE STUDY

Foundry work

Manufacturing cast pipe components using 'traditional' green sand casting resulted in a product requiring a lot of remedial work (fettling), using powered hand-held tools, to produce the necessary quality of finish. The holes in the pipe flanges then had to be drilled in a separate operation.

How was the problem tackled?

A 'lost-foam' casting process was introduced and resulted in such a high quality of casting that fettling was no longer required, eliminating all exposure to hazardous vibration.

The casting was so precise that it allowed the holes to be cast into the flanges, which removed the need for drilling and further reduced production time and costs.

Why is dealing with vibration important?

Hand-arm vibration syndrome (HAVS)

HAVS is a painful and disabling condition that affects the nerves, blood vessels, muscles and joints of the hands and arms. It causes tingling and numbness in the fingers, reduces grip strength and the sense of touch, and affects the blood circulation (vibration white finger, also known as VWF).

Whole-body vibration (WBV)

WBV is associated mostly with low back pain. However, back pain can also be caused by other factors, such as manual handling and postural strains, and while exposure to vibration and shocks may be painful for people with back problems, it will not necessarily be the cause of the problem.

What do I have to do?

You must:

- assess the vibration risk to your employees to identify if there is a problem;
- put in place appropriate control measures to counter the risks;
- provide health surveillance where risk remains (HAVS only);
- provide information and training to employees on health risks and the actions being taken to control those risks.

How can I reduce hand-arm vibration?

- Identify hazardous machines, tools and processes, especially those which cause tingling or numbness in the hands after a few minutes' use.
- If possible, do the job another way without using high-vibration equipment, eg rotary hammers, powered pedestrian-controlled mowers, hand-fed forging hammers etc.
- Ask about likely vibration levels for the way you use equipment before deciding on which new tool or machine to buy or hire.
- Provide suitable tools designed to cut down vibration.
- Make sure people use the right tool for the job and are trained to use it correctly.
- Make sure machines (including tools) are maintained as recommended by the manufacturer to prevent vibration increasing – check their sharpness, the condition of abrasive wheels, and anti-vibration mounts etc where fitted.
- Check whether the job can be altered to reduce the grip or pressure needed.

How can I reduce whole-body vibration?

- Choose vehicles or machines designed to cope with the task and conditions.
- Keep site roadways level, fill in potholes and remove debris.
- Train drivers to operate machines and attachments smoothly, to drive at appropriate speeds for the ground conditions and to adjust suspension seats correctly.
- Maintain and repair machine and vehicle suspension systems, tyre pressures and suspension seats.

Find out more

HSE's vibration at work website: www.hse.gov.uk/vibration

Hand-arm vibration at work: A brief guide Leaflet INDG175(rev3) HSE Books 2012 www.hse.gov.uk/pubns/indg175.htm

Hand-arm vibration. The Control of Vibration at Work Regulations 2005. Guidance on Regulations L140 HSE Books 2005 ISBN 978 0 7176 6125 1 www.hse.gov.uk/pubns/books/l140.htm

Whole-body vibration. The Control of Vibration at Work Regulations 2005. Guidance on Regulations L141 HSE Books 2005 ISBN 978 0 7176 6126 8 www.hse.gov.uk/pubns/books/l141.htm

The law

The Control of Vibration at Work Regulations 2005 require employers to assess and control health and safety risks to their employees from vibration.

17 Working at height

Working at height remains one of the biggest causes of fatalities and major injuries. Common cases include falls from ladders and through fragile surfaces. 'Work at height' means work in any place where, if there were no precautions in place, a person could fall a distance liable to cause personal injury (for example a fall through a fragile roof).

This chapter shows how employers can take simple, practical measures to reduce the risk of any of their workers falling while working at height.

CASE STUDY

Preventing falls from ladders

A large, independent installer of digital terrestrial and satellite equipment recognised it could be doing more to tackle falls, especially as engineers were installing aerials and dishes at a variety of heights from portable leaning ladders and roof ladders.

The solution

They took measures including making sure ladders were secured using an eyebolt and ratchet strap, and equipping appropriately trained workers with specialist kit, such as a flexible safety line that can be attached to the secured ladder.

Trained workers now wear a fall-arrest harness that can be attached to the line and the ladder. This means that the ladder cannot slip during use and, even if the engineer slips and falls from the ladder, the fall will be stopped.

What do I have to do?

You must make sure work is properly planned, supervised and carried out by competent people with the skills, knowledge and experience to do the job. You must use the right type of equipment for working at height.

Take a sensible approach when considering precautions. Low-risk, relatively straightforward tasks will require less effort when it comes to planning and there may be some low-risk situations where common sense tells you no particular precautions are necessary.

Control measures

First assess the risks. Factors to weigh up include the height of the task, the duration and frequency, and the condition of the surface being worked on.

Before working at height work through these simple steps:

- **avoid** work at height where it's reasonably practicable to do so (see page 12);
- where work at height cannot be easily avoided, **prevent** falls using either an existing place of work that is already safe or the right type of equipment;
- **minimise** the distance and consequences of a fall, by using the right type of equipment where the risk cannot be eliminated.

For each step, always consider measures that protect everyone at risk (collective protection) before measures that only protect the individual (personal protection).

Collective protection is equipment that does not require the person working at height to act for it to be effective. Examples are permanent or temporary guardrails, scissor lifts and tower scaffolds.

Personal protection is equipment that requires the individual to act for it to be effective. An example is putting on a safety harness correctly and connecting it, with an energy-absorbing lanyard, to a suitable anchor point.

Dos and don'ts of working at height

Do...

- as much work as possible from the ground;
- ensure workers can get safely to and from where they work at height;
- ensure equipment is suitable, stable and strong enough for the job, maintained and checked regularly;
- take precautions when working on or near fragile surfaces;
- provide protection from falling objects;
- consider emergency evacuation and rescue procedures.

Don't...

- overload ladders – consider the equipment or materials workers are carrying before working at height. Check the pictogram or label on the ladder for information;
- overreach on ladders or stepladders;
- rest a ladder against weak upper surfaces, eg glazing or plastic gutters;
- use ladders or stepladders for strenuous or heavy tasks, only use them for light work of short duration (a maximum of 30 minutes at a time);
- let anyone who is not competent (who doesn't have the skills, knowledge and experience to do the job) work at height.

Find out more

HSE's work at height website provides further practical advice on how to comply with the law, and the safe use of ladders and stepladders. It also contains useful links to industry-specific guidance: www.hse.gov.uk/work-at-height

The law

Work at Height Regulations 2005

18 Working in confined spaces

A confined space is one which is both enclosed, or largely enclosed, and which also has a reasonably foreseeable risk to workers of fire, explosion, loss of consciousness, asphyxiation or drowning.

It may be small and restrictive for the worker or it could be far larger such as a grain storage silo with hundreds of cubic metre capacity.

CASE STUDY

Having identified a fault in a crane's hydraulics, two men accessed a closed compartment. Within a minute of entering the compartment, one had passed out and the other was feeling lightheaded but managed to escape. Two others entered and tried to save the first man but were both overcome.

The three men were extracted by the emergency service but two of them died.

How could it have been avoided?

Water had got into the compartment causing rusting, which depleted the oxygen levels. Had the oxygen levels been checked, the space could have been ventilated and the deaths could have been avoided.

What are the hazards?

Working in a confined space is dangerous because of the risks from noxious fumes, reduced oxygen levels, or a risk of fire.

Other dangers may include flooding/drowning or asphyxiation from some other source such as dust, grain or other contaminant.

What do I have to do?

Wherever possible, you should avoid carrying out tasks in confined spaces. Where this is not possible, you must assess the risks of the particular confined space and plan how you will control those risks. For example:

- if a confined space has noxious fumes, you should consider how these can be ventilated or removed;
- if there is a risk of liquids or gases flooding in, you should establish whether the valves can be locked shut;
- if someone is going into a confined space and there is not enough oxygen to breathe properly, you must provide breathing apparatus or ventilate the space to increase oxygen levels before entering.

You should have emergency arrangements where necessary. If someone is working in a confined space, think about the following:

- How will you know they are okay and haven't been overcome by fumes?
- How will you get them out if they are overcome? (It is not enough to rely on the emergency services.)

Dos and don'ts of working in confined spaces

Do...

- be aware of the risks that may occur within a confined space;
- make sure the person doing the work is capable and trained in both the work and the use of any emergency equipment.

Don't...

- work in confined spaces unless it's essential to do so;
- ignore the risks – just because a confined space is safe one day doesn't mean it will always be;
- let others enter a confined space until you are sure it's safe to do so.

Find out more

HSE's confined spaces website: www.hse.gov.uk/confinedspace

Confined spaces: A brief guide to working safely Leaflet INDG258(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg258.htm

Safe work in confined spaces. Confined Spaces Regulations 1997. Approved Code of Practice, Regulations and guidance L101 HSE Books 2009 ISBN 978 0 7176 6233 3 www.hse.gov.uk/pubns/books/l101.htm

The law

Confined Spaces Regulations 1997

Other legislation may apply, depending on where the confined space is situated or on the task being carried out, for example:

Confined spaces within machinery
Provision and Use of Work Equipment Regulations 1998 (PUWER)

Workplace (Health, Safety and Welfare) Regulations 1992

Equipment required before entering a confined space
Personal Protective Equipment Regulations 2002

Personal Protective Equipment at Work Regulations 1992 (as amended)

19 Workplace transport

Every year, there are accidents involving transport in the workplace, some of which result in people being killed.

People are knocked down, run over, or crushed against fixed parts by vehicles (eg HGVs, lift trucks and tractors), plant and trailers. People also fall from vehicles – whether getting on or off, working at height, or when loading or unloading.

CASE STUDY

A forklift truck operator was driving his truck in a yard that was poorly lit and did not have designated traffic lanes for either industrial trucks or vehicles. As the operator drove across the yard, a large industrial truck started to reverse into it.

The truck driver had checked his mirrors and, although the truck was fitted with reversing alarms, they failed to detect that the forklift was in its path. The truck hit the forklift, which tipped over onto its side.

The forklift operator, who was not wearing his seat belt, was trapped underneath. He was pronounced dead at the scene, despite the efforts of the plant emergency response team and the emergency medical service.

How similar accidents could be avoided

- Better lighting in the yard
- Designated traffic lanes
- Reversing alarms that work effectively
- Wearing a seat belt

What do I have to do?

Think about whether there is an easier, safer way of doing the job. Your risk assessment must consider all workplace transport activities such as loading and unloading. It will help if you:

- look carefully at all the vehicles and people moving round your workplace;
- mark the traffic and pedestrian movements on a plan so you can see where pedestrians and vehicles interact;
- identify improvements that will reduce the contact between pedestrians and vehicles;
- remember to include less frequent tasks, eg waste skip changes;
- make sure you consider delivery drivers as they are particularly vulnerable.

CASE STUDY

While working on the construction of a new school, a maintenance engineer took a short cut across the vehicle route rather than using the pedestrian pathway.

As the building work was nearing completion, banksmen were not felt to be necessary for reversing vehicles. There were no barriers in place to prevent pedestrians crossing vehicle routes, and there were no signs to warn of the dangers of moving vehicles.

The maintenance engineer was struck by a reversing dumper truck whose driver had failed to see him behind the vehicle. The maintenance engineer died at the scene from multiple injuries.

How similar accidents could be avoided

- Using adequately trained banksmen when needed, even when work is nearing completion
- Barriers in place to keep pedestrians and vehicles apart
- Signs warning of moving vehicles

How can I do it?

Consider each of the following areas:

Safe site

- Plan your workplace so that pedestrians are safe from vehicles.
- Provide a one-way system if you can.
- Provide separate routes for pedestrians and vehicles where possible.
- Avoid reversing where possible.
- Provide appropriate crossing points where pedestrians and traffic meet.
- Use ‘Highway Code’ signs to indicate vehicle routes, speed limits, pedestrian crossings etc.
- Make sure lighting is adequate where people and vehicles are working.
- Make sure road surfaces are firm and even.
- Make sure there are safe areas for loading and unloading.
- Try to provide separate car parking for visitors as they may not know your site.

Safe vehicle

- Ensure vehicles are suitable for the purpose for which they are used.
- Maintain vehicles in good repair, particularly the braking system, steering, tyres, lights, mirrors and specific safety systems.
- Remove the need for people to climb up on vehicles where possible, eg by providing gauges and controls that are accessible from ground level.
- Reduce the risk of falling when people have to climb onto a vehicle or trailer by providing well-constructed ladders, non-slip walkways and guard rails where possible.
- Provide reversing aids such as CCTV where appropriate.
- Fit rollover protective structures and use seat belts where fitted.

Safe driver

- Train lift truck operators.
- Reassess lift truck operators at regular intervals, eg every three to five years, or when new risks arise such as changes to working practices.
- Train drivers of other vehicles to a similar standard.
- Make sure all drivers are supervised (including those visiting the site).

Find out more

More HSE advice on vehicles at work: www.hse.gov.uk/workplacetransport

Workplace transport safety: A brief guide Leaflet INDG199(rev2) HSE Books 2013
www.hse.gov.uk/pubns/indg199.htm

Workplace transport safety: An employers' guide HSG136 (Second edition)
HSE Books 2005 ISBN 978 0 7176 6154 1
www.hse.gov.uk/pubns/books/hsg136.htm

The law

Workplace (Health, Safety and Welfare) Regulations 1992, regulation 17

Provision and Use of Work Equipment Regulations 1998 (PUWER)

Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This publication is available at www.hse.gov.uk/pubns/books/hsg268.htm.