



Chapter 1

Unit 201: Health, safety and welfare in construction

A career in the building industry can be a very rewarding one, both personally and financially. However, building sites and workshops are potentially very dangerous places; there are many potential hazards in the construction industry. Many construction operatives (workers) are injured each year, some fatally. Regulations have been brought in over the years to reduce accidents and improve working conditions.

By reading this chapter you will know about:

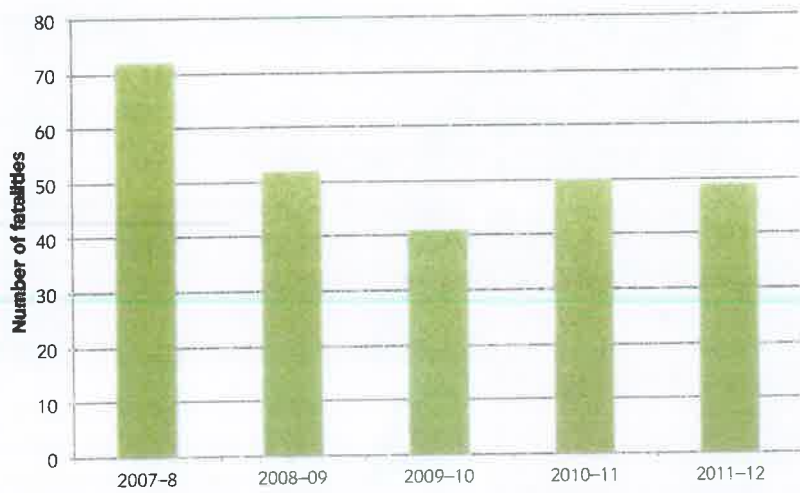
- 1 The health and safety regulations, roles and responsibilities.
- 2 Accident and emergency reporting procedures and documentation.
- 3 Identifying hazards in the workplace.
- 4 Health and welfare in the workplace.
- 5 Handling materials and equipment safely.
- 6 Access equipment and working at heights.
- 7 Working with electrical equipment in the workplace.
- 8 Using personal protective equipment (PPE).
- 9 The cause of fire and fire emergency procedures.



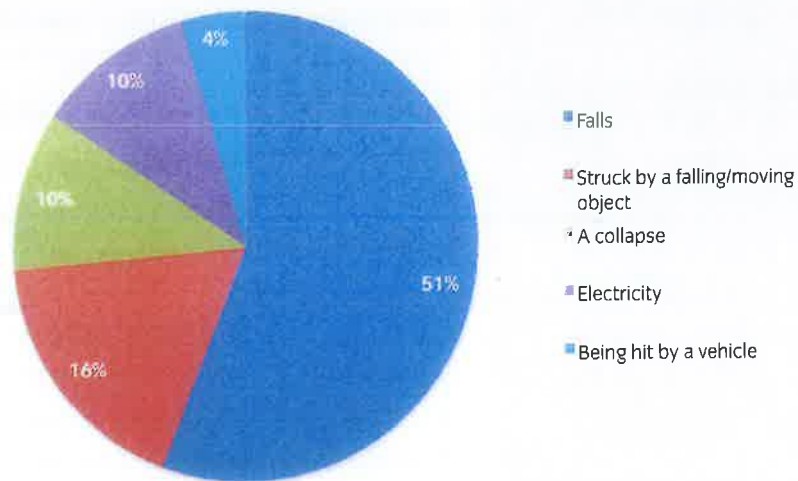
HEALTH AND SAFETY LEGISLATION

According to the Health and Safety Executive (HSE) figures, in 2011/12:

- Forty-nine construction operatives were fatally injured. Twenty-three of these operatives were self-employed. This compares with an average of 59 fatalities over the previous five years, of which an average of 19 fatally injured construction operatives were self-employed.
- The rate of fatal injury per 100,000 construction operatives was 2.3, compared with a five-year average of 2.5.
- Construction industry operatives were involved in 28% of fatal injuries across all industry sectors and it accounts for the greatest number of fatal injuries in any industry sector.



Number and rate of fatal injuries to workers in construction (RIDDOR)



Proportion of fatalities in 2011/12 in construction

Health and safety legislation and great efforts made by the industry have made workplaces much safer in recent years. It is the responsibility of everyone involved in the building industry to continue to make it safer. Statistics are not just meaningless numbers – they represent injuries to real people. Many people believe that an accident will never happen to them, but it can. Accidents can:

- have a devastating effect on lives and families
- cost a lot financially in injury claims
- result in prosecution
- lead to job loss if an employee broke their company's safety policy.

Employers have an additional duty to ensure operatives have access to welfare facilities, eg drinking water, first aid and toilets, which will be discussed later in this chapter.

If everyone who works in the building industry pays close attention to health, safety and welfare, all operatives – including you – have every chance of enjoying a long, injury-free career.

UK HEALTH AND SAFETY REGULATIONS, ROLES AND RESPONSIBILITIES

In the UK there are many laws (legislation) that have been put into place to make sure that those working on construction sites, and members of the public, are kept healthy and safe. If these laws and regulations are not obeyed then prosecutions can take place. Worse still, there is a greater risk of injury and damage to your health and the health of those around you.

The principal legislation that relates to health, safety and welfare in construction is:

- Health and Safety at Work Act (HASAWA) 1974
- Control of Substances Hazardous to Health (COSHH) Regulations 2002
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013
- Construction, Design and Management (CDM) Regulations 2007
- Provision and Use of Work Equipment Regulations (PUWER) 1998
- Manual Handling Operations Regulations 1992
- Personal Protective Equipment (PPE) at Work Regulations 1992



Standard construction safety equipment

- Work at Height Regulations 2005 (as amended)
- Lifting Operations and Lifting Equipment Regulations (LOLER) 1998
- Control of Noise at Work Regulations 2005
- Control of Vibration at Work Regulations 2005.

HEALTH AND SAFETY AT WORK ACT (HASAWA) 1974

The Health and Safety at Work Act (HASAWA) 1974 applies to all workplaces. Everyone who works on a building site or in a workshop is covered by this legislation. This includes employed and self-employed operatives, subcontractors, the employer and those delivering goods to the site. It not only protects those working, it also ensures the safety of anyone else who might be nearby.

KEY EMPLOYER RESPONSIBILITIES

The key employer health and safety responsibilities under HASAWA are to:

- provide a safe working environment
- provide safe access (entrance) and egress (exit) to the work area
- provide adequate staff training
- have a written health and safety policy in place
- provide health and safety information and display the appropriate signs
- carry out risk assessments
- provide safe machinery and equipment and to ensure it is well-maintained and in a safe condition
- provide adequate supervision to ensure safe practices are carried out
- involve trade union safety representatives, where appointed, in matters relating to health and safety
- provide personal protective equipment (**PPE**) free of charge, ensure the appropriate PPE is used whenever needed, and that operatives are properly supervised
- ensure materials and substances are transported, used and stored safely.

PPE

This is defined in the Personal Protective Equipment at Work Regulations 1992 as 'all equipment (including clothing affording protection against the weather) which is intended to be worn or held by a person at work and which protects against one or more risks to a person's health or safety.'

Risk assessments and method statements

The HASAWA requires that employers must carry out regular **risk assessments** to make sure that there are minimal dangers to their employees in a workplace.

Risk assessment

An assessment of the hazards and risks associated with an activity and the reduction and monitoring of them

Risk Assessment

Activity / Workplace assessed: Return to work after accident
 Persons consulted / involved in risk assessment
 Date:
 Reviewed on:

Location:
 Risk assessment reference number:
 Review date:
 Review by:

Significant hazard	People at risk and what is the risk Describe the harm that is likely to result from the hazard (eg cut, broken leg, chemical burn etc.) and who could be harmed (eg employees, contractors, visitors, etc)	Existing control measure What is currently in place to control the risk?	Risk rating Use matrix identified in guidance note Likelihood (L) Severity (S) Multiply (L) x (S) to produce risk rating (RR)				Further action required What is required to bring the risk down to an acceptable level? Use hierarchy of control described in guidance note when considering the controls needed	Actioned to: Who will complete the action?	Due date: When will the action be completed by?	Completion date: Initial and date once the action has been completed
Uneven floors	Operatives	Verbal warning and supervision	L 2	S 1	RR 2	L/M/H m	None applicable	Site supervisor	Active now	Ongoing
Steps	Operatives	Verbal warning	2	1	2	m	None applicable	Site supervisor	Active now	Ongoing
Staircases	Operatives	Verbal warning	2	2	4	m	None applicable	Site supervisor	Active now	Ongoing

Likelihood				
	1 Unlikely	2 Possible	3 Very likely	
Severity	1 Slight/minor injuries/minor damage	1	2	3
	2 Medium injuries/significant damage	2	4	6
	3 Major injury/extensive damage	3	6	9

Likelihood
 3 – Very likely
 2 – Possible
 1 – Unlikely

Severity
 3 – Major injury/extensive damage
 2 – Medium injury/significant damage
 1 – Slight/minor damage

1 – Low risk, action should be taken to reduce the risk if reasonably practicable
 2, 3, 4 – Medium risk, is a significant risk and would require an appropriate level of resource
 6 & 9 – High risk, may require considerable resourced to mitigate. Control should focus on elimination of risk, if not possible control should be obtained by following the hierarchy of control

125 type risk assessment

A risk assessment is a legally required tool used by employers to:

- identify work hazards
- assess the risk of harm arising from these hazards
- adequately control the risk.

Risk assessments are carried out as follows:

- 1 Identify the hazards. Consider the environment in which the job will be done. Which tools and materials will be used?
- 2 Identify who might be at risk. Think about operatives, visitors and members of the public.

- 3 Evaluate the risk. How severe is the potential injury? How likely is it to happen? A severe injury may be possible but may also be very improbable. On the other hand a minor injury might be very likely.
- 4 If there is an unacceptable risk, can the job be changed? Could different tools or materials be used instead?
- 5 If the risk is acceptable, what measures can be taken to reduce the risk? This could be training, special equipment and using PPE.
- 6 Keep good records. Explain the findings of the risk assessment to the operatives involved. Update the risk assessment as required – there may be new machinery, materials or staff. Even adverse weather can bring additional risks.

Method statement

A description of the intended method of carrying out a task, often linked to a risk assessment

INDUSTRY TIP

The Construction Skills Certification Scheme (CSCS) was set up in the mid-'90s with the aim of improving site operatives' competence to reduce accidents and drive up on-site efficiency. Card holders must take a health and safety test. The colour of card depends on level of qualification held and job role. For more information see www.cscs.uk.com

ACTIVITY

Think back to your induction. Write down what was discussed. Did you understand everything? Do you need any further information? If you have not had an induction, write a list of the things you think you need to know.

INDUSTRY TIP

Remember, if you are unsure about any health and safety issue always seek help and advice.

A **method statement** is required by law and is a useful way of recording the hazards involved in a specific task. It is used to communicate the risk and precautions required to all those involved in the work. It should be clear, uncomplicated and easy to understand as it is for the benefit of those carrying out the work (and their immediate supervisors).

Inductions and tool box talks

Any new visitors to and operatives on a site will be given an induction. This will explain:

- the layout of the site
- any hazards of which they need to be aware
- the location of welfare facilities
- the assembly areas in case of emergency
- site rules.

Tool box talks are short talks given at regular intervals. They give timely safety reminders and outline any new hazards that may have arisen because construction sites change as they develop. Weather conditions such as extreme heat, wind or rain may create new hazards.

KEY EMPLOYEE RESPONSIBILITIES

The HASAWA covers the responsibilities of employees and subcontractors:

- You must work in a safe manner and take care at all times.
- You must make sure you do not put yourself or others at risk by your actions or inactions.

- You must co-operate with your employer in regard to health and safety. If you do not you risk injury (to yourself or others), prosecution, a fine and loss of employment. Do not take part in practical jokes and horseplay.
- You must use any equipment and safeguards provided by your employer. For example, you must wear, look after and report any damage to the PPE that your employer provides.
- You must not interfere or tamper with any safety equipment.
- You must not misuse or interfere with anything that is provided for employees' safety.

FIRST AID AND FIRST-AID KITS

First aid should only be applied by someone trained in first aid. Even a minor injury could become infected and therefore should be cleaned and a dressing applied. If any cut or injury shows signs of infection, becomes inflamed or painful seek medical attention. An employer's first-aid needs should be assessed to indicate whether a first-aider (someone trained in first aid) is necessary. The minimum requirement is to appoint a person to take charge of first-aid arrangements. The role of this appointed person includes looking after the first-aid equipment and facilities and calling the emergency services when required.

First-aid kits vary according to the size of the workforce. First-aid boxes should not contain tablets or medicines.

INDUSTRY TIP

The key employee health and safety responsibilities are to:

- work safely
- work in partnership with your employer
- report hazards and accidents as per company policy.

INDUSTRY TIP

Employees must not be charged for anything given to them or done for them by the employer in relation to safety.

INDUSTRY TIP

In the event of an accident, first aid will be carried out by a qualified first aider. First aid is designed to stabilise a patient for later treatment if required. The casualty may be taken to hospital or an ambulance may be called. In the event of an emergency you should raise the alarm.

ACTIVITY

Your place of work or training will have an appointed first-aider who deals with first aid. Find out who they are and how to make contact with them.

ACTIVITY

Find the first-aid kit in your workplace or place of training. What is inside it? Is there anything missing?



SOURCES OF HEALTH AND SAFETY INFORMATION

Source	How they can help
Health and Safety Executive (HSE)	A government body that oversees health and safety in the workplace. It produces health and safety literature such as the Approved Code of Practice (ACoP) .
Construction Skills	The construction industry training body produces literature and is directly involved with construction training.
The Royal Society for the Prevention of Accidents (ROSPA)	It produces literature and gives advice.
The Royal Society for Public Health	An independent, multi-disciplinary charity that is dedicated to the promotion and protection of collective human health and wellbeing.
Institution of Occupational Safety and Health (IOSH)	A chartered body for health and safety practitioners. The world's largest health and safety professional membership organisation.
The British Safety Council	It helps businesses with their health, safety and environmental management.

Approved Code of Practice

ACoP gives practical advice for those in the construction industry in relation to using machinery

INDUSTRY TIP

There are many other trade organisations, eg the Timber Research and Development Association (TRADA), which also offer advice on safe practices.

ACTIVITY

You have been asked to give a tool box talk because of several minor injuries involving tripping on site. What topics would you include in this talk?

INDUSTRY TIP

To find out more information on the sources in the table, enter their names into a search engine on the internet.

Improvement notice

Issued by an HSE or local authority inspector to formally notify a company that improvements are needed to the way it is working

Prohibition notice

Issued by an HSE or local authority inspector when there is an immediate risk of personal injury. They are not issued lightly and if you are on the receiving end of one, you are clearly breaking a health and safety regulation

HEALTH AND SAFETY EXECUTIVE (HSE)

The HSE is a body set up by the government. The HSE ensures that the law is carried out correctly and has extensive powers to ensure that it can do its job. It can make spot checks in the workplace, bring the police, examine anything on the premises and take things away to be examined.

If the HSE finds a health and safety problem that breaks health and safety law it might issue an **improvement notice** giving the employer a set amount of time to correct the problem. For serious health and safety risks where there is a risk of immediate major injury, it can issue a **prohibition notice** which will stop all work on site until the health and safety issues are rectified. It may take an employer, employee, self-employed person (subcontractor) or anyone else involved with the building process to court for breaking health and safety legislation.

- by breathing in gas or mist
- by swallowing it
- by getting it into their eyes
- through their skin, either by contact or through cuts.

Safety data sheets

Products you use may be 'dangerous for supply'. If so, they will have a label that has one or more hazard symbols. Some examples are given here.


These products include common substances in everyday use such as paint, bleach, solvent or fillers. When a product is 'dangerous for supply', by law, the supplier must provide you with a safety data sheet. Note: medicines, pesticides and cosmetic products have different legislation and don't have a safety data sheet. Ask the supplier how the product can be used safely.

Safety data sheets can be hard to understand, with little information on measures for control. However, to find out about health risks and emergency situations, concentrate on:


- Sections 2 and 16 of the sheet, which tell you what the dangers are;
- Sections 4-8, which tell you about emergencies, storage and handling.

Since 2009, new international symbols have been gradually replacing the European symbols. Some of them are similar to the European symbols, but there is no single word describing the hazard. Read the hazard statement on the packaging and the safety data sheet from the supplier.

European symbols



New International symbols



Hazard checklist

- Does any product you use have a danger label?
- Does your process produce gas, fume, dust, mist or vapour?
- Is the substance harmful to breathe in?
- Can the substance harm your skin?
- Is it likely that harm could arise because of the way you use or produce it?
- What are you going to do about it?
 - Use something else?
 - Use it in another, safer way?
 - Control it to stop harm being caused?

CONTROL MEASURES

The control measures below are in order of importance.

- 1 Eliminate the use of the harmful substance and use a safer one. For instance, swap high **VOC** oil-based paint for a lower VOC water-based paint.
- 2 Use a safer form of the product. Is the product available ready mixed? Is there a lower strength option that will still do the job?

VOC

The volatile organic compounds measure shows how much pollution a product will emit into the air when in use

INDUSTRY TIP

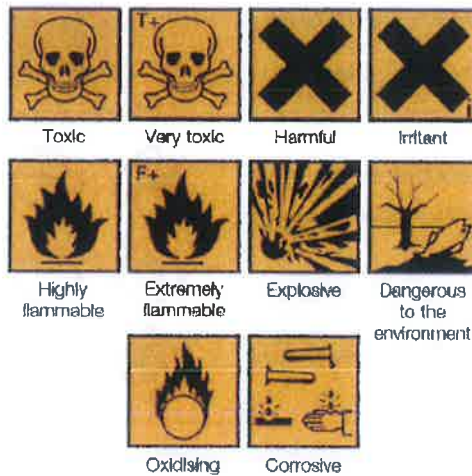
Product data sheets are free and have to be produced by the supplier of the product.

- 3 Change the work method to emit less of the substance. For instance, applying paint with a brush releases fewer VOCs into the air than spraying paint. Wet grinding produces less dust than dry grinding.
- 4 Enclose the work area so that the substance does not escape. This can mean setting up a tented area or closing doors.
- 5 Use extraction or filtration (eg a dust bag) in the work area.
- 6 Keep operatives in the area to a minimum.
- 7 Employers must provide appropriate PPE.



Paint with high VOC content

European symbols



ACTIVITY

Think of three substances in your workplace or place of training that might be hazardous to health. Can you find a COSHH data sheet for each? (They can often be found on the internet if you search for the product.)

New International symbols



COSHH symbols. The international symbols will replace the European symbols in 2015

INDUSTRY TIP

For more detailed information on RIDDOR visit the HSE webpage at www.hse.gov.uk/riddor.

REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATIONS (RIDDOR) 2013

Despite all the efforts put into health and safety, incidents still happen. The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013 state that employers must report to the HSE all accidents that result in an employee needing more than seven days off work. Diseases and dangerous occurrences must also be reported. A serious occurrence that has not caused an injury (a near miss) should still be reported because next time it happens things might not work out as well.

Below are some examples of injuries, diseases and dangerous occurrences that would need to be reported:

- A joiner cuts off a finger while using a circular saw.
- A plumber takes a week off after a splinter in her hand becomes infected.
- A ground operative contracts **leptospirosis**.
- A labourer contracts dermatitis (a serious skin problem) after contact with an irritant substance.
- A scaffold suffers a collapse following severe weather, unauthorised alteration or overloading but no one is injured.

Leptospirosis

Also known as Weil's disease, this is a serious disease spread by rats and cattle

INDUSTRY TIP

Accidents do not just affect the person who has the accident. Work colleagues or members of the public might be affected and so will the employer. The consequences may include:

- a poor company image (this may put off potential customers)
- loss of production
- insurance costs increasing
- closure of the site
- having to pay sick pay
- other additional costs.

New HSE guidelines require employers to pay an hourly rate for time taken by the HSE to investigate an accident. This is potentially very costly.

The purpose of RIDDOR is to enable the HSE to investigate serious incidents and collate statistical data. This information is used to help reduce the number of similar accidents happening in future and to make the workplace safer.

An F2508 injury report form

Although minor accidents and injuries are not reported to HSE, records must be kept. Accidents must be recorded in the accident book. This provides a record of what happened and is useful for future reference. Trends may become apparent and the employer may take action to try to prevent that particular type of accident occurring again.

CONSTRUCTION, DESIGN AND MANAGEMENT (CDM) REGULATIONS 2007

The Construction, Design and Management (CDM) Regulations 2007 focus attention on the effective planning and management of construction projects, from the design concept through to maintenance and repair. The aim is for health and safety considerations to be integrated into a project's development, rather than be an inconvenient afterthought. The CDM Regulations reduce the risk of harm to those that have to work on or use the structure throughout its life, from construction through to **demolition**.



CDM Regulations protect workers from the construction to demolition of large and complex structures.

The CDM Regulations apply to all projects except for those arranged by private clients, ie work that isn't in furtherance of a business interest. Property developers need to follow the CDM Regulations.

Under the CDM Regulations, the HSE must be notified where the construction work will take:

ACTIVITY

You have identified a potential risk. What action should you take? Make notes.



The CDM Regulations play a role in safety during demolition.

Demolition

When something, often a building, is completely torn down and destroyed

- more than 30 working days or
- 500 working days in total, ie if 100 people work for 5 days (500 working days) the HSE will have to be notified.

DUTY HOLDERS

Under the CDM Regulations there are several duty holders, each with a specific role.

Duty holder	Role
Client	<p>This is the person or organisation who wishes to have the work done. The client will check that:</p> <ul style="list-style-type: none"> ■ all the team members are competent ■ the management is suitable ■ sufficient time is allowed for all stages of the project ■ welfare facilities are in place before construction starts. <p>HSE notifiable projects require that the client appoints a CDM co-ordinator and principal contractor, and provides access to a health and safety file.</p>
CDM co-ordinator	<p>Appointed by the client, the co-ordinator advises and assists the client with CDM duties. The co-ordinator notifies the HSE before work starts. This role involves the co-ordination of the health and safety aspects of the design of the building and ensures good communication between the client, designers and contractors.</p>
Designer	<p>At the design stages the designer removes hazards and reduces risks. The designer provides information about the risks that cannot be eliminated. Notifiable projects require that the designer checks that the client is aware of their CDM duties and that a CDM co-ordinator has been appointed. The designer will also supply information for the health and safety file.</p>
Principal contractor	<p>The principal contractor will plan, manage and monitor the construction in liaison with any other involved contractors. This involves developing a written plan and site rules before the construction begins. The principal contractor ensures that the site is made secure and suitable welfare facilities are provided from the start and maintained throughout construction.</p> <p>The principal contractor will also make sure that all operatives have site inductions and any further training that might be required to make sure the workforce is competent.</p>
Contractor	<p>Subcontractors and self-employed operatives will plan, manage and monitor their own work and employees, co-operating with any main contractor in relation to site rules. Contractors will make sure that all operatives have any further training that might be required to make sure they are competent. A contractor also reports any incidents under RIDDOR to the principal contractor.</p>
Operatives	<p>Operatives need to check their own competence: Can you carry out the task you have been asked to do safely? Have you been trained to do this type of activity? Do you have the correct equipment to carry out this activity? You must follow all the site health and safety rules and procedures and fully co-operate with the rest of the team to ensure the health and safety of other operatives and others who may be affected by the work. Any health and safety issues must be reported.</p>



A client, a contractor and an operative looking over building plans ahead of construction



ACTIVITY




What would you do if you spotted any of these hazards?



WELFARE FACILITIES REQUIRED ON SITE UNDER THE CDM REGULATIONS

The table below shows the welfare facilities that must be available on site.

Facility	Site requirement
<p>Sanitary conveniences (toilets)</p> 	<ul style="list-style-type: none"> ■ Suitable and sufficient toilets should be provided or made available. ■ Toilets should be adequately ventilated and lit and should be clean. ■ Separate toilet facilities should be provided for men and women.
<p>Washing facilities</p> 	<ul style="list-style-type: none"> ■ Sufficient facilities must be available, and include showers if required by the nature of the work. ■ They should be in the same place as the toilets and near any changing rooms. ■ There must be a supply of clean hot (or warm) and cold running water, soap and towels. ■ There must be separate washing facilities provided for men and women unless the area is for washing hands and the face only.

Facility	Site requirement
<p>Clean drinking water</p> 	<ul style="list-style-type: none"> ■ This must be provided or made available. ■ It should be clearly marked by an appropriate sign. ■ Cups should be provided unless the supply of drinking water is from a water fountain.
<p>Changing rooms and lockers</p> 	<ul style="list-style-type: none"> ■ Changing rooms must be provided or made available if operatives have to wear special clothing and if they cannot be expected to change elsewhere. ■ There must be separate rooms for, or separate use of rooms by, men and women where necessary. ■ The rooms must have seating and include, where necessary, facilities to enable operatives to dry their special clothing and their own clothing and personal effects. ■ Lockers should also be provided.
<p>Rest rooms or rest areas</p> 	<ul style="list-style-type: none"> ■ Rest rooms should have enough tables and seating with backs for the number of operatives likely to use them at any one time. ■ Where necessary, rest rooms should include suitable facilities for pregnant women or nursing mothers to rest lying down. ■ Arrangements must be made to ensure that meals can be prepared, heated and eaten. It must also be possible to boil water.

ACTIVITY

What facilities are provided at your workplace or place of training?

PROVISION AND USE OF WORK EQUIPMENT REGULATIONS (PUWER) 1998

The Provision and Use of Work Equipment Regulations (PUWER) 1998 place duties on:

- people and companies who own, operate or have control over work equipment
- employers whose employees use work equipment.

Work equipment can be defined as any machinery, appliance, apparatus, tool or installation for use at work (whether exclusively or not). This includes equipment that employees provide for their own use at work. The scope of work equipment is therefore extremely wide. The use of work equipment is also very widely interpreted and, according to the HSE, means 'any activity involving work equipment and includes starting, stopping, programming, setting, transporting, repairing, modifying,

maintaining, servicing and cleaning.' It includes equipment such as diggers, electric planers, stepladders, hammers or wheelbarrows.

Under PUWER, work equipment must be:

- suitable for the intended use
- safe to use
- well maintained
- inspected regularly.

Regular inspection is important as a tool that was safe when it was new may no longer be safe after considerable use.

Additionally, work equipment must only be used by people who have received adequate instruction and training. Information regarding the use of the equipment must be given to the operator and must only be used for what it was designed to do.

Protective devices, eg emergency stops, must be used. Brakes must be fitted where appropriate to slow down moving parts to bring the equipment to a safe condition when turned off or stopped. Equipment must have adequate means of isolation. Warnings, either by signs or other means such as sounds or lights, must be used as appropriate. Access to dangerous parts of the machinery must be controlled. Some work equipment is subject to additional health and safety legislation which must also be followed.

Employers who use work equipment must manage the risks. ACoPs (see page 9) have been developed in line with PUWER. The ACoPs have a special legal status, as outlined in the introduction to the PUWER ACoP:

Following the guidance is not compulsory 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 as illustrating good practice.

MANUAL HANDLING OPERATIONS REGULATIONS 1992

Employers must try to avoid manual handling within reason if there is a possibility of injury. If manual handling cannot be avoided then they must reduce the risk of injury by means of a risk assessment.

INDUSTRY TIP

Abrasive wheels are used for grinding. Under PUWER these wheels can only be changed by someone who has received training to do this. Wrongly fitted wheels can explode!

ACTIVITY

All the tools you use for your work are covered by PUWER. They must be well maintained and suitable for the task. A damaged head on a bolster chisel must be reshaped. A split shaft on a joiner's wood chisel must be repaired. Why would these tools be dangerous in a damaged condition? List the reasons.



An operative lifting heavy bricks

LIFTING AND HANDLING

Incorrect lifting and handling is a serious risk to your health. It is very easy to injure your back – just ask any experienced builder. An injured back can be very unpleasant, so it's best to look after it.

Here are a few things to consider when lifting:

- Assess the load. Is it too heavy? Do you need assistance or additional training? Is it an awkward shape?
- Can a lifting aid be used, such as any of the below?



Wheelbarrow



Gin lift



Scissor lift



Kerb lifter

- Does the lift involve twisting or reaching?
- Where is the load going to end up? Is there a clear path? Is the place it's going to be taken to cleared and ready?

How to lift and place an item correctly

If you cannot use a machine, it is important that you keep the correct posture when lifting any load. The correct technique to do this is known as **kinetic lifting**. Always lift with your back straight, elbows in, knees bent and your feet slightly apart.

Kinetic lifting

A method of lifting that ensures that the risk of injury is reduced



Safe kinetic lifting technique

When placing the item, again be sure to use your knees and beware of trapping your fingers. If stacking materials, be sure that they are on a sound level base and on bearers if required.

Heavy objects that cannot easily be lifted by mechanical methods can be lifted by several people. It is important that one person in the team is in charge, and that lifting is done in a co-operative way. It has been known for one person to fall down and the others to then drop the item!

CONTROL OF NOISE AT WORK REGULATIONS 2005

Under the Control of Noise at Work Regulations 2005, duties are placed on employers and employees to reduce the risk of hearing damage to the lowest reasonable level practicable. Hearing loss caused by work is preventable. Hearing damage is permanent and cannot be restored once lost.

EMPLOYER'S DUTIES UNDER THE REGULATIONS

An employer's duties are:

- to carry out a risk assessment and identify who is at risk
- to eliminate or control its employees' exposure to noise at the workplace and to reduce the noise as far as practicable
- to provide suitable hearing protection
- to provide health surveillance to those identified as at risk by the risk assessment

ACTIVITY

Try it out. Place a box on the floor and lift it using the technique shown.

ACTIVITY

Consider this list of materials: plywood, cement, aggregates, sawn timber joists, glass, drainage pipes, and kerbs. Make a table to show how you would transport and stack them around your place of work.

INDUSTRY TIP

Most workplace injuries are a result of manual handling. Remember, pushing or pulling an object still comes under the Manual Handling Operations Regulations.

ACTIVITY

Watch this link to find out more about hearing loss and damage: www.hse.gov.uk/noise/video/hearingvideo.htm



Ear defenders



Ear plugs

INDUSTRY TIP

The typical noise level for a hammer drill and a concrete mixer is 90 to 100dB (a).

- to provide information and training about the risks to their employees as identified by the risk assessment.

EMPLOYEES' DUTIES UNDER THE REGULATIONS

Employees must:

- make full and proper use of personal hearing protectors provided to them by their employer
- report to their employer any defect in any personal hearing protectors or other control measures as soon as is practicable.

NOISE LEVELS

Under the Regulations, specific actions are triggered at specific noise levels. Noise is measured in decibels and shown as dB (a). The two main action levels are 80dB (a) and 85dB (a).

Requirements at 80dB (a) to 85dB (a):

- Assess the risk to operatives' health and provide them with information and training.
- Provide suitable ear protection free of charge to those who request ear protection.

Requirements above 85dB (a):

- Reduce noise exposure as far as practicable by means other than ear protection.
- Set up an ear protection zone using suitable signage and segregation.
- Provide suitable ear protection free of charge to those affected and ensure they are worn.

PERSONAL PROTECTIVE EQUIPMENT (PPE) AT WORK REGULATIONS 1992

Employees and subcontractors must work in a safe manner. Not only must they wear the PPE that their employers provide but they must also look after it and report any damage to it. Importantly, employees must not be charged for anything given to them or done for them by the employer in relation to safety.

ACTIVITY

Think about your place of work or training. What PPE do you think you should use when working with cement or using a powered planer?

The hearing and respiratory PPE provided for most work situations is not covered by these Regulations because other regulations apply to it. However, these items need to be compatible with any other PPE provided.

The main requirement of the Regulations is that PPE must be supplied and used at work wherever there are risks to health and safety that cannot be adequately controlled in other ways.

The Regulations also require that PPE is:

- included in the method statement
- properly assessed before use to ensure it is suitable
- maintained and stored properly
- provided to employees with instructions on how they can use it safely
- used correctly by employees.

An employer cannot ask for money from an employee for PPE, whether it is returnable or not. This includes agency workers if they are legally regarded as employees. If employment has been terminated and the employee keeps the PPE without the employer's permission, then, as long as it has been made clear in the contract of employment, the employer may be able to deduct the cost of the replacement from any wages owed.

Using PPE is a very important part of staying safe. For it to do its job properly it must be kept in good condition and used correctly. If any damage does occur to an article of PPE it is important that this is reported and it is replaced. It must also be remembered that PPE is a last line of defence and should not be used in place of a good safety policy!

ACTIVITY

Check the date on your safety helmet. Always update your safety helmet if it is out of date.



A site safety sign showing the PPE required to work there

INDUSTRY TIP






Remember, you also have a duty of care for your own health.

INDUSTRY TIP

You can get chemical burns from cement.
Always wear gloves when working with cement.

The following table shows the type of PPE used in the workplace and explains why it is important to store, maintain and use PPE correctly. It also shows why it is important to check and report damage to PPE.

PPE	Correct use
<p>Hard hat/safety helmet</p> 	<p>Hard hats must be worn when there is danger of hitting your head or danger of falling objects. They often prevent a wide variety of head injuries. Most sites insist on hard hats being worn. They must be adjusted to fit your head correctly and must not be worn back to front! Check the date of manufacture as plastic can become brittle over time. Solvents, pens and paints can damage the plastic too.</p>
<p>Toe-cap boots or shoes</p>  <p>Safety boots</p>  <p>A nail in a construction worker's foot</p>	<p>Toe-cap boots or shoes are worn on most sites as a matter of course and protect the feet from heavy falling objects. Some safety footwear has additional insole protection to help prevent nails going up through the foot. Toe caps can be made of steel or lighter plastic.</p>
<p>Ear defenders and plugs</p>  <p>Ear defenders</p>  <p>Ear plugs</p>	<p>Your ears can be very easily damaged by loud noise. Ear protection will help prevent hearing loss while using loud tools or if there is a lot of noise going on around you. When using earplugs always ensure your hands are clean before handling the plugs as this reduces the risk of infection. If your ear defenders are damaged or fail to make a good seal around your ears have them replaced.</p>
<p>High-visibility (hi-viz) jacket</p> 	<p>This makes it much easier for other people to see you. This is especially important when there is plant or vehicles moving in the vicinity.</p>
<p>Goggles and safety glasses</p>  <p>Safety goggles</p>  <p>Safety glasses</p>	<p>These protect the eyes from dust and flying debris while you are working. It has been known for casualties to be taken to hospital after dust has blown up from a dry mud road. You only get one pair of eyes: look after them!</p>

PPE	Correct use
<p>Dust masks and respirators</p>  <p>Dust mask Respirator</p>	<p>Dust is produced during most construction work and it can be hazardous to your lungs. It can cause all sorts of ailments from asthma through to cancer. Wear a dust mask to filter this dust out. You must ensure it is well fitted.</p> <p>Another hazard is dangerous gases such as solvents. A respirator will filter out hazardous gases but a dust mask will not! Respirators are rated P1, P2 and P3, with P3 giving the highest protection.</p>
<p>Gloves</p>  <p>Latex glove Nitrile glove</p> <p>Gauntlet gloves Leather gloves</p>	<p>Gloves protect your hands. Hazards include cuts, abrasions, dermatitis, chemical burns or splinters. Latex and nitrile gloves are good for fine work, although some people are allergic to latex. Gauntlets provide protection from strong chemicals. Other types of gloves provide good grip and protect the fingers.</p>  <p>A chemical burn as a result of not wearing safety gloves</p>
<p>Sunscreen</p>  <p>Sunscreen Melanoma</p>	<p>Another risk, especially in the summer months, is sunburn. Although a good tan is sometimes considered desirable, over-exposure to the sun can cause skin cancer such as melanoma. When out in the sun, cover up and use sunscreen (ie suncream) on exposed areas of your body to prevent burning.</p>
<p>Preventing HAVS</p> 	<p>Hand-arm vibration syndrome (HAVS), also known as vibration white finger (VWF), is an industrial injury caused by using vibrating power tools (such as a hammer drill, vibrating poker and vibrating plate) for a long time. This injury is controlled by limiting the time such power tools are used. For more information see page 31.</p>

ACTIVITY

You are working on a site and a brick falls on your head. Luckily, you are doing as you have been instructed and you are wearing a helmet. You notice that the helmet has a small crack in it. What do you do?

- 1 Carry on using it as your employer will charge you for a new one, after all it is only a small crack.
- 2 Take it to your supervisor as it will no longer offer you full protection and it will need replacing.
- 3 Buy a new helmet because the old one no longer looks very nice.

INDUSTRY TIP

The most important pieces of PPE when using a disc cutter are dust masks, glasses and ear protection.

WORK AT HEIGHT REGULATIONS 2005 (AS AMENDED)

The Work at Height Regulations 2005 (as amended) put several duties upon employers:

- Working at height should be avoided if possible.
- If working at height cannot be avoided, the work must be properly organised with risk assessments carried out.
- Risk assessments should be regularly updated.
- Those working at height must be trained and competent.
- A method statement must be provided.



Workers wearing safety harnesses on an aerial access platform

Several points should be considered when working at height:

- How long is the job expected to take?
- What type of work will it be? It could be anything from fitting a single light bulb, through to removing a chimney or installing a roof.
 - How is the access platform going to be reached? By how many people?
 - Will people be able to get on and off the structure safely? Could there be overcrowding?
- What are the risks to passers-by? Could debris or dust blow off and injure anyone on the road below?
- What are the conditions like? Extreme weather, unstable buildings and poor ground conditions need to be taken into account.



A cherry picker can assist you when working at height.

INDUSTRY TIP

Remember, you must be trained before you can operate any equipment.

ACCESS EQUIPMENT AND SAFE METHODS OF USE

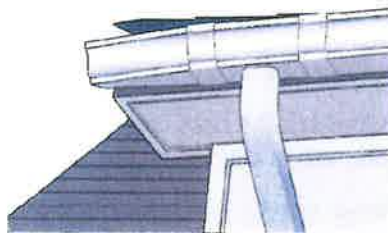
The means of access should only be chosen after a risk assessment has been carried out. There are various types of access.

Ladders

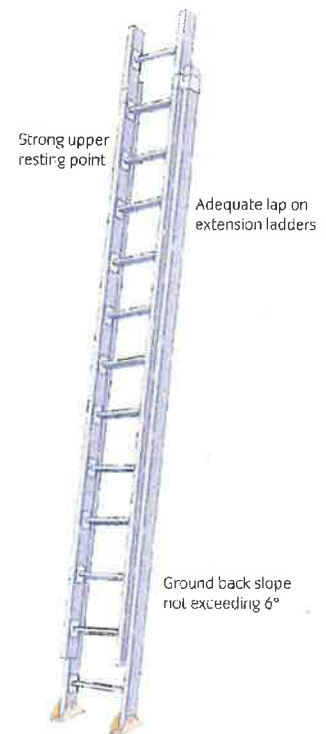
Ladders are normally used for access onto an access platform. They are not designed for working from except for light, short-duration work. A ladder should lean at an angle of 75° , ie one unit out for every four units up.



Roof ladder



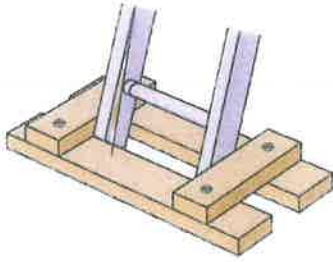
Resting ladders on plastic guttering can cause it to bend and break.



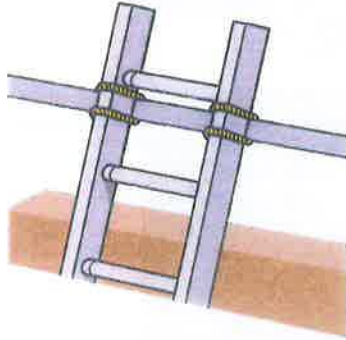
Ground side slope not exceeding 16° , clean and free of slippery algae and moss

Using a ladder correctly

The following images show how to use a ladder or stepladder safely.



A ladder secured at the base.



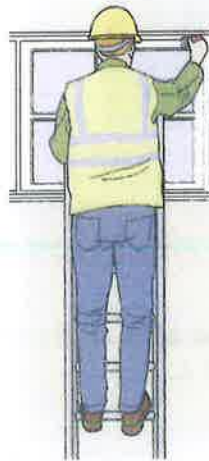
A ladder secured at the top of a platform for working from.



Access ladders should extend 1m above the landing point to provide a strong handhold.



Certain stepladders are unsafe to work from the top three rungs.



Don't overreach, and stay on the same rung.



Grip the ladder when climbing and remember to keep three points of contact.

INDUSTRY TIP

Always complete ladder pre-checks. Check the stiles (the two uprights) and rungs for damage such as splits or cracks. Do not use painted ladders because the paint could be hiding damage! Check all of the equipment including any stays and feet.

Stepladders

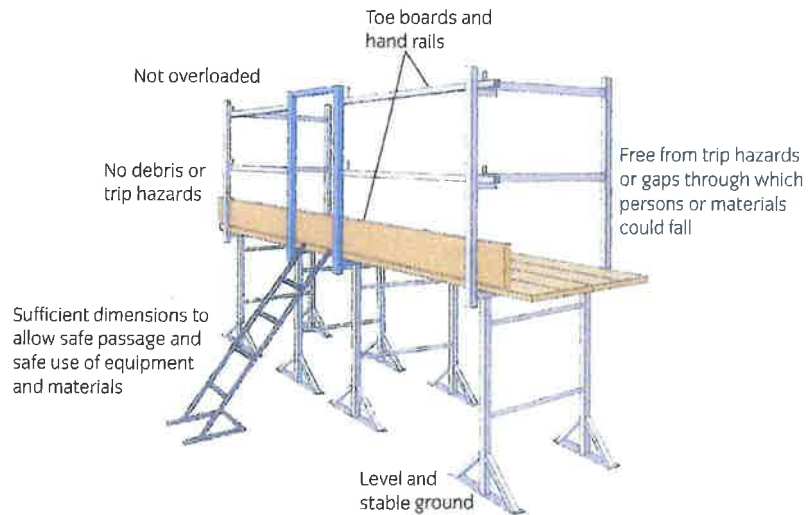
Stepladders are designed for light, short-term work.



Using a stepladder correctly

Trestles

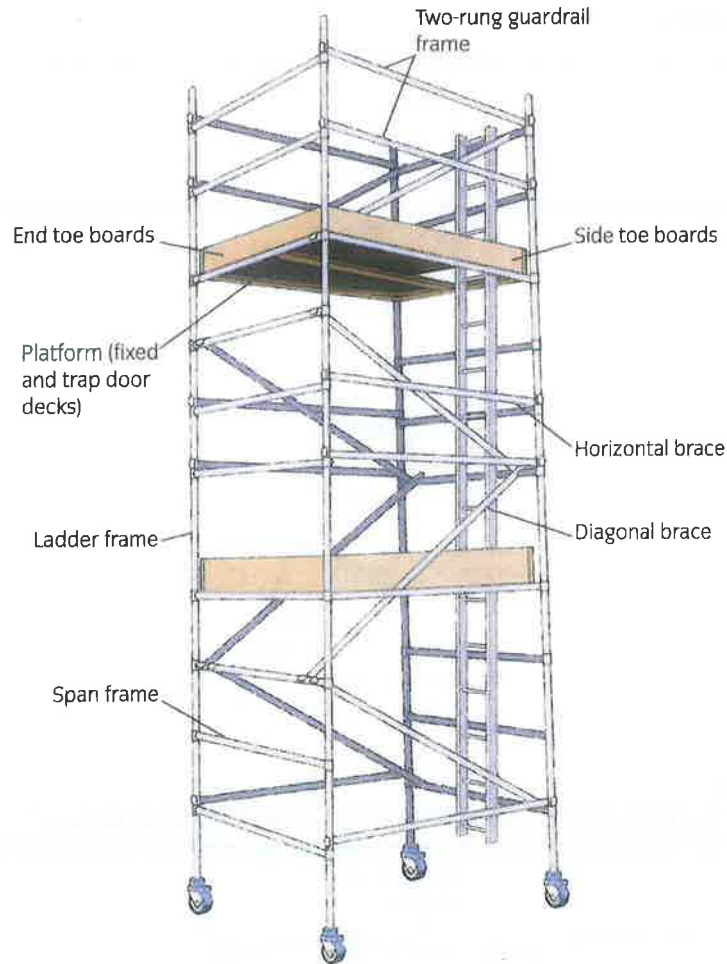
This is a working platform used for work of a slightly longer duration.



Parts of a trestle

Tower scaffold

These are usually proprietary (manufactured) and are made from galvanised steel or lightweight aluminium alloy. They must be erected by someone competent in the erection and dismantling of mobile scaffolds.



Parts of a tower scaffold

To use a tower scaffold safely:

- Always read and follow the manufacturer's instruction manual.
- Only use the equipment for what it is designed for.
- The wheels or feet of the tower must be in contact with a firm surface.
- Outriggers should be used to increase stability. The maximum height given in the manufacturer's instructions must not be exceeded.
- The platform must not be overloaded.
- The platform should be unloaded (and reduced in height if required) before it is moved.
- Never move a platform, even a small distance, if it is occupied.

INDUSTRY TIP

Remember, even a mobile access tower should have toe boards and guard rails fitted at all times when in use.

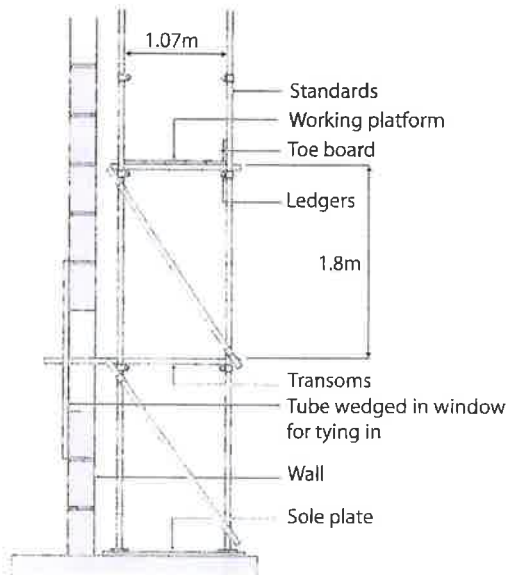
Tubular scaffold

This comes in two types:

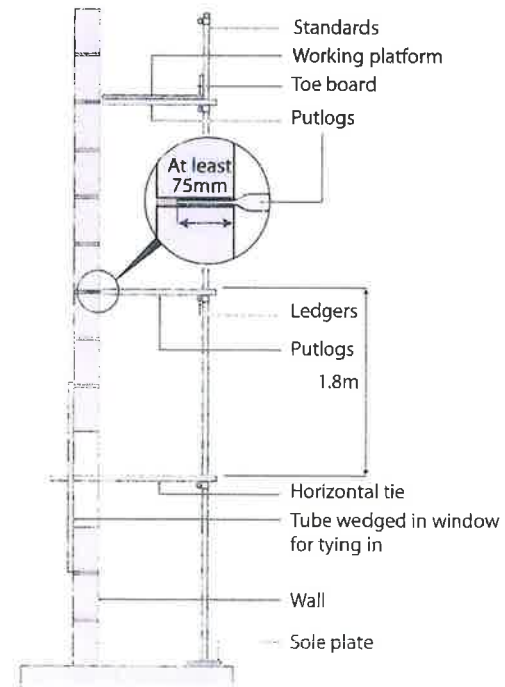
- independent scaffold has two sets of standards or uprights
- putlog scaffold is built into the brickwork.

INDUSTRY TIP

A scaffold must never be overloaded. Any loading (eg blocks or bricks) must be evenly distributed.



Independent tubular scaffold



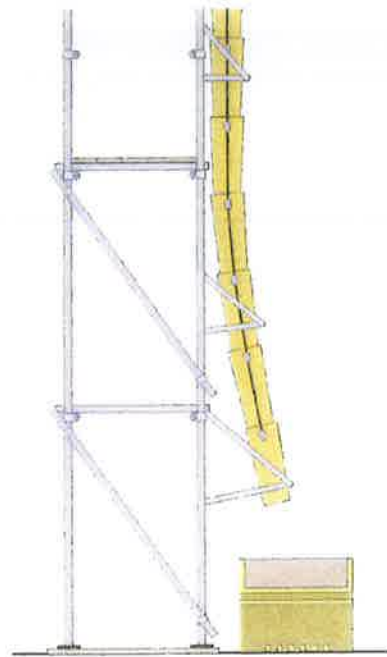
Putlog tubular scaffold

Tubular scaffold is erected by specialist scaffolding companies and often requires structural calculations. Only trained and competent scaffold erectors should alter scaffolding. Access to a scaffold is usually via a tied ladder with three rungs projecting above the step off at platform level.

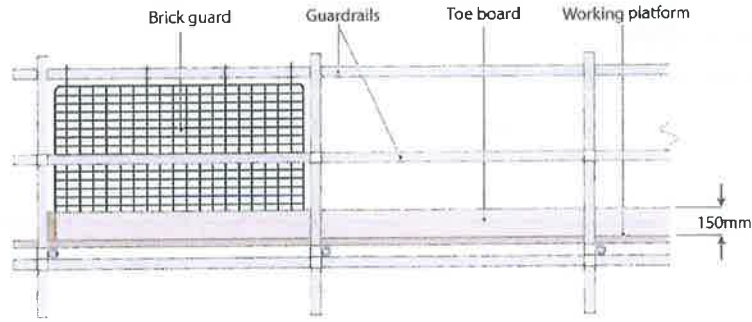
OUR HOUSE

You have been asked to complete a job that requires gaining access to the roof level of a two-storey building. What equipment would you choose to get access to the work area? What things would you take into consideration when choosing the equipment? Take a look at 'Our House' as a guide for working on a two-storey building.





A debris chute for scaffolding



A safe working platform on a tubular scaffold

All scaffolding must:

- not have any gaps in the handrail or toe boards
- have a safe system for lifting any materials up to the working height
- have a safe system of debris removal.

Fall protection devices include:

- harnesses and lanyards
- safety netting
- air bags.

A harness and lanyard or safety netting will stop a person falling too far, leaving them suspended in the air. Air bags (commonly known as 'bouncy castles') are set up on the ground and inflated. If a person falls, they will have a soft landing. Air bags have fallen out of favour somewhat as some operatives use them as an easy way to get off the working platform – not the purpose they were intended for!



Using a scissor lift at height

LIFTING OPERATIONS AND LIFTING EQUIPMENT REGULATIONS (LOLER) 1998

The Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 put responsibility upon employers to ensure that the lifting equipment provided for use at work is:

- strong and stable enough for the particular use and marked to indicate safe working loads
- positioned and installed to minimise any risks
- used safely, ie the work is planned, organised and performed by competent people
- subject to on-going thorough examination and, where appropriate, inspection by competent people.

THE CONTROL OF VIBRATION AT WORK REGULATIONS 2005

Vibration white finger or hand–arm vibration syndrome (HAVS) (see page 23) is caused by using vibrating tools such as hammer drills, vibrating pokers or hand-held breakers over a long period of time. The most efficient and effective way of controlling exposure to hand–arm vibration is to look for new or alternative work methods that remove or reduce exposure to vibration.

Follow these steps to reduce the effects of HAVS:

- Always use the right tool for each job.
- Check tools before using them to make sure they have been properly maintained and repaired to avoid increased vibration caused by faults or general wear.
- Make sure cutting tools are kept sharp so that they remain efficient.
- Reduce the amount of time you use a tool in one go, by doing other jobs in between.
- Avoid gripping or forcing a tool or work piece more than you have to.
- Encourage good blood circulation by:
 - keeping warm and dry (when necessary, wear gloves, a hat, waterproofs and use heating pads if available)
 - giving up or cutting down on smoking because smoking reduces blood flow
 - massaging and exercising your fingers during work breaks.

Damage from HAVS can include the inability to do fine work and cold can trigger painful finger blanching attacks (when the ends of your fingers go white).



An operative taking a rest from using a power tool!



Don't use power tools for longer than you need to!

CONSTRUCTION SITE HAZARDS

DANGERS ON CONSTRUCTION SITES

Study the drawing of a building site. There is some demolition taking place, as well as construction. How many hazards can you find? Discuss your answers.



Dangers	Discussion points
Head protection	The operatives are not wearing safety helmets, which would prevent them from hitting their head or from falling objects.
Poor housekeeping	The site is very untidy. This can result in slips, trips and falls and can pollute the environment. An untidy site gives a poor company image. Offcuts and debris should be regularly removed and disposed of according to site policy and recycled if possible.
Fire	There is a fire near a building; this is hazardous. Fires can easily become uncontrollable and spread. There is a risk to the structure and, more importantly, a risk of operatives being burned. Fires can also pollute the environment.

Dangers	Discussion points
Trip hazards	Notice the tools and debris on the floor. The scaffold has been poorly constructed. There is a trip hazard where the scaffold boards overlap.
Chemical spills	There is a drum leaking onto the ground. This should be stored properly – upright and in a lockable metal shed or cupboard. The leak poses a risk of pollution and of chemical burns to operatives.
Falls from height	The scaffold has handrails missing. The trestle working platform has not been fitted with guard rails. None of the operatives is wearing a hard hat for protection either.
Noise	An operative is using noisy machinery with other people nearby. The operative should be wearing ear PPE, as should those working nearby. Better still, they should be working elsewhere if at all possible, isolating themselves from the noise.
Electrical	Some of the wiring is 240V as there is no transformer, it's in poor repair and it's also dragging through liquid. This not only increases the risk of electrocution but is also a trip hazard.
Asbestos or other hazardous substances	Some old buildings contain asbestos roofing which can become a hazard when being demolished or removed. Other potential hazards include lead paint or mould spores. If a potentially hazardous material is discovered a supervisor must be notified immediately and work must stop until the hazard is dealt with appropriately.

Asbestos

A naturally occurring mineral that was commonly used for a variety of purposes including: **insulation**, fire protection, roofing and guttering. It is extremely hazardous and can cause a serious lung disease known as asbestosis

Insulation

A material that reduces or prevents the transmission of heat



Cables can be a trip hazard on site



Boiler suit

PERSONAL HYGIENE

Working in the construction industry can be very physical, and it's likely to be quite dirty at times. Therefore you should take good care with your personal hygiene. This involves washing well after work. If contaminants are present, then wearing a protective suit, such as a boiler suit, that you can take off before you go home will prevent contaminants being taken home with you.

You should also wash your hands after going to the toilet and before eating. This makes it safer to eat and more pleasant for others around you. The following steps show a safe and hygienic way to wash your hands.



Hand cleaner



STEP 1 Apply soap to hands from the dispenser.



STEP 2 Rub the soap into a lather and cover your hands with it, including between your fingers.



STEP 3 Rinse hands under a running tap removing all of the soap from your hands.



STEP 4 Dry your hands using disposable towels. Put the towels in the bin once your hands are dry.

WORKING WITH ELECTRICITY

Electricity is a very useful energy resource but it can be very dangerous. Electricity must be handled with care! Only trained, competent people can work with electrical equipment.

THE DANGERS OF USING ELECTRICAL EQUIPMENT

The main dangers of electricity are:

- shock and burns (a 230V shock can kill)
- electrical faults which could cause a fire
- an explosion where an electrical spark has ignited a flammable gas.

VOLTAGES

Generally speaking, the lower the voltage the safer it is. However, a low voltage is not necessarily suitable for some machines, so higher voltages can be found. On site, 110V (volts) is recommended and this is the voltage rating most commonly used in the building industry. This is converted from 230V by use of a transformer.

230V (commonly called 240V) domestic voltage is used on site as battery chargers usually require this voltage. Although 230V is often used in workshops, 110V is recommended.

400V (otherwise known as 3 phase) is used for large machinery, such as joinery shop equipment.

Voltages are nominal, ie they can vary slightly.

BATTERY POWER

Battery power is much safer than mains power. Many power tools are now available in battery-powered versions. They are available in a wide variety of voltages from 3.6V for a small screwdriver all the way up to 36V for large masonry drills.

The images on the next page are all examples of battery-powered tools you may come across in your workplace or place of training.



110V 1 phase – yellow



230V 1 phase – blue



400V 3 phase – red



Battery drill



Battery-powered planer



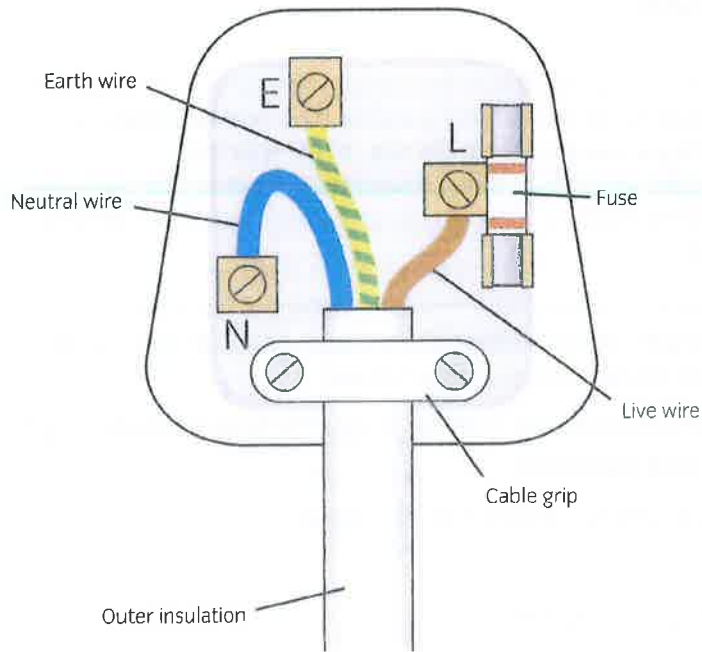
Battery-powered jigsaw

WIRING

INDUSTRY TIP

Wiring should only be completed by a qualified electrician.

The wires inside a cable are made from copper, which conducts electricity. The copper is surrounded by a plastic coating that is colour coded. The three wires in a cable are the live (brown), which works with the neutral (blue) to conduct electricity, making the appliance work. The earth (green and yellow stripes) prevents electrocution if the appliance is faulty or damaged.



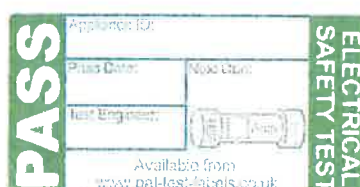
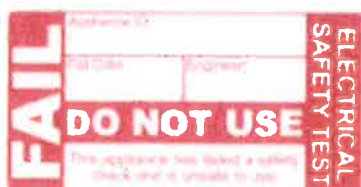
A wired plug

POWER TOOLS AND CHECKS

Power tools should always be checked before use. Always inform your supervisor if you find a fault. The tool will need to be repaired, and the tool needs to be kept out of use until then. The tool might be taken away, put in the site office and clearly labelled 'Do not use'.

Power tool checks include:

- **Look for the portable appliance testing (PAT) label:** PAT is a regular test carried out by a competent person (eg a qualified electrician) to ensure the tool is in a safe electrical condition. A sticker is placed on the tool after it has been tested. Tools that do not pass the PAT are taken out of use.



PAT testing labels

- **Cable:** Is it damaged? Is there a repair? Insulation tape may be hiding a damaged cable. Damaged cables must be replaced.
- **Casing:** Is the casing cracked? Plastic casings ensure the tool is double-insulated. This means the live parts inside are safely shielded from the user. A cracked casing will reduce the protection to the user and will require repair.
- **Guards and tooling:** Are guards in place? Is the tooling sharp?
- **Electricity supply leads:** Are they damaged? Are they creating a trip hazard? You need to place them in such a way that they do not make a trip hazard. Are they protected from damage? If they are lying on the floor with heavy traffic crossing them, they must be covered.
- **Use appropriate equipment for the size of the job:** For example, too many splitters can result in a web of cables.
- **Storage:** After use, power tools and equipment should be stored correctly. Tools must be returned to the boxes, including all the guards and parts. Cables need to be wound onto reels or neatly coiled as they can become tangled very easily.



Cable protection



Cable reel

INDUSTRY TIP

Remember, always fully unroll an extension lead before use because it could overheat and cause a fire.

FIRE

Fire needs three things to start; if just one of them is missing there will be no fire. If all are present then a fire is unavoidable:

- 1 *Oxygen*: A naturally occurring gas in the air that combines with flammable substances under certain circumstances.
- 2 *Heat*: A source of fire, such as a hot spark from a grinder or naked flame.
- 3 *Fuel*: Things that will burn such as acetone, timber, cardboard or paper.



The fire triangle

If you have heat, fuel and oxygen you will have a fire. Remove any of these and the fire will go out.

PREVENTING THE SPREAD OF FIRE

Being tidy will help prevent fires starting and spreading. For instance:

- Wood offcuts should not be left in big piles or standing up against a wall. Instead, useable offcuts should be stored in racks.
- Put waste into the allocated disposal bins or skips.
- Always replace the cap on unused fuel containers when you put them away. Otherwise they are a potential source of danger.
- Flammable liquids (not limited to fuel-flammable liquids) such as oil-based paint, thinners and oil must be stored in a locked metal cupboard or shed.

- Smoking around flammable substances should be avoided.
- Dust can be explosive, so when doing work that produces wood dust it is important to use some form of extraction and have good ventilation.

FIRE EXTINGUISHERS AND THEIR USES

You need to know where the fire extinguishers and blankets are located and which fire extinguishers can be used on different fires. The table below shows the different classes of fire and which extinguisher to use in each case.

Class of fire	Materials	Type of extinguisher
A	Wood, paper, hair, textiles	Water, foam, dry powder, wet chemical
B	Flammable liquids	Foam, dry powder, CO ₂
C	Flammable gases	Dry powder, CO ₂
D	Flammable metals	Specially formulated dry powder
E	Electrical fires	CO ₂ , dry powder
F	Cooking oils	Wet chemical, fire blanket



Fire blanket

INDUSTRY TIP

Remember, although all fire extinguishers are red, they each have a different coloured label to identify their contents.



CO₂ extinguisher



Dry powder extinguisher



Water extinguisher



Foam extinguisher

It is important to use the correct extinguisher for the type of fire as using the wrong one could make the danger much worse, eg using water on an electrical fire could lead to the user being electrocuted!

EMERGENCY PROCEDURES

In an emergency, people tend to panic. If an emergency were to occur, such as fire, discovering a bomb or some other security problem, would you know what to do? It is vital to be prepared in case of an emergency.

It is your responsibility to know the emergency procedures on your work site:

- If you discover a fire or other emergency you will need to raise the alarm:
 - You will need to tell a nominated person. Who is this?
 - If you are first on the scene you will have to ring the emergency services on 999.
- Be aware of the alarm signal. Is it a bell, a voice or a siren?
- Where is the assembly point? You will have to proceed to this point in an orderly way. Leave all your belongings behind; they may slow you or others down.
- At the assembly point, there will be someone who will ensure everyone is out safely and will do so by taking a count. Do you know who this person is? If during a fire you are not accounted for, a firefighter may risk their life to go into the building to look for you.
- How do you know it's safe to re-enter the building? You will be told by the appointed person. It's very important that you do not re-enter the building until you are told to do so.



Emergency procedure sign

ACTIVITY

What is the fire evacuation procedure at your workplace or place of training?






SIGNS AND SAFETY NOTICES

The law sets out the types of safety signs needed on a construction site. Some signs that warn us about danger and others tell us what to do to stay safe.

The following table describes five basic types of sign.

Type of sign	Description
Prohibition 	These signs are red and white. They are round. They signify something that must <i>not</i> be done.
Mandatory 	These signs are blue. They are round. They signify something that <i>must</i> be done.

Type of sign	Description
<p data-bbox="496 253 600 282">Caution</p> 	<p data-bbox="751 253 1270 315">These signs are yellow and black. They are triangular. These give warning of hazards.</p>
<p data-bbox="496 526 691 555">Safe condition</p> 	<p data-bbox="751 526 1281 629">These signs are green. They are usually square or rectangular. They tell you the safe way to go, or what to do in an emergency.</p>
<p data-bbox="496 857 699 887">Supplementary</p> 	<p data-bbox="751 857 1273 960">These white signs are square or rectangular and give additional important information. They usually accompany the signs above.</p>

Case Study: Graham and Anton

An old barn had planning passed in order for it to be converted into a dwelling.

Keith, the contractor, was appointed and the small building company turned up first thing Monday morning.

Graham, the foreman, took a short ladder off the van to access the building's asbestos and slate roof to inspect its condition. The ladder just reached fascia level. As Graham stepped off onto the roof the ladder fell away, leaving him stranded. Luckily for him, Anton the apprentice, who was sitting in the van at the time noticed what had happened and rushed over to put the ladder back up.

While inspecting the whole roof Graham found that the asbestos roof covering was rather old and had become brittle over time, especially the clear plastic roof light sections. It was also clear upon close inspection that the ridge had holes in it and was leaking water. On the slated area of the roof it was noted that many slates were loose and some of them had fallen away leaving the battens and rafters exposed which was leading to severe decay of the timbers.

It was decided that the whole roof needed to be replaced.

- Was the survey carried out safely?
- What accidents could have happened during the survey?
- What could have been done to make the whole operation safer?
- What is the builder's general view of safety?
- How would you carry out the roof work in a safe fashion?



TEST YOUR KNOWLEDGE

Work through the following questions to check your learning.

- 1 Which of the following **must** be filled out prior to carrying out a site task?
 - a Invoice.
 - b Bill of quantities.
 - c Risk assessment.
 - d Schedule.
- 2 Which of the following signs shows you something you **must** do?
 - a Green circle.
 - b Yellow triangle.
 - c White square.
 - d Blue circle.
- 3 Two parts of the fire triangle are heat and fuel. What is the third?
 - a Nitrogen.
 - b Oxygen.
 - c Carbon dioxide.
 - d Hydrogen sulphite.
- 4 Which of the following types of fire extinguisher would **best** put out an electrical fire?
 - a CO₂.
 - b Powder.
 - c Water.
 - d Foam.
- 5 Which piece of health and safety legislation is designed to protect an operative from ill health and injury when using solvents and adhesives?
 - a Manual Handling Operations Regulations 1992.
 - b Control of Substances Hazardous to Health (COSHH) Regulations 2002.
 - c Health and Safety (First Aid) Regulations 1981.
 - d Lifting Operations and Lifting Equipment Regulations (LOLER) 1998.
- 6 What is the correct angle at which to lean a ladder against a wall?
 - a 70°.
 - b 80°.
 - c 75°.
 - d 85°.
- 7 Which are the **most** important pieces of PPE to use when using a disc cutter?
 - a Overalls, gloves and boots.
 - b Boots, head protection and overalls.
 - c Glasses, hearing protection and dust mask.
 - d Gloves, head protection and boots.
- 8 Which of these is **not** a lifting aid?
 - a Wheelbarrow.
 - b Kerb lifter.
 - c Gin lift.
 - d Respirator.
- 9 Which of these is a 3 phase voltage?
 - a 400V.
 - b 230V.
 - c 240V.
 - d 110V.
- 10 Above what noise level **must** you wear ear protection?
 - a 75dB(a).
 - b 80dB(a).
 - c 85dB(a).
 - d 90dB(a).