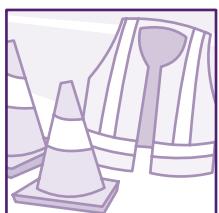




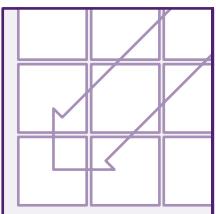
Managing safely

Your workbook



version

5.0



Your name: _____

Trainer's name: _____

Date of training: _____



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Module one



Module 1: Introducing managing safely

Key learning points

1. Why is it important to manage safely?
2. What are your responsibilities as a manager?



Notes:

Why is it important to manage safely?

Just for a moment, think about a serious accident happening in your organisation. What would it mean to you and your organisation?



Think about the injured workers, their personal costs, pain and suffering and the effect on their families. Workers may have long hospital stays and may never work again.

If it's shown that the accident happened because of a failure to manage health and safety risks in the organisation, the regulator may take action, which in turn may lead to prosecutions, fines and imprisonment.

There may also be a personal injury claim from the injured person. Maybe that doesn't alarm you too much – you're a reasonably comfortable outfit in financial terms, and the costs aren't going to hit you too hard.

But what about the replacement labour, accident investigation, downtime and increased insurance premiums? These are much greater than the costs of fines and compensation. Remember also that insurance won't pay the costs of criminal fines.

And what happens when the local or even the national press and television get hold of the story about the accident? What's the large multinational company that's recently placed an order with your organisation going to think?

What will other potential customers, clients, employees, contractors and the local and national community think about your organisation?

You'll probably find your loss of reputation will cost a lot more than those fines.



Notes:

Case study

A worker was using an unguarded drilling machine in a small engineering company employing 15 workers. The sleeve of his jumper caught on the rotating drill, entangling his arm. Both bones in his lower arm were broken and he suffered extensive tissue and muscle injury. He spent 12 days in hospital undergoing major surgery and was off work for three months. On his return he was placed on administrative duties for five months and he was unable to operate machinery for eight months. The managing director was prosecuted following the incident and the total costs to the business were around £45,000. Another cost was that two employees not involved in the accident were made redundant to prevent the company from going out of business.

Consequently, there are three key reasons to manage safely:



Moral: It's not acceptable for workers to suffer injury and ill health as a result of doing their job. Demonstrating that the organisation cares about staff safety and health will lead to a happier and more productive workforce.

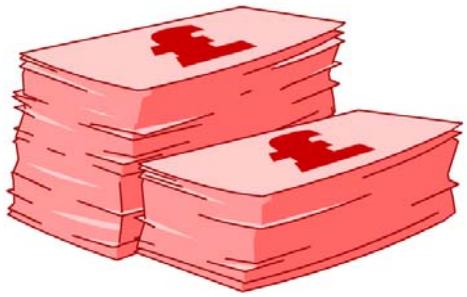
Case study

In 2000, the pharmaceutical manufacturer AstraZeneca started a 'Well-being' programme for employees, which focused on the home–work balance, rehabilitation and treatment, and health promotion. The company benefited tremendously from this strategy; in the UK alone, absence levels are 31 per cent lower than the UK average, saving an estimated £5 million per year. There was a 53 per cent reduction in the number of ergonomic-related health and safety cases per million hours worked by the firm's UK employees in the first 6 months of 2003, and a reduction in the number of work-related stress cases.

Legal: The law requires responsible people in organisations to assess reasonably foreseeable risks from the company's activities and to put in place control measures that will reduce the risks – so far as is reasonably practicable. This is quite fair; after all, it's the companies that create the risks!



Financial: As well as reducing the likelihood of fines and personal injury claims, managing health and safety can save money through reduced insurance premiums and safer and more effective ways of working. A reputation as a health and safety-conscious employer can also open doors for you in gaining new business, retaining staff and recruiting new staff.



Case study

Over the past ten years, management and employees at the GlaxoSmithKline (GSK) manufacturing site at Dartford have developed a programme that aims to improve health and safety through greater transparency and sharing responsibilities. Since 2000, GSK has enjoyed a 40 per cent reduction in employer's liability claims, thanks to the success of the programme.



Notes:

What are my responsibilities as a manager?

OK, so we've talked about 'the company' so far – now let's talk about you. As a manager you should already know that you have health and safety responsibilities.

As a manager, **you** are in the front line of safety. As the representative of the employer, **you** will make decisions about local safety practice. **You** are in control of what really happens.



Responsibility leads to **accountability** – as a manager, you can delegate responsibility but you can't give away your accountability – you're ultimately accountable.

Let's go back to our opening scenario, where we asked you to think about a serious accident happening in your organisation. Put yourself in the position of the manager of the employee who's had the accident:

- **you** are accountable for assessing and managing the risks the employee is exposed to
- **you** will have to arrange replacement labour, carry out the accident investigation, report to customers that their orders have been delayed, and potentially liaise with enforcement officers, your insurance company and the media
- **you** will have to tell your employee's family that they won't be coming home tonight.



When you return to your company, make a list of your responsibilities and accountabilities as a manager.

Case study

An employee was run over by a rough terrain forklift truck while he was handling plants and helping to unload stillages. It appears that he had to unload stillages of plants in different places; the driver of the forklift truck drove off without checking that the road was clear and ran over the employee. The company didn't have a system of work for controlling vehicle movement on site. There was also no system for protecting staff from risks associated with transport. The case against the company and its director was heard in the Crown Court. The company was fined £10,000 plus costs of £8,853, and its director was fined £5,000.

This course will help you identify your responsibilities and accountabilities.

You need to know when you need to act, how to act, when not to act, when to pass things on to more senior managers, and when to call for help because you're out of your depth.



Notes:

Quiz

1. Globally, approximately how many people die every year from a work related accident or disease?
2. Approximately , How many fatal accidents occure each year on constructions sites around the world?
3. Accross the world,How many people die from workrelated cancer each year?
4. In Eurpoe alone, How many cancer deaths are linked to occupational diesel exhaust exposure ?

5. How many lives will asbestos have claimed globally before it's fully controlled?
6. Which of the following does the ILO say is key to tackling the growing number of workrelated disease?
7. Approximately , what is the percentage of workers worldwide that do not have any worker insurance to compensate them in case of occupational diseases and injuries?
8. Organisations that establish worker safety programmes can reduce injury and workplace illness costs by how much?



9. EWorkplace health initiative can help to reduce sick leave absenteeism by what percentage?

10.What percentage of workplace accidents could be prevented by good management?



Getting it right

So health and safety is another thing on your list as a manager, along with budgets, discipline, communications, legal matters, HR matters, sick leave, annual leave, resources and targets, to name but a few....

But think about it... managing health and safety can give you a helping hand with managing all the other things that you have to deal with. Good health and safety management can:

- enhance your reputation
- increase your profits
- reduce wastage and insurance premiums
- maintain a happy and healthy team.

In fact, managing health and safety is key to your business. Integrate health and safety into everything your business does. Treat health and safety matters with the respect they deserve, just like other risks to your business.

It's all well and good to say you agree with this, but you also have to live up to what you say – your actions must match your words. So:

- think about health and safety when planning work
- talk about health and safety with your team
- demonstrate safe and healthy behaviour.



Notes:

Summary

1. It's important to manage safely because...

2. As a manager, your responsibilities are...



Module two



Module 2: Assessing risks

Key learning points

1. What is risk?
2. What is a risk assessment?
3. How are risk assessments carried out?



Notes:

What is risk?

Risk is part of everyone's life – we can't avoid risks but we can put things in place to manage them effectively.

Can you remember, for example, when you first learned to drive? Perhaps you were looking forward to your first lesson because you were eager to become independent. On the other hand, you might have been a bit apprehensive about getting behind the wheel for the first time. Either way, learning to drive involves a degree of risk. Because you were learning, you'd have had a qualified instructor sitting next to you, so the risk would have been well managed.

Learning to drive helped you learn to manage risks for yourself, as well as giving you a skill.

There'll always be a small risk in taking driving lessons, but without it you'll never learn to drive – a skill which you're likely to use throughout your life.

So what do we really mean by risk?

Imagine that you own a warehouse distribution company. The warehouse is an old building and the roof is in need of some repair. You're concerned about poor weather, since this could damage the building and its contents.



In these circumstances, rain would certainly be a threat to the building and its contents. A few moments of rain, sleet or snow wouldn't make any difference, but a long downpour would be much more of a problem. So the question you have to ask is 'how likely is it to rain?'

If you decided to do nothing about the roof, and one night it did rain, the extent of the damage would depend on the contents of the warehouse and their value.



Let's suppose the contents are plastic garden furniture designed to be outside in all weathers, which can be easily dried off. In this case there'd be little damage.

On the other hand, if the contents were television sets, they'd be completely ruined by the rain. Stock would have to be written off at a large cost to your company.

The chance of a downpour causing damage to garden furniture is very low, but the risk of damage to a stack of television sets is much higher.

On top of that, you might conclude that the chance of a downpour happening at all is much higher in the winter than in the summer. So, if you were trying to decide whether to fix the roof or leave it in its current condition, you'd probably ask yourself two questions: what are the chances it'll rain, and what could get damaged if it did?



Notes:

Basic terms that apply to risk assessment

In order to ensure a safe working environment, you need to understand the definition of risk and be able to estimate it, evaluate it and take action if necessary. Before we work our way through this process, let's take a look at the basic terms that apply to risk assessment.

A **hazard** is anything that has the potential to cause harm. This could be something as specialised as a piece of complicated machinery, or as commonplace as a cup of coffee. If it could be harmful in any way, then it's a hazard.

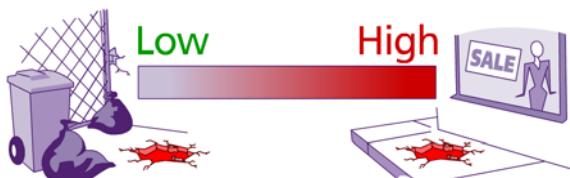


A **hazardous event** takes place when someone or something interacts with the hazard and harm results.

Suppose there's a hole in the ground. The hole (the hazard) by itself isn't causing any harm, but if someone tripped over it (the hazardous event) then it'd become harmful.

Every hazardous event has a likelihood and a consequence.

Likelihood is a measure of the chance that the hazardous event will occur. If the hole is in a busy area, such as a shop entrance, it's more likely someone will trip over it. However, if it's in an area that doesn't get a lot of traffic, such as a back yard, tripping over it would be less likely.



The **consequence** is the outcome of the hazardous event. If you tripped over a hole, there could be several possible outcomes: you might land on your feet with no damage at all, you might drop whatever you were carrying, or perhaps you could end up with a sprained ankle or even a fracture.



Risk is the combination of the likelihood of a hazardous event occurring and the consequence of the event.

$$\text{Risk} = \text{likelihood} \times \text{consequence}$$

We'll use this definition of risk throughout this course. Consequence is also sometimes referred to as severity – these terms may be used interchangeably.

What is a risk assessment?

Risk assessment is a means of making sure that the most serious workplace risks are managed by cost-effective control measures. Assessing risks allows you to prioritise the action you take to control them. In this module, we discuss how to assess risk. In Module 3, we'll look at ways of controlling risk.

Put simply, a risk assessment is a careful examination of anything in your workplace that could cause people to suffer injury or ill health while they're at work.

Risk assessment is about deciding who might be harmed and then judging how likely it is that something will go wrong, and how serious the consequences could be. Once you've worked out what the risks are and how significant they are, you can concentrate on cutting them out – or at least controlling them.

- You don't have to carry out the assessments yourself – if you're not confident, get help from someone who is appropriately qualified and trained and knows about what they're assessing. But remember, you're responsible for seeing that it's adequately done.
- It's always a good idea to involve other people in the risk assessment process – particularly the person whose job you're assessing. They may have noticed things which aren't immediately obvious to you. By involving your staff, you're also helping them to think about what could go wrong and how to avoid problems.



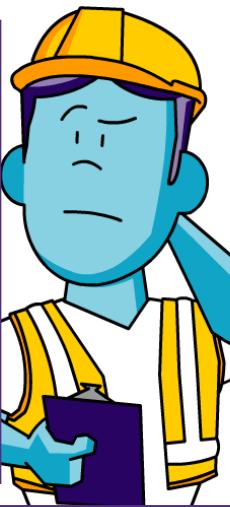
Notes:

A risk assessment enables you to:

Tell whether you're doing enough to protect your workforce and others from harm

For example, are you providing enough:

- training
- information
- personal protective equipment
- health surveillance?



Meet your legal requirements

All employers and self-employed people have a legal obligation to carry out risk assessments. If you don't, you could face prosecution and fines (*the Management of Health and Safety at Work Regulations 1999*).

Demonstrate good business practice and improve business performance

Understanding the risks that face your business will help you to manage it better, with:

- potential cost savings
- reduced insurance premiums
- enhanced reputation.

Remember, accidents and ill health can have a devastating effect – they can ruin lives and your business.



Notes:

Case study 1

A nurse, who had a long history of back complaints, was required to do work involving heavy manual handling of patients. She wasn't sent to the occupational health department to assess her fitness. The work aggravated her injuries and resulted in surgery and retirement on grounds of ill health. She claimed compensation from her employers and was awarded £16,000. The judgment recognised the failure of the employer to carry out a manual handling risk assessment.

Case study 2

A kitchen designer and manufacturer felt that he wasn't realising the full potential of the workforce – he wanted to get them more involved in all aspects of the business. Weekly meetings now cover everything, including risks! The business owner commented: 'Since we've been talking about risk, we're more aware of potential hazards... **in 16 months we haven't had a single injury.**'

Case study 3

A company providing services to the travel industry assessed the risks of its shrink-wrapping facilities. As a result, it was able to reduce the risk of manual handling injuries to employees, get staff involved with risk assessment and develop business processes. The company is now aiming for quality management certification and also targeting bigger customers, who expect to see proof that their suppliers are taking health and safety seriously.

Did you know...?



Workplace accidents and ill-health cost society up to **£31 billion** every year (Health and Safety Executive 2004).

How do we carry out risk assessments?

Risk assessment doesn't have to be complicated – what's important is that you concentrate on significant hazards which could result in serious harm or affect a number of people.

When carrying out a risk assessment, you need to:

Stage 1: list the work tasks that are your responsibility

Stage 2: identify the risks – what are the hazards, who might be harmed and how?

Once you've recorded this information you can then:

Stage 3: estimate the risk

Stage 4: evaluate the risk

Finally, you should:

Stage 5: record your findings

Stage 6: review your findings.



Stage 1. Make a list of the work tasks that are your responsibility

Anything in your workplace that you manage – the activities that take place, the people involved in those activities, the equipment they use and the different locations they work in – can be a hazard in some circumstances.

That's why it's essential that you make a list of everything you manage. The best way to do this is to walk around the workplace and see for yourself what's going on. If you don't do this, it's possible that a hazard could be overlooked and therefore not included in the risk assessment.

It's usual to include the following on your list:

a) A description of the location(s) you manage

You might find it useful to do a rough drawing or sketch of the areas.

You also need to think about common areas, like a corridor or stairs – there could be instances where a risk assessment is missed because two managers each thought the other was responsible for the activity in that location.



Notes:



b) The people who work in the area on a regular basis or from time to time

You need to consider staff who work both on and off site. For example, sales representatives and engineers may spend much of their time travelling and may not have a fixed place of work.

You're also responsible for people who visit the workplace, such as contractors, visitors, members of the public and trespassers. And don't forget young workers, trainees and expectant mothers, who may have additional needs.



Notes:

c) Permanent and temporary pieces of equipment and substances used at the location

If pieces of equipment – such as photocopiers and lifting equipment – are shared between departments, you'll need to agree with other managers who will be responsible for doing the risk assessment.

If you take delivery of new pieces of equipment or substances, you'll need to add these too.



Did you know...?



Organisations with a proactive approach to health and safety management tend to perform better in terms of profitability, number of accidents and days lost (IOSH, 2008).



d) Activities carried out at different locations

If you're responsible for more than one location, it's possible that some activities are carried out differently at each location. For example, someone may use a manual system to do a particular job at one site and an automated system at another site.

You'll need to carry out a separate risk assessment for both activities at both sites.

To record this information, you can use a work tasks list similar to the one on page 38.

A large rectangular area for notes, featuring a small icon of a spiral-bound notebook in the top-left corner. The word "Notes:" is written next to the icon. The main area contains 15 horizontal lines for writing.

Stage 2: Identify the risks – what are the hazards, who might be harmed and how?

Now that you've completed your work tasks list, you can identify the risks – to do this you need to know what the hazards are, who might be harmed and how.

So how can you identify the hazards?

- observe the physical layout at each location and the activities being carried out. For example, do people have enough space to work comfortably without being unnecessarily at risk?
- speak to your staff and their representatives, if they have any, and find out whether they consider anything in the workplace to be a hazard – they may have noticed something which isn't obvious to you
- inspect relevant company records, such as accident records, manufacturer's instructions or data sheets
- read up on hazards relevant to your area. For example, do any of your staff have to work with hazardous chemicals or electricity? If they do, both you and your staff should have some knowledge of these topics.

To record this information, you can use a hazard checklist like the one on page 39.



Notes:

Stage 3: Estimate the risk

Now that you've identified what the hazards are, you'll need to weigh up how serious each risk is.

You need to consider two things:

- how likely it is that something could go wrong
- how serious the outcome could be.

Consider the situation where window cleaners from a small local firm are using a ladder to clean windows on a three-storey block of flats during their monthly window-cleaning round.

How likely is it that they could fall? To assess this, you need to consider a number of factors, such as:

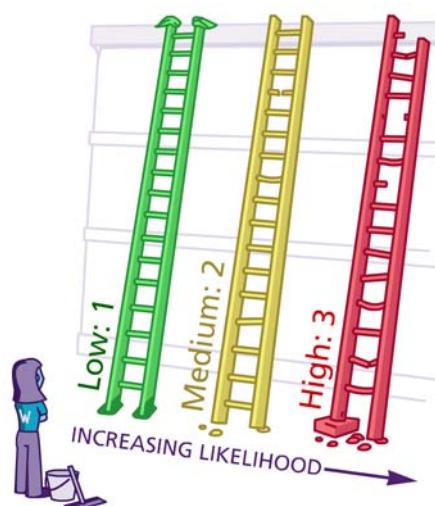
- the stability of the ladder
- the condition of the rungs
- the type of footwear
- the lighting levels.

When you've considered all relevant factors, you can rank the likelihood of the fall. You'll find it helpful to do this by using a three-point scale:

Low (1): if it's unlikely that the event will happen

Medium (2): if it's fairly likely that the event may happen

High (3): if it's likely that the event will happen.



Did you know...?



In 2008/09, **27,594** major injuries to employees were reported (Health and Safety Executive, 2009)



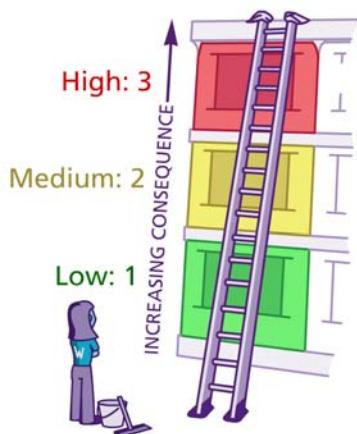
Notes:

Now that you've calculated the likelihood of the fall, you need to do the same for the consequence.

If a window cleaner were to fall off the ladder, what would the likely outcome be? Again, you need to consider a number of factors, such as:

- the height of the fall
- whether there's anything to help stop the fall
- what the person falls onto.

When you've considered all relevant factors, you can rank the seriousness of the fall. Again, you'll find it helpful to do this by using a three-point scale:



Low (1): minor injuries requiring first aid – for example, grazes or minor cuts

Medium (2): an injury requiring further medical assistance – for example, cuts needing stitches or broken bones

High (3): major injuries, such as paralysis, or death.

Now you can estimate the level of risk involved – whether something is going to be a low risk, a medium risk or a high risk. **Remember: risk = likelihood x consequence.**

We might decide that it's unlikely that the window cleaner will fall because the ladder is robust and secure, so we'll rank the likelihood as low (1). We might also decide that if the window cleaner were to fall from the lowest rungs of the ladder the injuries might not be so severe as if she fell from the upper rungs of the ladder – so the seriousness might be low (1) for the lower rungs and high (3) for the upper rungs.

For the two outcomes we've just described, we have two levels of risk:

$$1 \times 1 = 1 \text{ and } 1 \times 3 = 3$$

Suppose in another situation the ladder is in poor shape, not secure and on uneven ground. So this time we rank the likelihood of falling from the ladder as high (3). Again, as above, the seriousness of the fall could range from low (1) to high (3). So we have two levels of risk:

$$3 \times 1 = 3 \text{ and } 3 \times 3 = 9$$

Did you know...?



In 2008/09, 1.2 million people who had worked in the last 12 months were suffering from an illness they believed was caused or made worse by work. Taking account of people who have worked at any time, not just the last 12 months, the figure is much larger. (*Health and Safety Executive, 2009*)

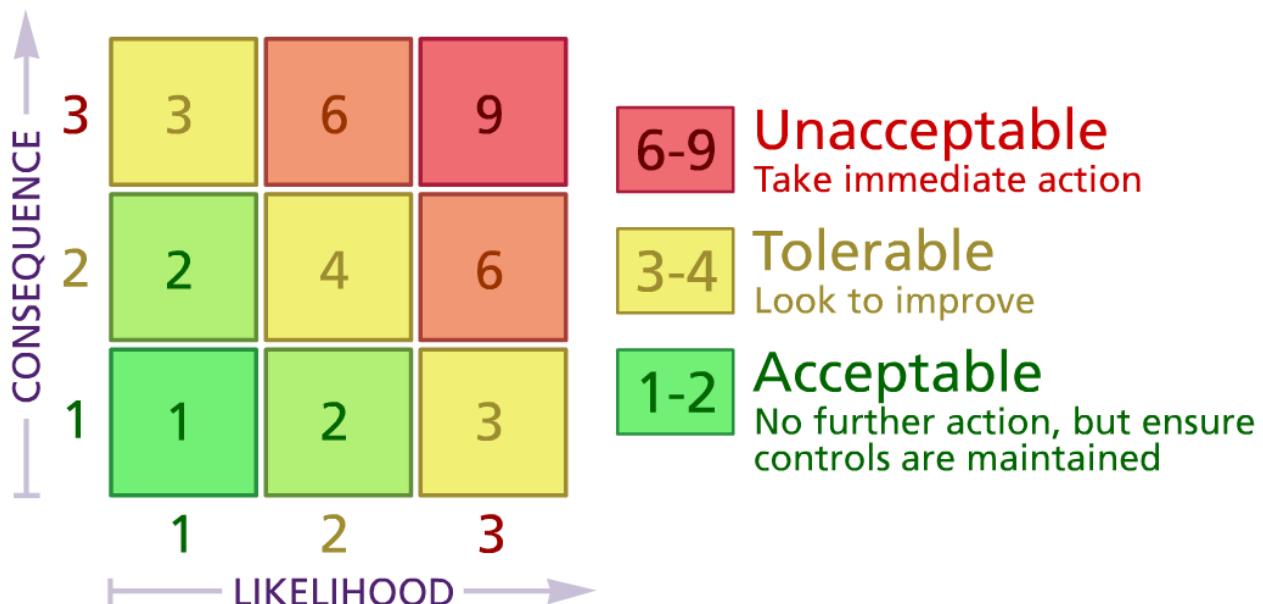


Notes:

Stage 4: Evaluate the risk

OK, so now you've estimated the risk and worked out your risk level – what are you going to do about it?

Usually, the higher the risk level, the more serious the risk is and the more likely you'll need to take action. To make it easier to decide on the urgency of the action, you can allocate an action level to each level of risk.



This way of estimating and evaluating risk is called the 'risk matrix' approach – it's a commonly used tool.

Did you know...?



In 2008/09, **29.3 million** working days were lost overall to work-related injury and ill health (1.24 days per worker). 24.6 million were due to ill health and 4.7 million to injury (Health and Safety Executive, 2009)



Notes:

You can also use a five-point scale to estimate likelihood and consequence, with five descriptions for likelihood and five for consequence.

So the likelihood could be ranked as:

- 1) **Very unlikely** – there's a 1 in a million chance of the hazardous event happening
- 2) **Unlikely** – there's a 1 in 100,000 chance of the hazardous event happening
- 3) **Fairly likely** – there's a 1 in 10,000 chance of the hazardous event happening
- 4) **Likely** – there's a 1 in 1,000 chance of the hazardous event happening
- 5) **Very likely** – there's a 1 in 100 chance of the hazardous event happening.

Consequence would be ranked as:

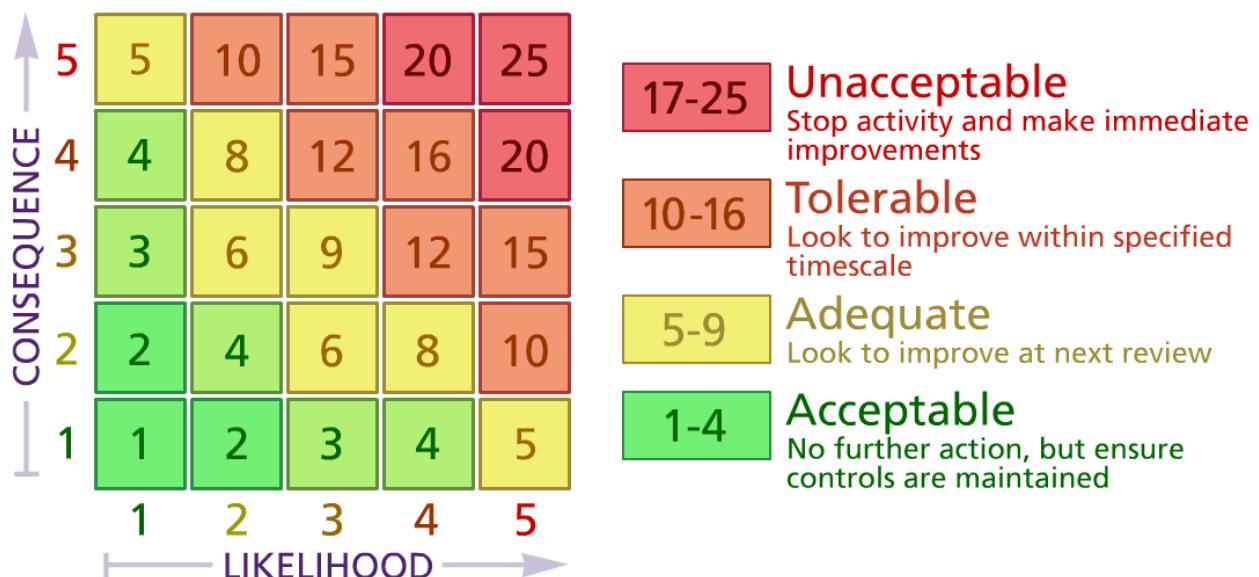
- 1) **Insignificant** - no injury
- 2) **Minor** – minor injuries needing first aid
- 3) **Moderate** – up to three days' absence
- 4) **Major** – more than three days' absence
- 5) **Catastrophic** – death.

This approach has the advantage over the three-point scale of giving a better definition of the medium risk area.



Notes:

In the case of the 5 x 5 matrix, the actions levels might be:



Risk estimation techniques and action levels will vary from company to company. Remember, there are several ways to do a risk assessment. It is important that you use the most appropriate method for your situation. Usually, complex processes require more advanced methods.

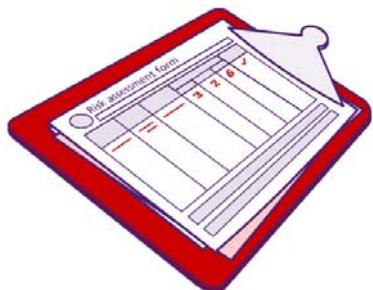


Find out how risk estimation and evaluation takes place in your organisation. If it's necessary for you to take action, you'll need to decide what to do to reduce the risk.

In Module 3, we'll discuss the different ways of reducing risk that are available to you.

It's important to remember that there's never a zero risk rating as there's always a chance of something happening. Also, once you've done something to reduce the risk, you'll need to estimate and evaluate the risk again to see whether you've done enough.

Stage 5: Record your findings



Now that you've completed the risk assessment, you'll need to record your significant findings. This could be electronically or as a paper copy. This is not only good practice but it's also a legal requirement if you employ five or more people.

It doesn't matter what form you use to record your findings – it could be a risk assessment form similar to the one on page 40, or one of your own. What matters is that the information you record about the activity – for example, the hazard, the likelihood and consequence of the hazardous event, and the risk level – is all there.

In general, it's helpful to record:

- details of the person carrying out the risk assessment
- the date and time of the assessment
- details of the location, people, equipment and activity you're assessing
- the hazards you've identified together with the risk level
- existing control measures and how well they work
- the date for review of the assessment.

Stage 6: Review your findings

We're almost there! As we all know, things change – for example, work procedures change, we buy new equipment and staff come and go. The same applies when new information comes to light, such as information about substances you use at work. When changes like these are identified, you'll need to review your risk assessments.

It's good practice to review assessments annually or sooner, especially if you're made aware of new changes or information. Where risks ratings are low, you still need to review assessments to make sure they stay low.



In Module 3, we'll discuss the steps you need to take to control risks.

Did you know...?



180 people were killed at work in 2008/09 (Health and Safety Executive 2009).



Notes:

Getting it right

Risk assessment is a simple process, but here are some tips to make sure you do it well.

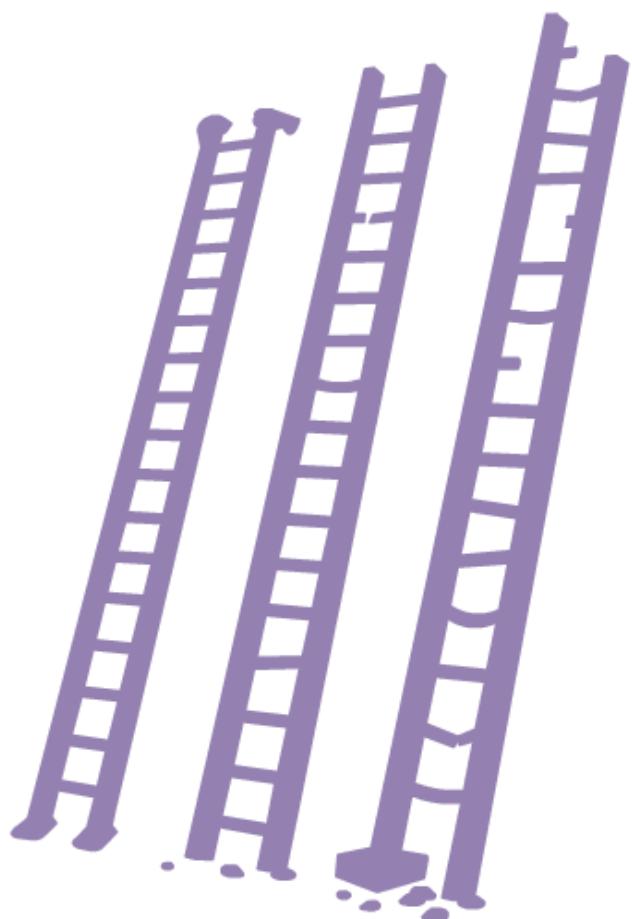
- Make sure your assessment is suitable and sufficient. Have you got the right information and are you using the right people and techniques? Sometimes you may need to seek advice from someone with specialist knowledge in a particular area, such as chemicals.
- Risk assessment involves making a judgment about risk – clearly this isn't an exact science. However, ensuring the quality of the information you use to estimate likelihood and consequence helps to reduce the subjectivity. For example, use relevant accident and incident data.
- It's essential to involve the people whose activities you're assessing. You may think you know how a job is done – they really know how it's done.
- Make sure your risk assessments are relevant to the local situation at your site. A risk assessment done somewhere else for an activity that also takes place on your site is not necessarily valid for your circumstances. You'll need to modify it to fit your situation. For example, different equipment may be used at different sites for the same task, and this may affect the risk.
- Where people work alone or encounter an unpredictable event, such as a new kind of machinery breakdown, they may have to do an 'on-the-spot' risk assessment to fit the new circumstances. As a manager, you should consider how competent your staff are to undertake such roles and assess these risks.



Notes:

Summary

1. Risk is...
2. A risk assessment is...
3. The key stages of carrying out a risk assessment are...





Work tasks list

Managing safely

Company:	Department:	Location:	
			Activities
			Equipment
			People
			Locations



Risk assessment form

Name of assessor		Date														
Time		Work area														
Task being assessed																
What is the hazard?	Who might be harmed?	How might people be harmed?	Risk rating		Additional controls			New risk rating (Residual)			Action/monitored by whom?			Action/monitored by when?		
			L	C	R	L	C	R	L	C	R	L	C	R		



Risk assessment form

What is the hazard?	Who might be harmed?	How might people be harmed?	Existing risk control measures	Risk rating			Additional controls	New risk rating (Residual)			Action/ monitored by whom?	Action/ monitored by when?
				L	C	R		L	C	R		

Review date _____ Signature _____

Training Provider name _____

Module three



Module 3: Controlling risks

Key learning points

1. How do you reduce risk?
2. How do you decide which risk control to use?



Notes:

How do we reduce risk?

Now that you've learned how to assess risks in the work environment, what's next? It's one thing to know that a risk exists, but you need to know what to do about it.



Risk is an ever-present part of our daily lives, at work and at home. Risk is affected by several factors. For example, the risk of falling off a ladder will be affected by its stability, the distance you fall, your ability to use the ladder and your method of working.

Remember learning to drive again – a novice driver on the road is a hazard to themselves and other road users, but having a qualified and experienced driving instructor and dual controls in the vehicle helps to control or mitigate this risk.

Risk control involves introducing changes in the way we work in order to minimise risk.

Whatever you plan to do, you'll need to estimate its impact on the likelihood and consequence of the risk.

Remember: risk = likelihood x consequence

Therefore, if you want to reduce risk, you need to look at:

- a. reducing the likelihood of the hazardous event happening
- b. reducing the consequence of the hazardous event
- c. reducing both factors.

Let's consider how implementing risk controls will impact on each of these factors.

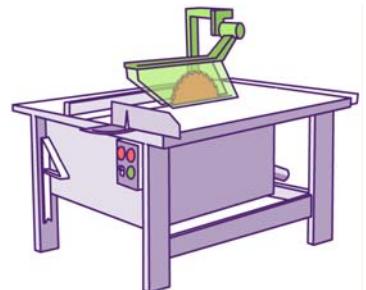
To show this, we'll use the five-point scales for likelihood and consequence that we introduced in Module 2.

Let's assume you manage a woodworking shop employing several cabinet makers. You've carried out a risk assessment and estimated and evaluated the risks on site, so you know that you need to reduce a number of risks.

a. Reducing the likelihood of the hazardous event

Suppose the likelihood of someone getting caught in the table saw is 4 and the consequence of this is 4, so that the risk rating is 16.

Providing a guard will *reduce the likelihood* of getting caught in the table saw. If we assume that the guard is used most but not all of the time, the likelihood is reduced to 1, which in turn makes the risk rating 4.

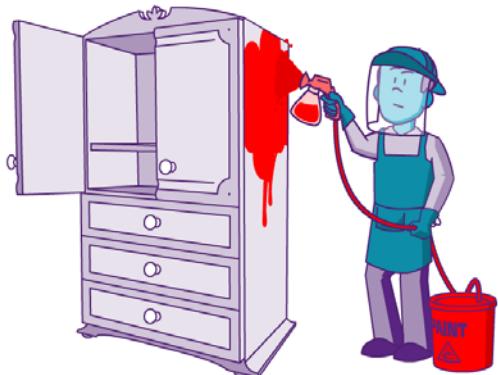


Did you know?



An injury to a worker using an unguarded drill cost a small engineering company £45,000 – and that wasn't all. The managing director was prosecuted and two employees had to be made redundant to keep the company afloat (www.hse.gov.uk).

b. Reducing the consequences of the hazardous event



Suppose the likelihood of the paint sprayer being exposed to a harmful substance contained in the paint is 3 and the consequence of this is 4, giving a risk rating of 12. If the paint can be replaced with one containing less harmful substances, then the likelihood of exposure remains at 3 but the consequence of exposure can be reduced to 2, giving a risk rating of 6.

c. Reducing both likelihood and consequence

If in the above example, we use the less harmful paint, which reduces the consequence to 2, but we *also* replace the paint sprayer with a robot and we enclose the process, we can also reduce the likelihood of the worker being exposed to the harmful substance. The worker controls the spraying operation from outside the enclosure and only enters the enclosure to position and remove items for spraying. The likelihood could be reduced to 2, giving a risk rating of 4.



Notes:

The level of risk that's left after we've introduced our control measures is often referred to as **residual risk**.

For example, before you go on holiday, you'll make sure that your house is as secure as possible. You'll put the alarm system on, make sure that all the windows are closed and the doors are locked and you might even arrange for your neighbours to keep an eye on things. There is, though, still a possibility that these 'controls' could fail, and you end up being burgled.



Notes:

How do we decide which risk control to use?

We've shown in the previous examples how we can reduce the likelihood and/or consequence by using the guard, the face shield and the robot. These options all reduce the risk and are referred to collectively as **risk controls**.

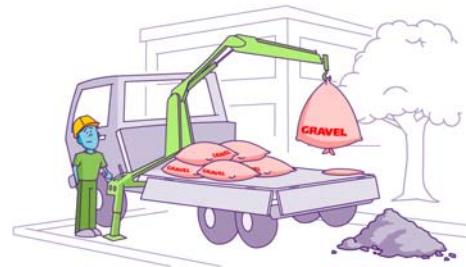
To help decide on a risk control, there's an order or **hierarchy of risk control** that we can use. Basically, risk control options at the top of the hierarchy are the preferred option because they're much less reliant on people to do something. They can also protect larger numbers of people.

We can categorise risk control options as follows:

1. Eliminating the hazard

The most effective method of risk control is to completely eliminate the hazard.

One way to do this is to replace something hazardous with something that removes the hazard completely. So, instead of unloading a lorry-load of heavy gravel bags by hand, you'd use a crane to lift the bags off instead – this eliminates the need for manual handling.



2. Reducing the hazard

The next preferred option is to reduce the hazard. So, instead of trying to carry a box of photocopier paper, which holds five reams, carry one or two reams at a time.



A hazard can be reduced by substituting it with a less hazardous solution. A business may decide that since road travel is riskier than rail travel, it'll encourage its staff to travel by train for business trips where possible.



A business may also decide to continue with business travel by car, but specify that a rental vehicle meeting high safety standards is used, and that all staff who drive on company business must complete an approved defensive driving course.

Elimination or reduction are the best methods of risk control.

3. Preventing people coming into contact with the hazard

These control measures rely on preventing people from coming into contact with the hazard by:

- putting distance between people and the hazard.



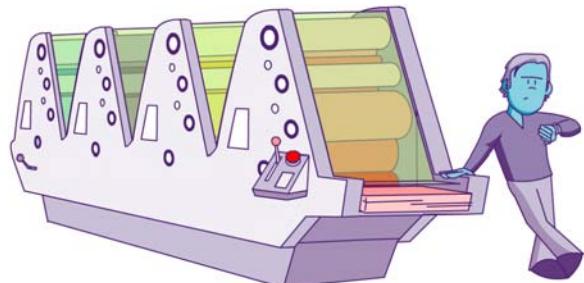
If, for example, hazardous chemicals are held on site, store them in a remote location. Separation can often keep most people away from hazards most of the time, but there are occasions when people will deliberately or inadvertently be close to the hazard.

If people need to get chemicals from the store, they'll be deliberately close to the hazard, while contractors, visitors and trespassers, who don't know it's there, will be inadvertently close.

Other examples include keeping people away from noisy machinery, and automated processing.

- enclosing the hazard.

For example, place guarding around the dangerous parts of machinery to prevent operators coming into contact with them. Barriers occasionally need to be removed for good reasons, such as cleaning or maintenance.



However, this also means that they can be removed without good reason. You can make sure that a machine can't be operated without the guard being in place by connecting the machine guard to the equipment's power supply.

Other examples include putting an enclosure around a noisy machine, or carrying out all painting in a painting bay.

4. Safe systems of work

Safe systems of work include safe work procedures, permits to work and safety rules. These all detail how activities should be carried out to minimise risk.

If people understand how important it is to work in a particular way, it's more likely that they'll follow procedures, permits and rules effectively and consistently.



- When followed, safe systems of work can effectively minimise risk. A good example of this is specifying that a job in a noisy environment is done on rotation by two or three people, so that each individual's exposure to noise is limited. But for this to work, it's essential that people keep to their allocated time limit and rotate to other jobs.

5. Personal protective equipment

Using personal protective clothing and equipment – such as goggles, respiratory protection, gloves and hard hats – can prevent harm to people if they come into contact with the hazard. Personal protective equipment should not, however, be considered as a first-choice control measure, except in exceptional circumstances (eg an emergency). Its success always relies on people to use it!





Remember – all of these methods have weaknesses but some are less prone to failure than others. Usually, risk controls that rely on people to do something or behave in a certain manner are **weaker** than those that don't. For example, even though you've given your employees PPE and they've been trained how to use it, you're relying on them to wear it and wear it correctly.

We need to be aware that we, as humans, have several options for the way we behave, and that we tend to opt for behaviour that gives us the most satisfaction. For example, if we can get the job done more quickly without using safety equipment we might be tempted to do that, especially if that's become the norm for us.



Notes:

Putting the hierarchy into practice

To explain the hierarchy, let's assume that you're employed as a manager for a utility company.

You've received a report that a water pipe has burst under a busy dual carriageway and it's your team's responsibility to repair it. You've calculated that it's going to take your team about two days to complete the work.

As team manager, you're responsible for deciding on and implementing control measures to protect the workforce from the traffic. It's important that you start at the top of the hierarchy and work your way down.



1. Eliminate the hazard

The most effective method of risk control is to eliminate the hazard.

It's possible to do this by closing the road and diverting traffic while the work takes place. But is this *practical* for a two-day job?



2. Reduce the hazard

If it's not possible to close the road, you'll need to think about how you can reduce the hazard.

You may consider it safer to slow the traffic down to less than 10 mph so that vehicles are less hazardous. But can this be achieved in reality and would it help?



3. Prevent people coming into contact with the hazard

What if it's not practical to close the road or slow the traffic to less than 10 mph? Then you'd need to consider another course of action.

Because this job will only take two days, you decide to minimise any risks by closing one lane of traffic. You'll also introduce a speed limit and set up a physical barrier to protect your workforce from the traffic.



4. Introduce a safe system of work

As well as closing one lane of traffic, you'll also have a safe system of work in place, which sets out how the work will be carried out on site and how the workforce will behave.



5. Provide personal protective equipment

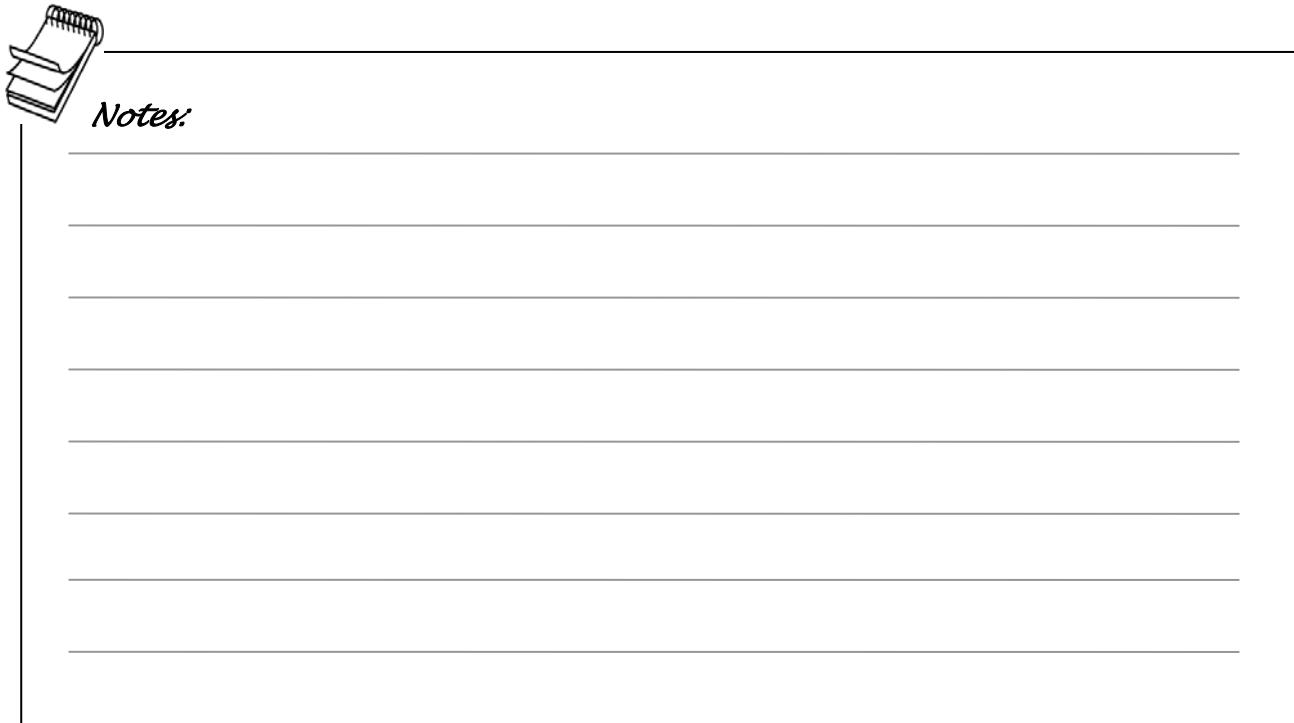
To protect people individually, you must provide them with reflective jackets, hard hats, gloves and ear defenders where necessary.

OK, so you now have some options for risk control and a hierarchy of risk control, but which one is going to be the 'best' one for your circumstances?

No doubt you'll have various demands to balance, such as:

- how many people need to be protected? If there's a noisy machine on site, it may be better to put it in a soundproof enclosure than to buy hearing protection and expect everyone to wear it
- how reliant is the effectiveness of the risk control on human behaviour?
- how often will the risk control need to be tested, maintained and replaced?
- how much does the risk control cost?
- how much is it going to reduce the risk by? Will using the selected control introduce other risks?

Usually, the final decision is a compromise between all of these points.



Notes:

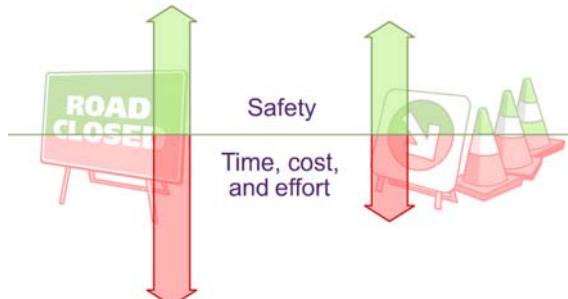
Did you know?



About 3,500 people are killed every year and 40,000 seriously injured on Britain's roads. There are 250,000 incidents and 300,000 casualties altogether. The direct costs of accidents that cause injury are estimated at about £3 billion a year. (Eves & Gummer, 2009).

Now, you may be wondering when you've done enough in terms of reducing risk. Generally, what you need to do is reduce risks '**so far as is reasonably practicable**'.

This means that if the cost – in terms of time, effort, money or inconvenience – associated with the risk control outweighs the benefits of the risk reduction, then it's not reasonably practicable to use that risk control.



Let's go back to the roadworks example.

As we've already discussed, closing the road would be the first option. This is the safest measure because it eliminates the risk, but it isn't reasonably practicable, because:

- it's very expensive
- approval is needed – this could be a lengthy process
- it's inconvenient to road users and may increase risk elsewhere by causing congestion on other routes.

It may also be appropriate to consider other courses of action – for example, slowing the traffic down to less than 10 mph. However, because this is only a two-day job, this option isn't reasonably practicable either, because:

- it's inconvenient to road users and could cause congestion
- cars might not slow down.

Because you can't eliminate or reduce the risk, your third option is to provide cones, introduce a speed limit and narrow the traffic lanes to create space between the workers and traffic. This is the most reasonably practicable option, as it minimises the risk to an acceptable level and:

- it's less expensive
- it's a simple measure.

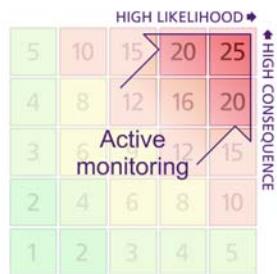
After balancing the cost in terms of time, effort, money or inconvenience the third option would be 'reasonably practicable' in these circumstances. In summary, you should use this type of analysis for all possible actions.

However, there are circumstances, particularly where risk of injury is high, where implementing controls is mandatory.

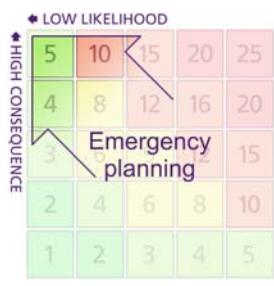


Most organisations do not know what accidents and ill-health really cost them in time and money. They are often surprised to find out what the actual costs are: accidents in construction can account for 3–6 per cent of total project costs (www.hse.gov.uk).

Getting it right



Where there are hazards with **high likelihood and high consequence**, we expect that risks will be managed and monitored proactively – for example, when a dangerous machine is consistently in use, and regularly accessed for maintenance and cleaning.



High consequence but low likelihood issues are best suited to contingency and emergency planning. An example of this issue is the potential for electrical failure in organisations relying on power for safety reasons, but with well-engineered and maintained electrical systems.



Low consequence issues with high likelihood are usually the kinds of issues which are generally well understood. Therefore we should be dealing with these already – for example, slips, trips and falls can often be managed through good housekeeping practices.



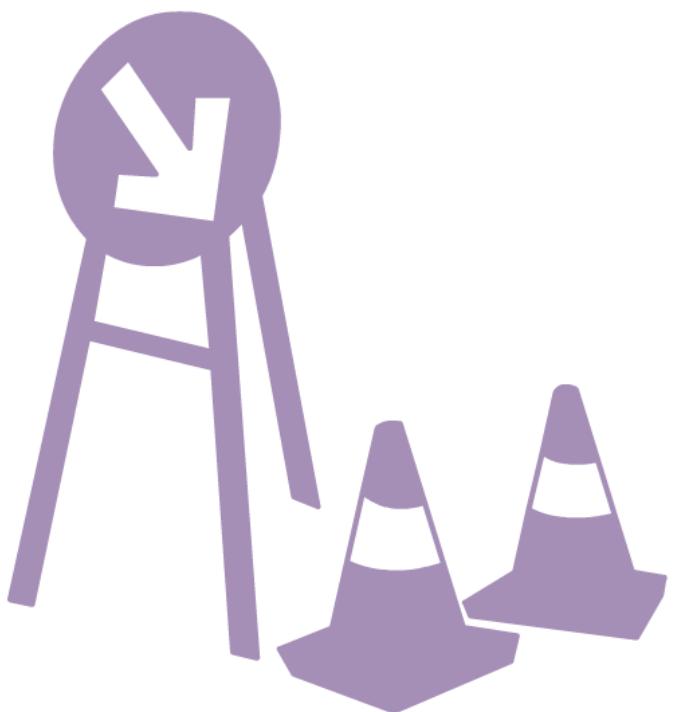
Finally – **low consequence and low likelihood issues**. We're probably going to monitor these issues for change, but more often than not, we're going to live with them.



Notes:

Summary

1. If you want to reduce risk you need to look at ...
2. To decide which risk control to use, there's a hierarchy which is...





Module 4: Understanding your responsibilities

Key learning points

1. What does the law require you to do?
2. How does the law work?
3. What are the key parts of a health and safety management system?



Notes:

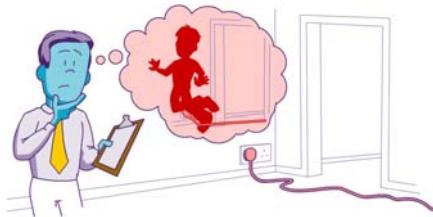
What does the law require you to do?

OK, so you know as a manager you have health and safety responsibilities – but what should you worry about, how far should you go, what's the best way to do it, when do you stop and what's there to guide you?



The minimum you need to do is to comply with the law, as the law sets the boundaries within which companies must operate. However, from what you've seen and heard so far, you'll realise that there are many benefits to your business from managing safely.

As a manager, you need to assess 'reasonably foreseeable' risks and put in place control measures to reduce the risks so far as is reasonably practicable.



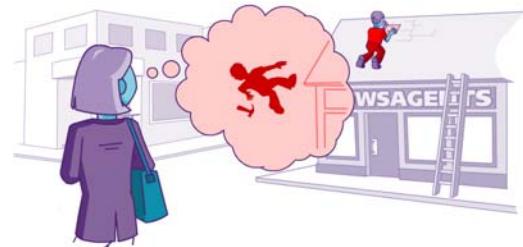
Reasonable foreseeability – being responsible for everything that is foreseeable would be a burdensome task. Instead the law tries to be fair by requiring you to be responsible only for reasonably foreseeable risks. For example, if you see a trailing cable across a doorway you know that there's a high risk that someone will trip over it.

Employers aren't responsible for issues they can successfully argue as 'not reasonably foreseeable', but are responsible where reasonable foreseeability can be argued.

To help you further, there are three tests you can apply:

1. Common knowledge

You're expected to foresee what the average person in the street would have foreseen, as that information is common knowledge. For example, if the public would have known that working on a roof in a gale without anything to stop a fall was dangerous, then so should the employer.



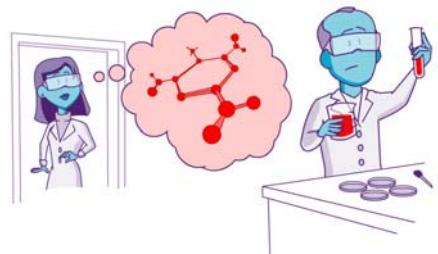
2. Industry knowledge

If a safety issue is beyond public knowledge, your company is expected to have the same level of background knowledge as other companies working in the same industry.

For example, if a company was using a chemical and didn't realise how dangerous it was, but the rest of the industry had realised for years, and had introduced control measures or had replaced it with an alternative, the employer wouldn't be able to argue against reasonable foreseeability.

3. Expert knowledge

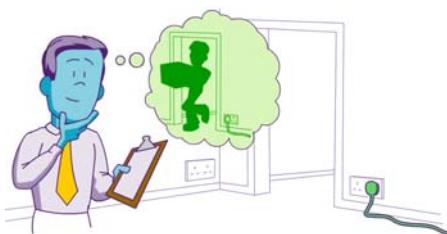
Only if you're an expert are you expected to have expert knowledge. For example, a research chemist would quite reasonably be expected to understand all the different properties of the substances they were handling, even if some risks were peculiar to the substance in very specific circumstances, beyond normal use.



In summary, an employer must be able to demonstrate reasonable foreseeability of significant risks covered by tests 1 and 2 but they would rarely face an expectation under test 3, unless they were an expert.



Consider the jobs you and your team do at work that give rise to reasonably foreseeable concerns. Those are the ones you need to act on.



Reasonable practicability – we've already covered this in Module 3 but just to recap, this means that if the cost – in terms of time, effort, money or inconvenience – associated with the risk control outweighs the benefits of the risk reduction, then it's not 'reasonably practicable' to use that risk control.



Notes:

Case study – Burns v Joseph Terry & Sons Ltd (1950)

Mr Burns was a keen and enthusiastic young employee at Terry's chocolate factory. His job was to feed sacks of cocoa beans into a machine and to collect up any that fell on the ground.

He noticed that, somehow, some beans had found their way up onto a shelf. The shelf was too high to reach so he got a ladder. There was no place to rest the top of the ladder so he chose to rest it on a slowly revolving shaft. At the end of the shaft, not far from the ladder, were some cogs. These cogs were well fenced in from the front. They were not fenced on top or on the sides because it wasn't expected that anyone would get up there. There was simply no way, other than resting a ladder on the revolving shaft, that anyone could get up there.

While up the ladder clearing the beans from the shelf, Mr Burns felt the ladder start to slip on the revolving shaft. He reached out for support and took hold of one of the cogs. This pulled his hand into the mechanism and crushed it. He tried to claim damages for breach of statutory duty arising from the company's failure to 'securely fence' the dangerous parts of this transmission machinery.

It was decided that the expression 'securely fenced' means well fenced from all foreseeable risks. The test is whether a reasonable person, with the factory occupier's knowledge, would reasonably anticipate that injury could occur from incomplete fencing, or whether incomplete fencing provided security against all reasonably foreseeable risks.

In this case, there was only one way a person could have got into the difficulties which Mr Burns found himself in. That was by doing what Mr Burns did. It was entirely unforeseeable that any person would rest a ladder against a revolving shaft and get his hand around the fencing so that it was in contact with the dangerous cogs behind.

The final decision was that the employer wasn't liable and therefore Mr Burns did not win his case.



Notes:

How does the law work?

You don't need to know the detail of every regulation, but you do need to understand a little more about how the law works in relation to health and safety.

Remember the workplace accident in Module 1?



We said that if the accident had happened because of a failure to manage health and safety risks in the organisation, the regulator may take action, which in turn may lead to prosecutions, fines and imprisonment. Also, the injured worker may seek compensation for their injuries.

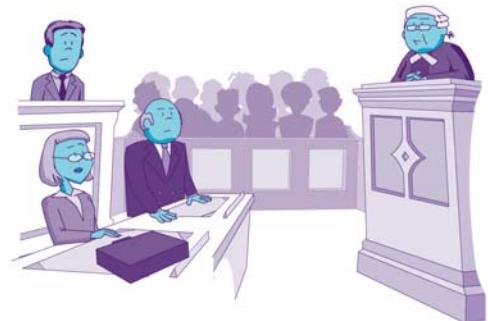
Essentially, there are two types of legal proceedings that could take place as a result of the accident: a criminal law case and/or a civil law action.

So, as a manager, you need to understand why.

Criminal law case

Employers have a legal duty under the **Health and Safety at Work etc Act 1974 (HASWA)** to manage health and safety risks. This Act is known as a statute and is created by Parliament – in other words, it's the law of the land. As you can imagine, there are many statutes relating to a whole range of issues, not just health and safety matters.

Statutes can be used in criminal and civil cases. Where the statute allows for criminal proceedings, the type of law created is criminal law, breaches of which can be punished through imprisonment, fines and/or remedial orders.



Usually, any legal action must start within six months of the accident or from when the Health and Safety Executive (HSE) or Local Authority (LA) realise the organisation has broken the law.

- All employers, directors, managers, manufacturers and employees have a duty under HASWA to ensure, so far as is reasonably practicable, health and safety in relation to their activities.
- Under the **Management of Health and Safety at Work Regulations 1999**, additional general requirements are placed on employers to carry out assessments of reasonably foreseeable risks and to implement risk controls, so far as is reasonably practicable.

- The **Workplace (Health, Safety and Welfare) Regulations 1992** aim to ensure that the workplace meets the health, safety and welfare needs of all the workforce, including people with disabilities.
- The **Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR)** require the reporting of certain types of accidents and incidents.

Other regulations set minimum requirements for a range of specific hazards – for example, chemicals and work equipment.

This type of law is proactive – it's designed to encourage prevention and avoidance – and reactive – it provides punishment for lawbreakers.

In criminal law, the case against the accused must be proved by the prosecution. So, in this case the State or its representative has the 'burden of proof'. The level of proof required is 'beyond reasonable doubt'. However, for breaches of some sections of the Health and Safety at Work Act etc 1974, the defendant must prove that it was not reasonably practicable to do more than they did to satisfy their duty. This is referred to as the 'reverse burden of proof'.



Penalties for criminal offences can be imprisonment, fines and/or remedial orders. The severity of the penalty depends on the seriousness of the crime. These fines come out of the company's bottom line – they're not covered by insurance policies.



Notes:

Remember we said that the injured person might also bring a personal injury claim against the company. So how does that work?

Civil law action

In **civil law**, victims of harm or loss, caused by the fault or **negligence** of another party, can seek compensation for that harm.

Usually, the legal action must start within three years of the accident or when the injured person found that the injury was the fault of the employer. The amount of compensation awarded depends on the nature of the injury and its effect on the person's ability to earn a living.



This type of law is mainly developed over time by the decisions made by judges – also known as precedents. So a decision taken by a judge in one particular case will apply to all future similar cases. You can think of this type of law as 'judge-made'.

Note that statute law can also apply to civil law proceedings – breaches of some statute law can be used in civil claims to establish negligence. In addition to establishing negligence, breaching some statute law gives a right to pursue a civil action.

This type of law is entirely reactive – someone has to suffer harm or loss before a case can be brought to court.

In such cases, the responsibility is on the claimant (the injured party) to demonstrate that the defendant has been negligent so that the judge is more certain than not of the defendant's negligence – this level of proof is usually referred to as 'the balance of probabilities'.



For the claimant to be successful, they have to show three things:

1. that the defendant owed the person a duty of care
2. that the duty of care was breached
3. that the injury was caused by a breach of the duty.

So in the case of our accident, the company owed the employee a duty of care not to cause them foreseeable injury. By failing to manage foreseeable safety risks, they breached the duty of care and caused the injury.

If the employee is found to have played a part in contributing towards their own injury, the claim for compensation may be reduced or even denied because of their 'contributory negligence'.

Also, the employer can be liable for the negligent actions of his employees which cause injury to others while they're in employment. This is known as **vicarious liability**.

Employers are required to take out and maintain insurance policies against liability for injury or illness sustained by their employees while in their employment.

Employers' liability insurance is compulsory for many organisations – exceptions are public organisations, some family businesses, health service bodies and other public funded bodies. This insurance allows businesses to meet the costs of compensation and legal fees for employees who are injured or made ill at work through the fault of the employer.

By law, an employer must be insured for at least £5 million.



Notes:

To conclude, here's a summary of both criminal and civil law:

	Criminal law	Civil law
Who does the court case focus on?	The accused – the individual or organisation who's accused of breaking the law	The injured party – the person who's suffered harm as a result of the actions of others
What is the main source of this type of law?	Statute law	Common law precedence
Who makes this kind of law?	Parliament – usually takes years to change	Judges – might change tonight
Who initiates legal proceedings?	Health and Safety Executive or Local Authority	Anyone affected
What is the most likely outcome for this case?	Possible imprisonment, fines and/or remedial orders	Compensation payouts
Who is responsible for proving the case (burden of proof)?	The State (subject to health and safety law)	The claimant
What is the standard of proof required?	Beyond reasonable doubt	On the balance of probabilities
Normally, how soon must legal action start?	Six months for summary offences (but can be extended)	Three years from discovery of harm (but courts have discretion to extend)

	Criminal law	Civil law
What are the main parts of the law that apply?	Health and Safety at Work etc Act 1974 (HASWA) and associated regulations	Duty of care Negligence Breach of statutory duty

Did you know...?



In late August 2005, Transco plc was fined a total of £15 million due to failure to keep accurate records of its pipelines, which led to a fatal explosion. The company was also found guilty of failing to ensure that members of the public were not exposed to risks to their health and safety.



Notes:

Help with interpreting and applying the law comes in the form of:

- approved codes of practice
- guidance documents
- industry-specific guidance.

So now you know that you have to manage foreseeable risks to the extent that is reasonably practicable. You also have an insight into how things might pan out if there were a serious accident.

There doesn't have to be an accident for an inspector to take action! If an inspector has concerns about your activities and believes you've broken the law, they can take action by issuing an improvement notice or prohibition notice.

- An improvement notice gives you a time limit in which to resolve the problem.
- A prohibition notice means that you must stop an activity that's considered to present a risk of serious personal injury.

Now we need to look at the best way of managing foreseeable risks. The ideal way to do this is to incorporate health and safety into everything you do by planning, doing what you plan, checking that this was OK and, if not, acting accordingly and planning again. This process is central to good business management, not just health and safety.

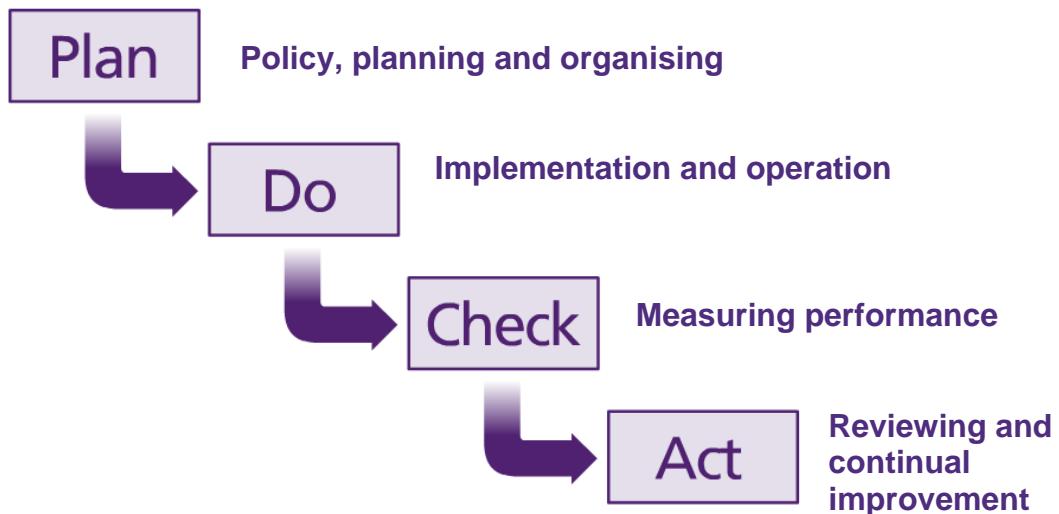
We'll now consider the key elements in a health and safety management system.



Notes.

What are the key parts of a health and safety management system?

Most health and safety management systems are based around the principle of plan, do, check and act. This is also known as the Deming Cycle or Shewhart Cycle.



The key benefits for you and your organisation of introducing a health and safety management system (HSMS) are:

- complying with legislative and other requirements
- helping you to deliver the policy
- enabling improved management of health and safety risks
- providing competitive edge
- providing synergy with good business management.

Notes:

Effective health and safety management systems include the following elements:

Policy



Say what you're going to do – a statement of commitment by the organisation's senior management to comply with health and safety law and meet ethical and professional responsibilities for health and safety. If you employ five or more people it is a legal requirement to have a written health and safety policy.

Planning

Plan how you're going to do it – a plan for hazard identification, risk assessment and risk control, being prepared for emergencies and response, together with identification of the relevant legal and other standards that might apply to your organisation.



Organising



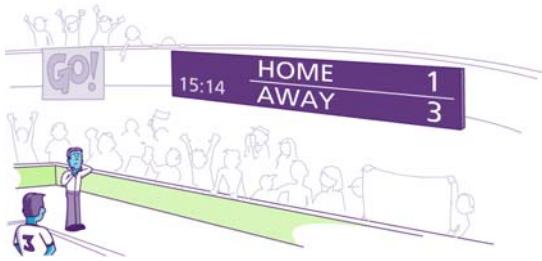
Get the people in place – a definition of who's responsible for what in terms of health and safety and how to make sure that everyone's capable of fulfilling their responsibilities. You also need to consult on health and safety matters – there's a fund of knowledge and expertise within the workforce, clients, suppliers and other stakeholders that can help you. And remember communication – from basic information and work procedures to how the system works – is vital.

Implementing and operating

Doing it – the process of putting in place the plans and getting involved in all the necessary activities, from risk assessment, through safe systems of work, to audit.



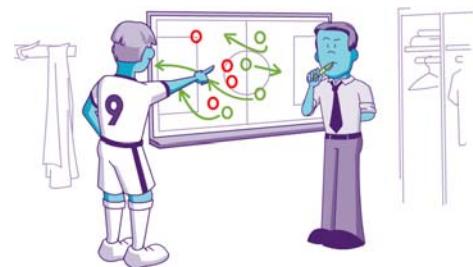
Measuring performance



Find out how well you're doing – from reactive data (for example, on injuries and ill health) to active data (such as on inspections and training). This will give you an indication of whether your actions are working. Audits will help you judge whether the whole system is working. You'll need to make adjustments as necessary.

Review and continual improvement

Overall, does the system work and how can we make it better? – an evaluation of the overall design and resourcing of the system compared with the performance achieved. It shows a commitment to manage health and safety risks proactively so that accidents and ill health are reduced and/or the system achieves its goals using fewer resources.



A number of health and safety management systems have been published, but all reflect the plan–do–check–act cycle. Some of the widely used health and safety management systems/standards include: BS 18004:2008, HSG65 and OHSAS 18001.



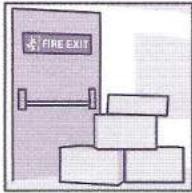
Find out what health and safety management system is in use in your organisation.



Notes:

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Module five



Module 5: Understanding hazards

Key learning points

1. What are common hazards?
2. What can you do about common hazards?



Notes:

What are common hazards?

Common hazards exist in every workplace. You need to be able to recognise them and know what to do about them.

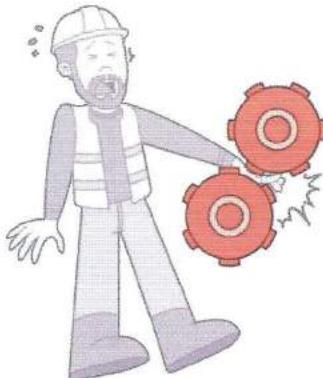
Hazards generally fall into six broad groups:

- mechanical
- physical
- chemical
- biological
- environmental
- organisational.

Mechanical hazards

Mechanical hazards are created by the powered operation of apparatus or tools. The applied power may be machine generated or human.

Some examples of mechanical hazards are unguarded machines, plant machinery and vehicles.



A person may be harmed as a result:

- contact or entanglement with machinery or equipment
- crushing between a moving part of the machinery or equipment
- being struck by ejected parts of the machinery or equipment.

Mechanical hazards can also be categorised according to the type of injury caused:

- crushing
- shearing
- cutting and severing
- entanglement
- drawing-in or trapping
- impact
- stabbing and puncture
- friction and abrasion
- high-pressure fluid injection.



Notes:

Physical hazards

Physical hazards are those substances or conditions that may harm a person's physical safety. Some examples of physical hazards are fires, electricity, vibration and poor housekeeping.

Physical hazards are the most common type of hazards in the workplaces and include unsafe conditions that can cause injury, illness and death.

The most common types of injuries include:

- tripping
- slipping
- falling from a height or on a level
- being struck by a falling object.



Did you know...?



Slips and trips are the most common cause of major injuries at work.

Notes:

Chemical hazards

Chemicals are considered a hazard due to their intrinsic properties to cause harm to humans, property, or the environment.

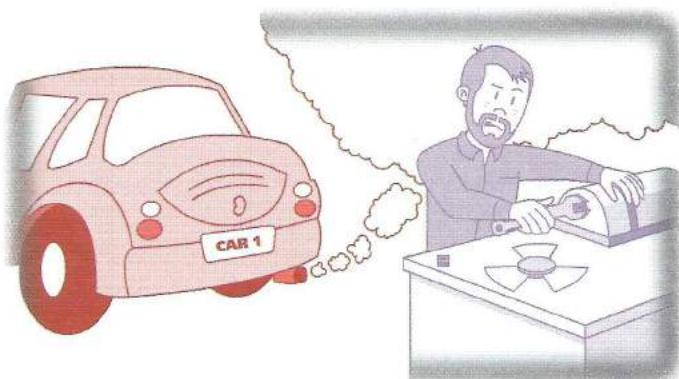
Some chemicals occur naturally, for example arsenic or radon gas, while others are manufactured for commercial or home use. Examples of these chemical hazards are paints, varnishes, bleaches and diesel.

Chemical hazards can be presented by substances that are:

- used directly in work activities (for example, adhesives, paints, cleaning materials)
- generated during work activities (for example, fumes from soldering and welding).



The level of harm caused depends on the route and the speed of entry into the body.



Chemicals can harm a person's health by entering the body by:

- absorption through the skin
- ingestion through the mouth
- inhalation through the lungs.

Once a chemical hazard has entered the body, examples of harmful effects are:

- diseases of the skin
- diseases of the respiratory system
- cancer and birth defects
- asphyxiation
- disorders of the central nervous system
- damage to specific organs
- blood poisoning.

Some substances can cause harm from a single exposure of short duration (acute effect), while some harm will only be apparent after prolonged and/or repeated exposure (chronic effect).

Biological hazards

Biological hazards are organic substances or microorganisms that pose a threat to the health of humans and other living organisms. They also include toxins that are produced by organisms.



Examples of biological hazards include:

- pathogenic bacteria
- viruses
- fungi
- parasites.

Biological hazards pose risks for many workers in a variety of ways. For example, people working with microorganisms (for example, in laboratories) are at higher risk of exposure.

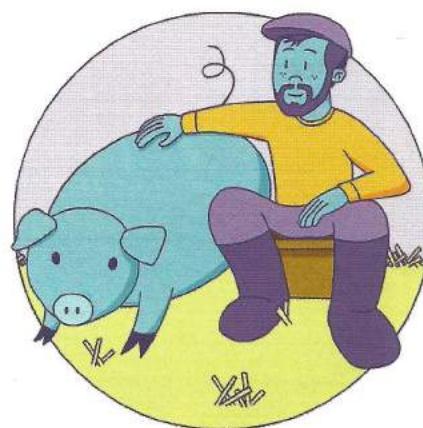
Other examples of work activities that can bring people into contact with biological hazards are:

- working with animals
- working with people who might be infectious
- handling waste materials
- working in an environment or with equipment that could be contaminated

Examples of common occupational infections that can arise from these activities include:

- bovine tuberculosis (natural host – cattle)
- hepatitis B and C (natural host – humans)
- leptospirosis – weil's disease (natural host – rodents).

Notes:



Environmental hazards

Environmental hazards are the conditions or state of events that have the potential to affect the environment and adversely impacting people's health. These hazards come in various forms and are often unnoticed until an accident occurs.

Environmental hazards include:

- noise
- poor lighting
- unreasonable temperatures
- dust.

Understanding the various environmental hazards and taking precautions can help prevent accidents.



Balancing the work activity and work rate with the temperature, humidity, air movement, clothing, food and drink intake, body build and psychosocial factors is important for workers' efficiency, comfort and safety.



Notes:

Organisational hazards

Organisational hazards are associated with behaviour, workload, time constraints and deadlines.

Studies have shown that the following work dimensions may have the potential to be stressful:



- temporal aspects of work (for example shift work)
- work content
- interpersonal issues within a team
- interpersonal issues with supervisors
- organisational structures

Notes:

What can you do about common hazards?

You're about to watch a short animation. As you watch it you'll identify several common hazards.

During this session, you'll also find out what you can do about them.

Aggression and violence

Work-related violence occurs when someone is abused, threatened or assaulted in circumstances relating to their work. Violence (which includes verbal abuse, threats or physical attacks) can come from people you know, as well as from strangers.

Your risk of being exposed to violence depends a lot on your occupation. If your work brings you into contact with the public, you're at a higher risk of attack, especially if you:

- handle money – security and protective services
- work with violent people – prison officers
- deal with complaints – receptionists
- have a duty to interact with the public – traffic warden, police
- provide care, advice or information – nurses and care workers
- work alone – bus drivers, ticket collectors
- work unsociable hours – catering staff.



As well as occupation, the circumstances and situations of your work affect your chances of suffering aggression and violence. Working alone, for example, increases your vulnerability.

Physical attacks and verbal abuse

Physical attacks are dangerous, but serious or persistent verbal abuse can be a significant problem too, as it can damage an employee's health through anxiety and stress.

Verbal abuse is more common than physical attacks and can cause **psychological symptoms** that can lead to physical symptoms.

 *Notes:*

Psychological symptoms can include:

- insomnia
- stress
- anxiety
- irritability
- loss of confidence
- agoraphobia
- thoughts of self-harm
- guilt.

As a duty holder, you'll need to identify whether aggression and violence are problems for you and your team. Minimise the risks of violence to you and your staff by:

- providing training and information to help employees identify the early signs of aggression and avoid it or deal with it
- improving public waiting areas, information about delays and physical security measures, such as video cameras, alarm systems and security doors
- introducing changes to the way your team works – such as limiting the amount of cash on the premises by using cheques, credit cards and tokens, banking money more frequently, checking client credentials for meetings away from the workplace, accompanying workers if they have to meet a known aggressor away from the workplace, making sure that employees keep in touch when they're working away from base
- setting up a system for reporting, investigating and monitoring any instances of violence, so that you can make more improvements if appropriate. The reporting system needs to be easily accessible – for example, an answerphone service.

Encourage members of your team to:

- raise any concerns about the risk of violence
- discuss workplace precautions with you
- report any attack, however minor, to you. This should include an account of what happened, details of the victim, perpetrator and any witnesses, the outcome and details of the location and nature of the incident.



Did you know...?



According to Crime Survey England and Wales, there were an estimated 649,000 incidents of violence at work in 2012/13.

Asbestos

Asbestos is a term used for a group of fibrous minerals widely used because of its incombustibility, good electrical and heat-insulating properties and strength. The most commonly used types of asbestos are:

- chrysotile (white asbestos)
- amosite (brown asbestos)
- crocidolite (blue asbestos).



Where are you likely to find asbestos materials?

- roof and exterior walls
- boiler, vessels and pipework
- ceilings
- interior walls/panels
- floorings
- domestic appliances.

Although asbestos is a hazardous material, it can only pose a risk to health if its fibres become airborne and then inhaled. Asbestos containing materials only release fibres into the air when they are disturbed. Exposure to asbestos fibres can have serious adverse health effects including asbestosis, lung cancer and mesothelioma. The disease can take many years to develop so the person who breathes in fibres will not be immediately aware of a change in their health.

Everyone who works with asbestos must be properly trained and some work requires a licence.

Notes:

Those in control of premises are required to:

- take reasonable steps to determine the location and condition of materials likely to contain asbestos
- presume materials contain asbestos unless there is strong evidence that they don't
- keep an up-to-date record of the location and condition of the (presumed) asbestos material
- assess the likelihood of risk of anyone being exposed to fibres from the material
- prepare a plan of how the risks from the material are to be managed
- put the steps of the plan into action
- periodically review and monitor the plan
- provide information on the location and condition of the materials to anyone who is liable to work on or disturb them.

Duty holders are required to:

- ensure the health and safety of employees, visitors and contractors
- prevent the exposure of employees to asbestos
- identify whether premises contain asbestos, what condition it is in and assess the risk
- apply the measures identified
- use approved contractors
- ensure that asbestos waste is transported in sealed, labelled containers with consignment notes, and disposed of at a licensed site.

Did you know...?



In the UK, approximately 4,500 people die each year due to asbestos related diseases. (www.hse.co.uk)



Notes:

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Bullying

If a worker feels they're being singled out for unfair treatment by a boss or colleague, they're probably being bullied. There's no comprehensive list of bullying behaviours and no one type of person who's likely to be a bully. Bullying can be described as unfair, offensive, intimidating or insulting behaviour intended to undermine, humiliate or injure someone.

Examples of bullying behaviour include:

- constantly criticising competent staff, removing responsibilities from them, or giving them trivial tasks
- shouting at staff
- persistently picking on people in front of others or in private
- blocking promotion
- regularly and deliberately ignoring or excluding individuals from work activities
- setting a person up to fail by overloading them with work or setting impossible deadlines
- consistently attacking a member of staff on their professional or personal standing
- regularly making the same person the butt of jokes.



Symptoms of bullying include:

- anxiety
- headaches
- nausea
- ulcers
- sleeplessness
- skin rashes
- irritable bowel syndrome
- high blood pressure
- tearfulness
- loss of self-confidence.

As a duty holder, make it clear to your team members that you find bullying behaviour unacceptable. Encourage them to talk to you if they feel they're at risk of being bullied or are being bullied.

A graphic of a spiral-bound notebook with the word 'Notes.' written on its cover. Below the notebook is a large rectangular area with horizontal lines for writing notes.

Chemicals and harmful substances



Chemicals and harmful substances can cause you injury or ill health. They can be found in the home and at work – examples include adhesives, paints, cleaning agents, fumes from soldering and welding, grain dust and bacteria.

These warning signs are used to identify different types of harmful substances:

 GHS-01	<ul style="list-style-type: none">• Explosives• Self-reactive substances and mixtures, types A, B Organic peroxides, types A,B
 GHS-02	<ul style="list-style-type: none">• Flammable gases, aerosols, liquids or solids• Self-reactive substances and mixtures• Pyrophoric liquids and solids• Self-heating substances and mixtures• Substances and mixtures, which in contact with water emit flammable gases• Organic peroxides
 GHS-03	<ul style="list-style-type: none">• Oxidising gases, liquids and solids
 GHS-04	<ul style="list-style-type: none">• Compressed gases, liquids and solids• Liquefied gases• Refrigerated liquefied gases• Dissolved gases

 GHS-05	<ul style="list-style-type: none"> • Corrosive to metals • Skin corrosion • Severe eye damage
 GHS-06	<ul style="list-style-type: none"> • Acute toxicity (Cat 1 – 3)
 GHS-07	<ul style="list-style-type: none"> • Acute toxicity (Cat 4) • Skin and eye irritation • Skin sensitisation • Specific target organ toxicity • Respiratory tract irritation • Narcotic effects
 GHS-08	<ul style="list-style-type: none"> • Respiratory sensitisation • Germ cell mutagenicity • Carcinogenicity (health hazard) • Reproductive toxicity • Specific target organ toxicity • Aspiration hazard
 GHS-09	<ul style="list-style-type: none"> • Hazardous to the aquatic environment

How can you be exposed to chemicals?

Chemicals can come into contact with your bare skin and eyes

Some substances, such as fuels and oils, can pass through the skin, while others get into the body via cuts and grazes. This is known as *absorption*.

Chemicals can also get into the body by deliberate or accidental puncture of the skin – for example through contaminated syringes. This is known as *injection*.

You can breathe in chemicals

Breathing in harmful gases and dusts, such as asbestos, means they can stay in the lungs and cause a variety of diseases, such as asbestosis. This is known as *inhalation*.

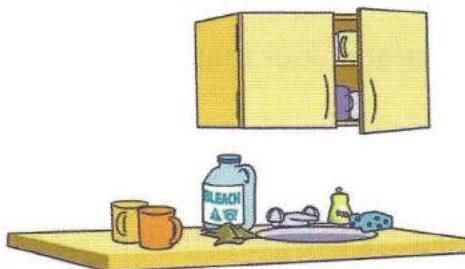
You can swallow chemicals

This happens most often through swallowing contaminated food or drink. This is known as *ingestion*.

Some substances have a Workplace Exposure Limit (WEL). This defines an exposure level that mustn't be exceeded. Information on the WEL for a particular substance can be found on the safety datasheet that accompanies all harmful substances. But not exceeding the WEL doesn't guarantee health protection – individual differences in human susceptibility make this impossible.

Remember:

- some substances are more harmful than others
- some will harm you quickly
- some require large doses before they cause harm
- some may take years of exposure before any effects are seen.



Notes.

Did you know...?



Based on the last 3-year average, Labour Force Survey estimates that, among people currently or recently in work, the prevalence of skin problems caused or made worse by their work was 12,000.

As a duty holder, you'll need to make sure that risks from harmful substances in the areas you're responsible for are managed effectively. To do this you'll need to:

- set up processes and activities to minimise the release and spread of harmful substances
- take note of all the ways in which people can be exposed when designing control measures
- control exposure in ways that are appropriate for the level of risk to health
- choose the most effective and reliable control measures. For example, consider the following: replacing the substance with a safer alternative; using the substance in a safer form; using the smallest amount possible; enclosure and ventilation; and using appropriate work methods
- provide personal protective equipment where you can't control exposure any other way, and make sure it's used
- check your measures are working well
- inform and train all workers about the hazards and risks from the substances they work with and what they should do if they're exposed
- make sure your controls don't increase other health and safety risks
- introduce a health surveillance programme if necessary.

Encourage your team members to:

- always use gloves, goggles and other protective equipment. This equipment should be suitable to prevent contact with harmful substances
- always use the correct mask or breathing apparatus to prevent them breathing in chemicals, and to make sure that it's clean and undamaged and that it fits properly
- avoid eating or drinking in workplaces where hazardous chemicals or substances are being used
- always take personal hygiene precautions (such as washing hands and changing clothing) before eating, drinking or smoking.

Did you know...?



There are currently approximately 12,000 deaths in the UK each year due to occupational respiratory diseases, about two-thirds of which were due to asbestos-related diseases or chronic obstructive pulmonary disease.

Computer workstations

The main injuries associated with workstations occur after working with them for long periods. They are:



- **upper limb disorders (ULDs)** – these include repetitive strain injury and usually occur after using a keyboard or mouse
- **back injuries** from sitting with an awkward posture
- **eye strain** from looking at the screen

As a duty holder, there are several simple practical steps that you can take to prevent these injuries to your team members.

Make sure that your team members:

- adopt the right posture when working at their computer workstations – for example, not holding their wrists at an acute angle
- take frequent short breaks if they're using a keyboard for a long time
- are aware of the early symptoms of ULDs – such as tingling in the fingers after keyboard use – and report their symptoms to you
- use an adjustable chair that's set up properly for them
- know how to set up an adjustable chair to meet their needs
- position the screen properly – so that there's no glare or reflection, it's at eye height, and it's neither too far away nor too near
- wear glasses or lenses if they need them to see the screen clearly – they should wear them all the time they're using the screen
- have their eyes tested regularly – your organisation must pay for this if they have to use screens for most of their work.

Notes:

Confined spaces

A confined space is any space of an enclosed nature where there is a risk of serious injury or death from hazardous substances or dangerous conditions.



Examples of confined spaces include:

- storage tanks
- process vessels
- storage bins
- silos
- flues and ducts
- sewers and drains
- excavations
- tunnels.

A confined space may also be created by leakage of toxic gas in an enclosed area or a poorly ventilated room.

Working in a confined space is hazardous because of the following possible hazards:

- flammable substances
- toxic fumes or vapours
- oxygen enrichment or deficiency
- ingestion of liquids
- excessive heat
- flooding and/or drowning
- asphyxiation from dust, grain or other contaminant.

A number of people are killed or seriously injured in confined spaces each year in the UK. These occur across a wide range of industries and involve complex plants as well as simple storage vessels.

Duty holders must make sure that the safe system of work is developed and put into practice. Employees working in a confined space must be adequately informed, instructed and trained in the relevant safe system of work, safety equipment and rescue arrangements.

To reduce the risks from working in a confined area:

- determine if the work can be carried out without the need to enter
- establish a safe system of work, if entry to a confined space is unavoidable
- put in place adequate emergency arrangements before the work starts.



Did you know...?



A company was fined £533,000 and ordered to pay costs of £200,000 in July 2009 following two deaths in a confined space at a manufacturing plant.



Notes:

Drugs and alcohol

The use of drugs and alcohol can be a serious workplace issue. Not only can their use lead to significant health problems but workers under the influence of drugs or alcohol can be a hazard to themselves and others.

Employers who knowingly allow employees to work under the influence of alcohol or drugs, where this affects the safety of themselves and others, could be prosecuted under the health and safety law. Employees affected by alcohol and drugs are likely to have increased sickness absence and poorer performance.



It is not only illegal drugs that cause problems at work. Legal ones, including prescription drugs, can be misused too or have adverse effects. However, some people have conditions that require drugs to help them live a normal life and couldn't work without them. Many drugs can also have psychological effects that can affect performance or mental well-being especially after long term use or if a dependency develops.

The causes of substance misuse can be many but may include the following:

- workloads, staff shortage, risk of redundancy, change, shift work, bullying and harassment
- the existing workplace culture that encourages the use and perhaps the misuse of alcohol or drugs
- long working hours and working away from home.

Notes:

The following behaviours in the workplace may indicate the existence of a problem:

- absenteeism
- poor time keeping
- high accident levels
- tendency to become confused
- poor performance of duties
- mood swings
- irritability or aggression
- misconduct.

Alcohol and drug misuse can affect work performance in four main ways:

- it increases the likelihood of mistakes, errors of judgement and increased accidents
- it can impair both work attendance and performance
- it can lead to a range of social, psychological and medical problems, including dependence
- carers may find the impact of dealing with the problem affects their work performance.

Did you know...?



In 2012/13, around 1 in 12 adults aged 16 – 59 had taken an illicit drug in England and Wales.



Notes:

Electricity

The main type of harm from electricity is electric shock, caused by coming into direct contact with an electrical conductor, such as the bare wires of an appliance while it's live. You can also be injured as a consequence of an electric shock: for example, if you get a shock while changing a light bulb, you could fall off your ladder. Electricity can also cause electrical burns and fire.

Most deaths and injuries from electricity are due to:

- using poorly maintained electrical equipment
- working near overhead power lines
- contact with underground power cables during excavation work
- working on or near domestic electricity supplies
- use of unsuitable electrical equipment in explosive atmospheres, such as in car paint spraying booths.



Most of these could have been avoided by careful planning and relatively straightforward precautions.

Did you know...?



On average two people are killed and many more are injured each year in accidents involving overhead power lines in agricultural work (www.hse.gov.uk).



Notes:

As a duty holder, you'll need to assess what kind of electrical work your team's involved in. Your team may be:

- working near electricity – for example, near overhead power lines or underground cables
- using electrical equipment – for example, power tools
- working on electrical equipment, machinery or installations – for example, carrying out maintenance or repair work.



Whatever the work, you need to make sure that the risks are assessed, workers are given appropriate training, and adequate controls are provided so that they can work without putting themselves and others in danger.

Did you know...?



Each year, there are around 1,000 electrical accidents at work and about 25 people die of their injuries (www.hse.gov.uk).

Working near electricity

Make sure your team members are trained to:

- recognise electrical wiring – sometimes it isn't obvious
- request and use an up-to-date map of gas, water and electricity services in the area
- find and mark underground services
- ask for electrical power supplies to be turned off
- ask for and follow the advice of a competent person.



Using electrically powered equipment

Develop a procedure to make sure that:

- electrical equipment is suitable for its intended use, and it's in good condition
- electrical equipment is suitable for the electrical supply
- a circuit breaker is used between the equipment and electrical supply
- workers are trained to use the equipment safely

Working on electrical equipment, machinery or installation

Make sure that this type of work:

- is thoroughly planned
- is carried out by competent people only
- meets the requirements of relevant national or industrial standards.

Case study

An electrical contractor received a fatal electric shock while examining a faulty air conditioning unit at premises owned and controlled by a local council. The investigation found that the council had failed to maintain the unit in a safe condition, even though it had known about its condition for some time. Also, this was the second electrocution on the council's premises in five years.

The council was prosecuted under the Health and Safety At Work etc Act 1974 and fined £400,000.

People in control of work activities have a responsibility to maintain equipment in a safe condition. They should also provide whatever information and instruction that's necessary to ensure that workers can work safely.

(www.hse.gov.uk/electricity/experience.htm)



Notes:

Fire

Workplace fires cause many people to suffer from burns each year and some prove fatal. For a fire to start or an explosion to occur, three things have to be present:

- oxygen
 - fuel
 - heat
- } When oxygen mixes with fuel, and there's a spark or other source of heat, a fire will start.

Sources of fuel: flammable liquids (such as paint, varnish, adhesives, solvents and petrol), wood, paper, card, plastics, rubber, foam, flammable gases and dusts such as coal, sugar and grain.

Sources of heat: naked flames, cigarettes and matches, heaters, hot processes (grinding, cooking), lighting equipment and friction.

Sources of oxygen: air in the atmosphere, oxidising materials (for example bleaches) and oxygen stored in cylinders.

Removing any one of these components will prevent or put out a fire.

Fires injure and kill people through:

- heat and flames
- smoke, which can suffocate or poison them
- collapse of buildings.



Notes:

Once a fire's started, the best way to reduce injury or death is to get people away from it and out of reach of the smoke. However, the best approach is to prevent fires starting in the first place. A fire will only go out when there's no oxygen, the fuel runs out or the heat is removed by cooling with water or another firefighting measure.

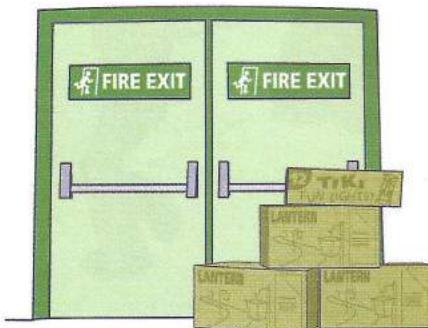
Did you know...?



In 2012/13, there were 350 fire-related deaths in Britain. There were 22,500 fires recorded in buildings that were not dwellings.

As a duty holder, you'll need to make sure that fire risks in the areas you're responsible for are managed effectively. To do this, you'll need to identify:

- ways to eliminate or reduce sources of:
 - ignition – for example, buy and install equipment that's been designed to minimise the risk of fire
 - fuel – for example, remove flammable materials or keep them to the minimum amounts you need for the work
 - oxygen – for example, shut doors and windows
- how much training your staff have had in fire safety
- what fire precautions are in place, such as smoke detectors, fire alarms, escape routes and firefighting equipment.



You need to have an effective way to detect fires and recover from them if they do start. In particular you need to set up:

- a system for alerting everyone to a fire and evacuating the premises
- regular fire practices to test the emergency systems before a real fire occurs
- adequate firefighting equipment so that trained employees can put out a fire at its early stages without exposing themselves to danger.

Getting in and getting out

Getting in and out of buildings and work sites is so commonplace we don't give it a second thought. But we should – many people get injured doing exactly that!

Before going into an area, we all need to be aware of what hazards we may face both at the opening itself and on the other side.

As a duty holder, think about the areas you're responsible for and ask yourself these questions:

- are entrances and exits for employees, visitors and vehicles identified?
- are they well lit, maintained and staffed, if necessary?
- are they suitable for their users?
- are they safe under foot?
- have you thought about emergency situations, when entrance and exit routes might change?

You can help to keep entrances and exits in good condition by including them in routine inspections.



Notes:

Safety signs

Safety signs play an important part in communicating health and safety information to everyone. Signs need to be provided whenever there's a hazard that hasn't been fully controlled in other ways. Make sure your team understands the meaning of the signs.



Red signs – these are prohibition signs. This means you're not allowed to do something (such as smoking, as illustrated). Other common prohibition signs are those showing that there's no access for pedestrians or no access for vehicles. Red signs are also used for firefighting equipment.



Blue signs – these are mandatory signs. This means that you must do something (such as wearing ear defenders, as illustrated). Other common mandatory signs are 'head protection must be worn' and 'face protection must be worn'.



Yellow or amber signs – these are used to warn about hazards such as forklift trucks (as illustrated), electricity, radioactive material and biological risks.

Green signs – these signs are for emergency escape routes (as illustrated) and first aid provisions, such as first aid posts and emergency showers.



Heights

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.

Falls from height are the most common cause of fatal injury and the second most common cause of major injuries to employees.

The main causes of falls from height are:

- failing to recognise the risk
- not providing a safe system of work and making sure it's followed
- not providing adequate information, training, instruction or supervision
- not using equipment properly – or sometimes not using it at all.



Case study

An employee of a wood panel manufacturer suffered severe back injuries when he fell 11.5m through a hole in the factory roof. He was on the roof to collect wood debris and throw it down a chute. To gain access to the chute, he had to walk along a cordoned-off area where there were two holes in the roof to allow the installation of a new extractor unit. One of these holes had been left open, the other covered by an insulating board. During one trip through the cordoned-off area, he stood on the hole covered by insulating board; it broke under his weight and he fell. His employer was fined £12,000 for breaches of health and safety legislation.

Did you know...?



There were 39 fatal injuries to workers involved in falls from height in 2013/14.

If the work you're responsible for includes working at height, you need to make sure that:

- it's properly planned and organised
- the workers are competent
- you've assessed the risks from working at height, chosen appropriate work equipment and made sure your staff use it
- you've controlled the risks from fragile surfaces
- equipment for working at height is properly inspected and maintained.

Avoid working at height wherever possible. If you can't avoid it:

- use work equipment or other measures to prevent falls
- use work equipment or other measures to minimise the distance and consequences of a fall.

Did you know...?



In Britain, about 567,000 working days are lost each year due to injuries resulting from falls.

Case study

A window cleaner broke his arm, ribs and fingers when he fell 2.3 metres from his ladder while cleaning the windows of a show home on a new housing estate. The ladder wasn't secured or footed, and the ground was dry but sloped gently away from the building. The construction company hadn't produced a method statement and the injured man had received no health and safety induction when he arrived on the site.



Notes:

Housekeeping

Poor housekeeping can result in dirty, untidy, overcrowded and obstructed workplaces. This often leads to a variety of hazardous situations.



Poor housekeeping creates hazards for everyone. For example, if you don't clean up spillages and tidy away tools after use, there'll be a slip and trip hazard. Poor storage of materials may also present a fire hazard, not only because of the nature of the materials, but also because they block the route to a fire exit.

Encourage members of your team to tidy up after themselves and to report any problems with housekeeping to you. Regular housekeeping inspections will help to keep on top of this common but often overlooked hazard.

Welfare facilities

Employers must provide a number of facilities to ensure the welfare and comfort of their workforce:

- toilets and washing facilities
- drinking water
- storage for clothing and changing areas, if appropriate
- rest and eating areas
- showers, depending on the type of work.

In addition, toilets and washing facilities must be kept clean, ventilated and well lit. Including these areas in regular inspections will help to make sure they stay in a good condition. Encourage your team members to use these facilities.

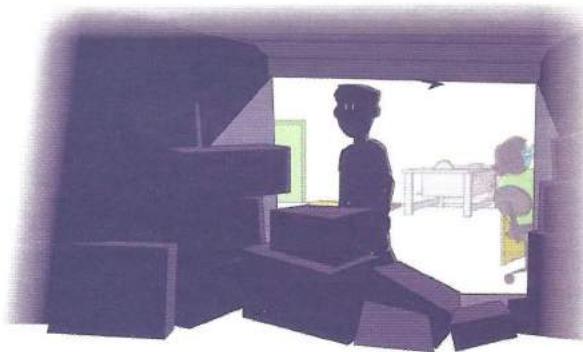
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Lighting

Good lighting can help us recognise hazards in the workplace. In addition, it can reduce the likelihood of discomfort and tiredness of the eyes, which is important for many work activities. Natural light is the best form of lighting and should be provided wherever reasonably practicable.

The key safety issues with lighting in the workplace are:

- too little or too much light
- glare and reflections – areas where the light is too bright or where reflections cause problems can lead to misperceptions and often mistakes
- shadows in safety-critical places, such as across an entrance or near steps
- significant differences in lighting levels between different areas (for example, where you can't see the traffic when you walk outside on a bright day from a dimly lit room)
- providing extra lighting to do the job safely – people are more productive when they can see properly.



Remember to consider these issues when carrying out risk assessments. Encourage your team members to discuss their concerns about workplace lighting with you.



Notes:

<hr/>

Manual handling

Manual handling covers a number of activities, such as lifting, lowering, carrying, pushing and pulling. These activities are a major cause of musculoskeletal disorders (MSDs) – such as lower back pain, joint injuries and repetitive strain injuries. Manual handling injuries are the single most common cause of workplace injury and occur across a range of industries, from construction to office work.



Did you know...?



Musculoskeletal disorders are the most common cause of occupational illness in the UK. An estimated 526,000 workers in 2013/14 suffered from musculoskeletal disorders caused or made worse by their current or past work.

The following factors affect the risk of injury from manual handling:

- **the weight of the load** – generally, the heavier the load, the higher the risk of back injury from moving it
- **the size and shape of the load** – loads which are small and easy to grasp are generally less of a risk than large, awkwardly shaped loads
- **your posture during manual handling** – if you have to lift or move something while you're in an awkward posture, or while seated, the risks of injury are greater
- **the distance you have to lift the load** – the higher, lower or further you have to reach to pick up or put down the load, the higher the risk
- **how you move while handling something** – if you have to twist your body or reach over during manual handling, the risk of injury is higher
- **how often you have to lift or move something** – carrying out a manual handling operation repeatedly increases the risk of injury
- **the working environment** – anything which makes the manual handling more difficult increases the risk of injury, such as uneven floors or carrying loads from one level to another
- **the capability of the person** – people differ in physical strength, height and reach.

As a duty holder, there are four main things you should consider when assessing the risks of manual handling:

Task – look at the job you're doing. Could manual handling aspects of the job increase the risk of injury – for example, twisting or reaching while lifting? What needs to change to improve this factor?

Individual – what is it about the person that makes this job more or less safe? Could some personal characteristics increase the risk of an injury – for example, has the person had training, or do they have any history of back problems? What needs to change to improve this factor?

Load – look at the load itself. Could the weight, size and shape of the load increase the risk of injury – for example, is it hard to grip? What needs to change to improve this factor?

Environment – look at the surroundings where the handling job is to take place. Could the environment increase the risk of injury – for example, are there objects in the way or uneven surfaces? What needs to change to improve this factor?

Did you know...?



An estimated 11.6 million working days a year are lost to work-related MSDs (www.hse.gov.uk).



Notes:

Noise

There are two main causes of hearing damage:

1. the long-term, cumulative effect of exposure to loud noise. This isn't about simply being in a room where there are loud noises (for example, from noisy machinery or music) but is about a slow effect that will build up over time and is irreversible.
2. Exposure to one-off loud bangs or extreme noise that may cause temporary or permanent deterioration in your hearing or may even deafen you. For example, quarry workers, mine workers and the military can be at risk from exposure to sudden blasts.



Distraction and stress from unwanted noise, particularly where the work needs attention to detail, can also reduce workers' performance.

As a rough rule of thumb, if the general noise is so loud that you can't reasonably hear a normal conversation at a distance of 2 metres, then you probably need to take action.

As a duty holder, you'll need to identify how bad the problem is. To do this you'll need to have noise measurements done – this will give you a noise map showing where the problem areas are. You'll need to engage a competent person to do this survey. In addition to the loudness of the noise, you'll need to take into account the length of time people work in the area. A quieter noise for a long period could be just as damaging as a louder noise for a short period.

Depending on the levels of noise, you'll need to implement certain control measures – for example, systems of work that limit exposure time, and providing quiet areas for breaks, soundproofed enclosures, quieter machinery and hearing protection. If members of your team are routinely exposed to more than a certain level of noise (the action level), you'll need to consider introducing a health surveillance programme.

Did you know...?



Over 1 million employees in Great Britain are exposed to levels of noise which put their hearing at risk.

Encourage your team members to:

- work with you to tackle noise problems
- check their noise exposure away from work – noisy hobbies can damage hearing as much as noisy work
- wear ear plugs or defenders when doing noisy work and make sure that:
 - they fit properly
 - they're appropriate for the type of noise they're exposed to
 - they're clean and undamaged.



Notes:

Plant and machinery

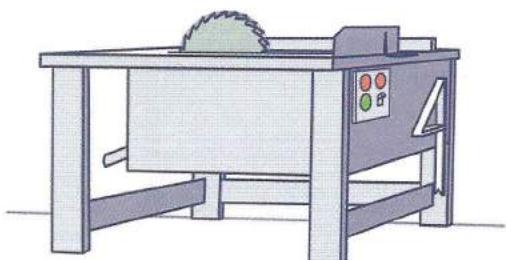
Plant and machinery can pose a wide range of hazards to workers and bystanders. These hazards can't be dealt with in isolation because one hazard can lead to another – for example, entanglement with a rotating part can lead to drawing in and eventually crushing.

Machinery hazards can be sub-divided into mechanical hazards and non-mechanical hazards.

- **Mechanical hazards** – include contact with moving machinery, entanglement in machinery and ejection of items from the machinery
- **Non-mechanical hazards** – include exposure to chemicals, vibration and noise.



Guarding offers a viable solution for mechanical hazards, if you can't eliminate or reduce the hazard in any other way. Guards should be chosen in the following order of priority:



Where you don't need access to the danger zone under normal operation:

- fixed guard
- interlocking guard
- trip device.

Where you do need access to the danger zone under normal operation:

- interlocking guard
- automatic guard
- trip device
- adjustable guard
- self-adjusting guard
- two-handed control.

The condition of plant or machinery should be inspected on a regular basis to ensure that it remains in good condition and, all safety features including guards and stop controls are operational.



As a duty holder, you must develop procedures to make sure work equipment is:

- suitable for its purpose
- set-up and used to minimise risks
- well-maintained
- inspected
- operated by trained users.

Did you know...?



Approximately 13 per cent of reported major injuries and 11 per cent of over seven-day injuries involved contact with moving machinery.

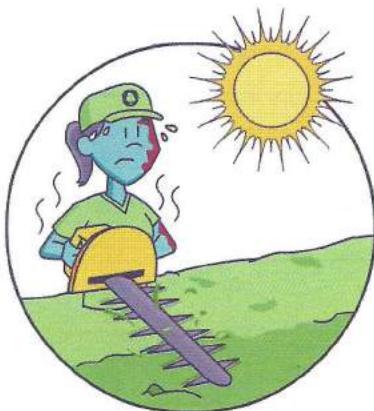


Notes:

Radiation

Radiation is generally classed as either ionising or non-ionising.

Ionising radiations – occur as electromagnetic rays (for example, x-rays and gamma rays) or as particles (for example, alpha and beta particles). Radiation happens naturally from the radioactive decay of natural radioactive substances (for example, radon gas and its decay products) but can also be produced artificially.



Exposure to ionising radiation can lead to conditions such as:

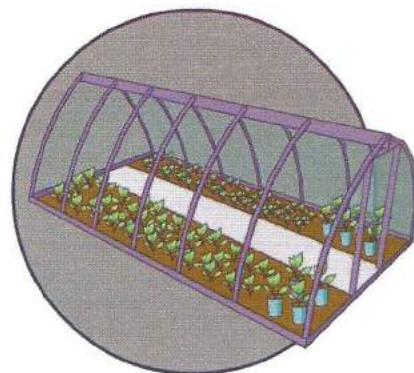
- dermatitis
- skin burns
- cell damage
- cancer
- cataracts
- changes to blood.

It's important to manage the risks of ionising radiation sensibly to protect workers and the public.

Non-ionising radiations – is the part of the electromagnetic spectrum covering two main regions; optical radiation (for example, ultraviolet, visible and infrared) and electromagnetic fields (for example, power frequencies, microwaves and radio frequencies).

Exposure to non-ionising radiation can cause:

- skin burns
- cancer
- cataracts
- conjunctivitis
- arc eye.



Duty holders are required to:

- identify all sources of ionising and non-ionising radiation in their workplace
- reduce any exposures to ionising and UV radiation, as far as possible
- consider getting competent advice
- introduce a medical health surveillance programme
- provide appropriate shielding and personal protective equipment
- seek expert advice when lasers are used for displays.



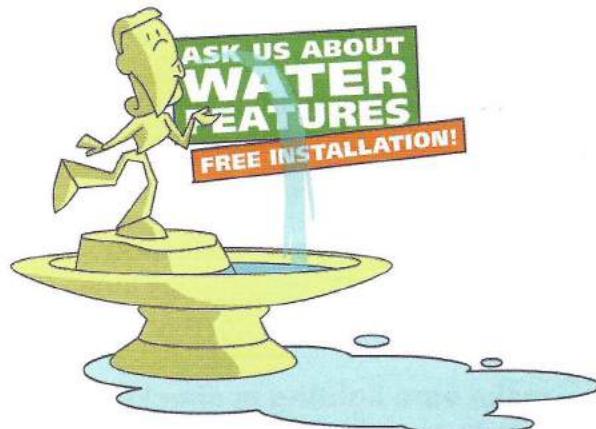
Notes:

Slips and trips

Slips and trips are the most common cause of major injuries at work. They occur in almost all workplaces and 95 per cent of major slips result in broken bones. They can also be the initial cause of a range of other types of accident, such as falls from height.

There are several factors that can contribute to a slip or trip. Considering these factors can play an important part in preventing slips and trips:

- flooring – needs to be suitable and maintained in good condition
- contamination and obstacles – most floors only become slippery when water, oil, grease or dust, to name but a few, end up on the floor. Half of trip accidents are caused by bad housekeeping
- cleaning – can remove contamination and obstacles – but the moist surface created by cleaning can also create slip and trip hazards
- people – human behaviour and attributes can affect the risk of a slip or trip
- environment – lighting, noise and weather conditions can affect the risk of a slip or trip
- footwear – needs to be suitable for the work environment and can play a key part in preventing slips and trips.



To tackle the risk of slips and trips in your organisation:

- take slips and trips seriously
- understand and recognise their causes
- think that they're preventable
- use controls to minimise the risk.

When doing a risk assessment of your work activities, look out for slip and trip hazards – for example, uneven floors, trailing cables, areas that are sometimes slippery because of spillages. Also, take account of older workers and people with disabilities, who may be at particular risk.

Did you know...?



Slip and trip injuries cost employers over £500 million per year (www.hse.gov.uk).

As a duty holder you should:

- **get things right from the start** – when designing new work areas, choose only suitable floor surfaces, make sure there's enough light and plan pedestrian routes
- **where possible, provide designated walking routes** – encourage your team members to use them and make sure you do too!
- **specify and provide appropriate footwear at work** – footwear plays an important part in reducing risk of slipping and tripping and is particularly important where floors can't be kept dry
- **keep floors in good condition** – encourage everyone to keep an eye out for any defects in a surface, such as loose finishing, holes, cracks, worn rugs and mats, or spillages, and report them to you
- **make sure lighting is checked as part of regular inspections** – people need to be able to see any obstructions or slippery areas, so make sure damaged lights are replaced or repaired promptly.
- **keep work areas tidy and free from obstructions** – these can easily cause a trip. If obstructions can't be avoided, make sure that people are warned of the hazard by signs or barriers.

Did you know...?



Slips and trips result in over a third of all reported major injuries.



Notes:

Stress

Stress is an individual's reaction to excessive pressure and other demands placed on them. Pressure can keep you motivated, but too much causes stress. Non-work factors can also contribute to your levels of stress. This will affect your ability to 'bounce back' and could leave you more vulnerable to work-related stress.



Work factors that create stress can include:

- excessive work demands
- not enough work
- fear of failure
- bullying
- poor job design.

Non-work factors that create stress can include:

- family life
- financial worries
- divorce
- birth of a child
- bereavement.

Duty holders should be aware of the effects of stress:

- **physiological effects:** increased blood pressure, tiredness, stomach ulcers, digestive disorders, weight loss or gain, headaches, general malaise such as skin rashes, increased perspiration, aching neck and shoulder muscles, blurred vision, dizziness and lowered responses to infection
- **emotional effects:** increased tension, anxiety, depression, frustration and loss of self-esteem
- **behavioural effects:** anorexia, binge eating, misuse of alcohol or other drugs, interpersonal difficulties, insomnia, aggressive or passive behaviour, workplace conflict and absenteeism.

To manage stress effectively, you need to address six key areas of work design:

- **demands** – what are the workload, work patterns, and the work environment?
- **control** – how much say does the individual have in the way they do their work?
- **support** – are encouragement, sponsorship and resources provided by the organisation, line management and colleagues?
- **relationship** – do you have positive ways to avoid conflict and deal with unacceptable behaviour?
- **role** – do people understand their role within the organisation and does the organisation ensure that people don't have conflicting roles?
- **change** – how is organisational change (large or small) managed and communicated in the organisation?

Find out how your organisation is performing in these six areas and compare it with what's recognised as good practice. This will help you to identify potential problem areas and sources of stress.

Did you know...?



Estimates from the Labour Force Survey 2013/14 indicate that self-reported work-related stress, depression or anxiety account for an estimated 11.3 million working days lost per year in Britain (www.hse.gov.uk).



Notes:

Case study

Following a risk assessment, a large high street bank identified a lack of clarity in employees' roles. This happened because employees were working to targets with penalties for not meeting them; there were time limits on calls, but employees needed to deal with calls in a thorough, helpful, way, so assuring quality often meant compromising quantity; and there wasn't enough support available for staff after difficult and time-consuming situations (for example, after dealing with a hostile customer).

The bank considered that conflicting roles were contributing to its high levels of staff turnover. It decided to apply the following solutions after discussion with staff:

- targets – the bank withdrew the guidance on how long employees should spend on calls. This gave employees the discretion to spend more time dealing with contacts, which helped to reduce the pressure of difficult calls and allowed them to provide a better service
- rest rooms – the bank provided rooms where employees could leave the office environment and compose themselves after tackling a particularly difficult call. When staff used this facility, their line manager was told, so that support could be offered to the employee if needed.

Staff and management report that the relaxation of rules has helped to clarify their roles and reduce the demands placed on employees. The introduction of rest rooms has contributed to greater job satisfaction and staff retention. Finally, the actions have been good for business, as a result of improved customer service.

www.hse.gov.uk/stress/experience.htm



Notes:

Temperature

Temperature in workrooms should give reasonable comfort without the need for special clothing. Where this is impractical because of hot or cold processes, all reasonable steps should be taken to keep the temperature as close as possible to 'comfortable'.



Generally, the temperature in workrooms should be at least 16 degrees Celsius. If the work involves physical activity, the temperature should be at least 13 degrees.

As a duty holder, encourage your team members to discuss any concerns about the temperature in their work environment with you. Take temperature into account when allocating work and when carrying out risk assessments.



Notes:

Vehicles and transport safety

When people and vehicles operate together, there is the potential for serious accidents.

Most transport-related accidents involve people being injured as a result of:

- being hit or run over by moving vehicles
- being struck by objects falling from vehicles
- falling from vehicles while loading or unloading
- vehicles overturning.

The only truly effective solution is to keep vehicles and pedestrians entirely separate and make sure that they can't operate in the same space at the same time. This can be done by physically separating them with barriers, or by scheduling vehicle and pedestrian work at different times.

If people do work where there are vehicles, then physical separation by barriers is better than having marked walkways – and well-marked walkways are far better than letting people choose for themselves! In all cases, you can reduce the risk of collision by putting up signs and warnings in appropriate places, and training people to take notice of them. It's no good having a line to mark a walkway if people don't know which side of the line means 'safe'.

If you and your team work in an office environment, don't think this isn't about you. Lots of people get injured in car parks or on approaches to office buildings because they're often off public roads and think they're safe – they're not!

There are particular problems with reversing vehicles, especially if the driver has a restricted view of the back of the vehicle. To reduce the risk of injury:

- minimise the need for vehicles to reverse – for example, by setting up one-way systems
- get someone to watch the vehicle reversing
- make everyone aware of the dangers of reversing vehicles.



As a duty holder, you'll need to make sure that vehicle risks in the areas you're responsible for are managed effectively. Ask yourself the following questions:

- what vehicles are operating and what are they doing? In particular consider:
 - reversing
 - loading/unloading
 - tipping
 - cleaning
 - maintenance and repair
 - stability
 - other hazards
- are the drivers trained and experienced on the vehicles they operate? For example, do they respect speed limits, one-way systems and pedestrian areas? Do they follow safe practices in loading and unloading areas and when refuelling and recharging their vehicles?
- are pedestrians aware of how they need to behave to stay safe in the area? For example, do they keep clear of areas designated for vehicles, use pedestrian routes when available and treat site traffic with the same respect as highway traffic?
- what safe working practices are in place?



Notes:

Case study

A machine part manufacturer operating from an old office complex took over a relatively new warehouse with loading bays next door. Trucks reversed from the main road down to bays. Workers often walked across this loading bay area from the warehouse to the main offices opposite.

At 7.45am on a rainy February morning a warehouse worker walked across the loading bay to visit the personnel office. He waved to the driver of the truck reversing into the loading bay. He thought the driver had seen him, so carried on, but the truck continued to reverse, knocking him down.

The warehouse worker was crushed by the truck and died later in hospital. The company was found not to have followed health and safety guidelines and was fined £124,000.

(www.hse.gov.uk/workplacetransport/sitesafe/index.htm)

Did you know...?



On average, work-related transport results in a quarter of the total number of fatal injuries to workers. This makes workplace transport the second largest cause of workplace accidents (www.hse.gov.uk).



Notes:

Vibration

Exposure to vibration at work can occur in two main ways:

Hand-arm vibration (HAV) is transmitted from work activities into workers' hands and arms. It 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 machines, such as grinders. Regular and frequent exposure to hand-arm vibration can lead to permanent health effects, such as vibration white finger.

Whole-body vibration (WBV), which is transmitted through the spine, occurs mainly where workers are driving vehicles such as tractors and earth movers for long periods. It is associated with musculoskeletal problems and other ill-health effects.

Did you know...?



Around 5 million workers are exposed to hand-arm vibration in the workplace. Approximately 1.7 million of these are exposed to levels of vibration that pose clear risks of developing disease (www.hse.gov.uk).

If any of the following apply to your team, you may need to take action to minimise the risk of injury:

- do workers report tingling and numbness in their hands or fingers after using vibrating tools?
- do workers hold work pieces that vibrate while being processed by powered machinery?
- do workers regularly use hand-held or hand-guided power tools and machines, such as sanders, grinders, hammer drills or powered mowers?
- do workers regularly operate hammer-action tools for more than about 15 minutes per day or some rotary and other action tools for more than about one hour per day?
- do you work in an industry where exposures to vibration are particularly high, such as construction, foundries, heavy steel fabrication or shipyards?



If you've answered 'yes' to any of these, you'll need to do a risk assessment – you could do this yourself or get a competent person to do it. Depending on what you find, you'll need to develop an action plan. You can consider these options:

- alternative ways of working – try to find alternative work methods which eliminate or reduce exposure to vibration
- equipment – choose the tool with the lowest vibration that is suitable and can do the work efficiently, and limit the use of high-vibration tools
- purchasing policy – replace older machinery with new efficient and low-vibration equipment
- workstation design – improve the design of workstations to minimise loads on employees' hands, wrists and arms caused by poor posture
- maintenance – poorly maintained equipment can cause increased vibration
- protective clothing – the right clothing can encourage good blood circulation, which will help protect workers from vibration white finger.



Notes:

Getting it right

Although there is a wide range of common hazards, there are some simple steps which can be applied in all cases:

- assess the risks
- involve your team in assessing the risks and in developing solutions
- provide information and training to anyone who needs to know
- carry out regular workplace inspections
- get competent advice and act on the recommendations.



Notes:

Summary

1. Common hazards are...

2. You can manage common hazards by....



Module six



Module 6: Investigating accidents and incidents

Key learning points

1. Why investigate accidents and incidents?
2. How do accidents and incidents happen?
3. How do you carry out an investigation?



Notes:

Why investigate accidents and incidents?

For most of this course, we've been raising your awareness of the things you need to do to manage health and safety and minimise the chances of things going wrong through, for example, introducing risk controls. But while you can minimise the chances of injury and ill health, it's impossible to reduce to zero the chances that occasionally things will go wrong.

So we need to know what to do on these occasions, and how to learn from them.

That's why we need to discuss accident and incident investigation.

Let's define some important terms that we'll use in this module:

Incident – an event or condition that doesn't cause harm but has the potential to do so.

In many organisations these events will be recorded as 'near misses'.



Accident – an undesired event that results in injury and/or property damage.

There are a number of reasons to investigate accidents and incidents, including:

- to collect the information you need to pass on to the enforcing authority
- to identify the cause of the accident and/or incident to stop it happening again
- to get information needed for an insurance claim
- to find out the cost of an accident.

It's good practice to carry out an investigation to find out how and why the accident and/or incident happened so that you can stop it happening again. It's also important to do this with an open mind. An investigation provides a snapshot of how work is really done – it may not be how you think it's done – and helps you to find out any shortcomings in your risk controls.

Notes:

The key benefits of investigation are to:

- make a safer work environment
- improve workers' morale
- prevent more business losses from disruption, down-time and lost business
- prevent more accidents and/or incidents
- develop skills that can be applied elsewhere in the organisation.



Remember:

Incidents that don't result in any loss, such as an injury or damage to equipment, also need to be reported and investigated. This is because these incidents could cause injury or loss next time they happen.

As an example, a painter working on a platform might drop a tool, which simply falls to the ground, causing nothing more than the inconvenience of having to go and get it later. On the other hand, the tool might hit another worker or a member of the public, causing a serious head injury.

Did you know...?



In many cases, investigations into major accidents reveal that a similar event had occurred in the past without resulting in serious consequences.

It's often easier to find out what happened in an incident, because there are no injuries. This can influence what people are prepared to say. There's usually a larger sample of incidents than accidents that you can use to identify trends or repetitions.



Notes:

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How do accidents and incidents happen?

As we've already mentioned, accident investigation allows us to find out the cause of an accident or incident. However, accidents and incidents are rarely caused by a single factor – there are usually several contributory factors. Also, these factors will include obvious and immediate causes and less obvious underlying causes.

- **Immediate causes** – unsafe actions or lack of action (for example, operating equipment with missing guards and bypassing interlocks, using the wrong personal protective equipment) and unsafe conditions (for example, damaged tools and equipment, or high noise and low lighting levels)
- **Underlying causes** – factors that allow the unsafe actions and conditions to happen. The majority of these are related to the way the organisation manages health and safety and how people perceive risk.

Among the many contributory factors to an accident or incident, there'll be **root causes**. A root cause is a factor that may cause conditions that could result in an undesirable event. If the problem were corrected, it'd prevent the undesirable event from happening. In other words, a root cause is an event from which all other causes spring.

Only through effective investigation can the root causes of an accident or incident be identified. It's important to find out what happened but also why it happened. It's unusual for an accident or incident to have just a single root cause.

For example:



You're the manager of a distribution depot. It's Friday afternoon, close to the end of the working day.

One of your warehouse operatives has had enough for the day and decides to pack up early. Meanwhile, in the warehouse one of your forklift truck drivers, who's equally keen to finish his work, is driving his truck loaded with boxes of paint. The forklift truck turns a corner and heads at speed along the aisle towards the loading bay.

At that very moment, the warehouse operative comes out of an unauthorised access aisle, not looking where he's going, and heads towards a fire exit – a short cut to the car park.

The forklift truck driver sees the man at the last minute and brakes hard, but skids on a patch of oil left by a leaking forklift. He comes to an abrupt stop and the load falls onto the warehouse operative, breaking his arm and bruising his leg.



In this example the **immediate causes** are:

- struck by the load
- load falling
- forklift skidding
- patch of oil
- braking hard
- using the unauthorised aisle
- speed.

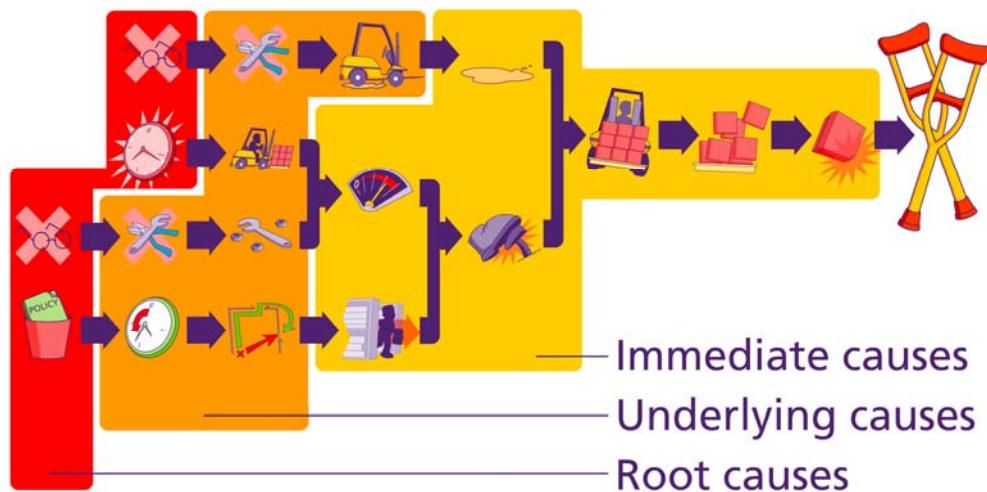


The **underlying causes** are:

- forklift leaking
- rushing to get the job done
- speed limiter removed
- lack of maintenance or inspection
- taking a short cut
- leaving work early.

The **root causes** are:

- lack of supervision
- work pressures
- poor custom and practice.



We can find the causes of the accident by finding the links between the accident and the other facts.

How do you carry out an investigation?

You'll need to have a system in place and to develop this you'll need to think about the following factors:

Make sure the injured person is looked after

When someone's injured in an accident, it's essential that they get the treatment they need as soon as possible. First aid is the initial management of the injury until expert medical attention is available. First aid aims to preserve life, prevent deterioration and promote recovery. You'll need to provide enough equipment, facilities and personnel of the right kind to make sure you can give first aid to employees if they're injured or become ill at work.

Preserving the scene of the accident

An effective investigation depends on getting all possible evidence together, so it's essential to secure the accident scene as soon as possible after the accident. Other areas separate from the main scene but relevant to the investigation may also need to be secured.



Notes:

Reporting the accident or incident

As soon as possible after the accident, you need to tell the injured person's line manager, who should then start the reporting process. This means completing the organisation's reporting forms and the statutory accident book.

To record this information, you can use an accident report form like the one in the appendix (page 126).



 Find out what forms are used in your organisation.

In most organisations, the reporting process depends on the severity of the injury or potential severity of the incident. For example, in large organisations, fatal and major accidents will be reported to senior management immediately.

If the accident or incident needs to be reported to the enforcing authority, someone needs to contact the authority as soon as possible and complete the notification form. You must report:

- deaths
- major injuries
- injuries that lead to more than three days' absence from work
- dangerous occurrences, such as those to do with failures of lifting equipment and pressure systems, scaffold collapse and explosion or fire
- certain diseases.

The Reporting of Injuries Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) give full details.

As well as your duty to report to the enforcing authority, remember that you may need to tell several other people, including:

- the family of the injured person
- the owner of any property that was damaged
- your organisation's insurance company
- your organisation's health and safety and human resources departments.

Did you know...?



The typical cost to employers of a serious or major injury is £17,000 to £19,000 (www.hse.gov.uk).

Who carries out the investigation?

A team carrying out an accident investigation will need a range of knowledge, skills and experience. The team should be led by someone with enough authority and knowledge to make authoritative recommendations. Ideally, the team should include:

- someone familiar with the work location
- a supervisor or manager from the work location
- a senior manager with authority or influence
- a health and safety expert
- an employee representative
- a person involved in the accident or incident (if possible)
- a technical expert eg engineering or medical, if necessary.



It's your responsibility to make sure that the investigator is competent in a range of analytical, interpersonal, technical and administrative skills.

In a small firm with limited resources, one person may carry out more than one of these roles. For example, a senior manager or line manager with health and safety responsibilities would take part in the investigation as it's unlikely the organisation will have a health and safety specialist. Senior managers are more likely to be part of the team for more serious accidents.

 *Notes:*

Investigation process

You'll need to decide how you'll carry out the investigation. You'll also need to decide what level of investigation is needed – all accidents and incidents need to be reported but not all need the same level of investigation. Clearly, the more serious ones need deeper investigation. But also think about the likelihood of the undesired event occurring again and its worst potential consequences. For example, a tool falling off the scaffold may not have caused any injuries, but it has the potential to cause a major injury.

Likelihood of recurrence	Potential worst consequence of event			
	Minor	Serious	Major	Fatal
Possible	Low	Medium	High	High
Unlikely	Minimal	Low	Medium	High

Minimal investigation – a supervisor looks at the circumstances of the undesired event and tries to identify how to prevent further similar events.

Low-level investigation – a supervisor or line manager does a short investigation into the circumstances and looks at the immediate, underlying and root causes of the undesired event to try to prevent it happening again.

Medium-level investigation – a more detailed investigation, involving a health and safety practitioner and employee representatives.

High-level investigation – the highest level of investigation, using a team-based approach that includes line managers, supervisors, health and safety practitioners, and employee representatives, and is led by a senior manager.

Did you know...?



The Piper Alpha explosion killed 167 people and cost more than £2 billion (www.hse.gov.uk).

A good investigation has a structured approach.

Information gathering: You need to find out where and when the accident or incident happened and who was involved, how it happened and what happened. This will involve gathering physical evidence (such as broken parts and debris), taking photos and witness statements, and looking at documents like risk assessments and operating procedures. You need good interpersonal skills to interview witnesses.



Analysis: At this stage you need to look at all the information you've gathered to identify what happened and why. There are several ways to do this, but it's essential to do the analysis carefully and systematically. If you find that human error or deliberate violations were part of the cause, you'll need to discover whether someone forgot, didn't know or deliberately ignored a rule. This will help when considering how to avoid it happening again.



Reviewing risk control measures: At this stage you'll be able to identify where changes need to be made to risk control measures to prevent the accident or incident happening again. You'll need to evaluate the possible options carefully. Consider also whether you need to make similar changes elsewhere in the organisation.



Action planning: This is about deciding what changes are going to be made, by when and by whom. It's essential that someone in authority is responsible for delivering the action plan.

To record this information, you can use an investigation form like the one in the appendix (pages 127, 128 and 129).



Find out what forms are used in your organisation.

External relations

You'll need to have plans in place for dealing with external bodies – for example, the enforcement authorities, media and local residents and businesses. It's essential that only designated people release information to these parties and that this happens when it's clear what's happened and what's going to happen.

HSE and local authority inspectors have the right to enter all workplaces under their jurisdiction in order to carry out their duties under the Health and Safety at Work etc Act. So it's an offence to refuse entry to an enforcement officer. Inspectors can gather copies of documents, take samples and photos and ask questions.



Always treat inspectors with the respect their position deserves.

If an inspector suspects that an offence has been committed, they'll issue a caution to a designated representative of the organisation.

In larger organisations there are more likely to be procedures for dealing with enforcement visits; where organisations don't have procedures, it's a good idea to have a nominated individual to act as the main contact for such visits.



Find out what procedures are in place in your organisation!



Notes:

Getting it right

- Investigation is about finding out *what* went wrong and *why*, so that it doesn't happen again. It's not about finding out who to blame.
- While you think an accident may never happen to you and your organisation, having plans and procedures in place for investigating accidents and incidents before they occur will help to make the investigation process as effective as possible if the worst happens.
- Sharing the findings of the investigation is as important as its quality. To get the full benefit from an investigation, you need to communicate the lessons learned as widely as possible. Different people in the organisation will need different levels and types of information. For example, workers using similar processes to those involved in the accident or incident will need detailed information on how to avoid the conditions that led to the accident, but a senior manager will need only summary information.



Notes:

Summary

1. You need to investigate accidents and incidents because...
2. Accidents and incidents happen because...
3. You can carry out an accident investigation by...



Module seven



Module 7: Measuring performance

Key learning points

1. What is performance measurement about?
2. How do you measure health and safety performance?
3. What is auditing?



Notes:

What is performance measurement about?

So, you know why you need to manage health and safety, what you have to do and how you can do it. We've also covered how you can learn when things go wrong.

But do you know how you're doing overall? Is this year the same as last, is it worse or is it better? Remember the football team in Module 4. They measured their performance by matches won, drawn and lost, and their league position.

The best way to find out is to set some indicators that enable you to keep an eye on how you're doing in health and safety terms.





Although we may not realise it, measuring performance is important in all aspects of our lives, at leisure and at work. For example, if we play sport, we can measure our performance by the number of games we win, lose or draw. At work, our performance is assessed by our manager against agreed criteria.

Performance indicators provide us with information on:

- what's going on around us
- what's happened so far
- potential problems or dangers that we may need to respond to.



For example, think about driving a lorry:

- The speedometer gives information on speed and allows us to make adjustments to deal with current speed limits. Similarly, the fuel and oil gauges provide information that allows us to take action before the lorry stops working because it's run out.
- The tachograph gives us information on the distance and hours travelled.
- The satellite navigation system provides information on our proposed route and any delays that crop up.



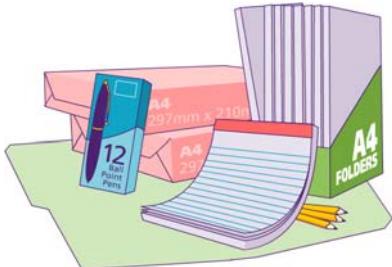
Notes:

Some indicators give us information on the outcomes of our actions (in this case driving), such as the distance we've travelled and the number of hours we've spent driving. We tend to refer to these measures or indicators as '**reactive**'.



Other indicators give us information about the current situation that might impact on future performance, such as speed and traffic flow. We tend to refer to these measures or indicators as '**proactive**'. Both types of indicators are important.

It's good practice to develop performance measures that match organisational or departmental objectives. There's not much point developing indicators that tell you about something that's not really important to your organisation or department. Let's illustrate the points we've been discussing so far.



Let's suppose you're a manager in a business selling stationery supplies. You aim to offer quality products and service to your customers so that you achieve customer satisfaction. What sort of information would help you to measure business performance?

Monthly sales will tell you the outcome of your efforts – from these you can see whether there are any variations in the sales figures and, importantly, you can determine your profit (and loss). This gives a measure of your bottom line.

However, this information doesn't give you the full picture. If you also collect information about the number of deliveries made on time, the number and nature of customer complaints, the number of new accounts opened and the number of enquiries answered within 24 hours, you'll also get information about how your business is doing. Then you'll have the chance to respond to a potential problem, such as a deterioration in service delivery.



Notes:

How do we measure health and safety performance?

Just as in the previous examples, we have two ways of getting information about health and safety performance:

Reactive measurement

This focuses on collecting information on the outcomes of our health and safety management system, including accidents, incidents, ill health, the absence of these negative events, and the number of days without an accident or incident.

You can calculate your organisation's injury incidence rate as follows:

$$\text{Injury incidence rate} = \frac{\text{number of reportable injuries in a given period (such as a year)}}{\text{average number of employees who worked during the period}} \times 100,000$$

This is useful for comparing your performance year on year and for measuring your performance against national statistics for your sector – you can get this information from the enforcing authority. Analysis of this type of information is useful in identifying trends – for example, what types of accident are happening and how serious they are.

However, gathering information about accidents and ill health does have limitations – can you think what these could be?



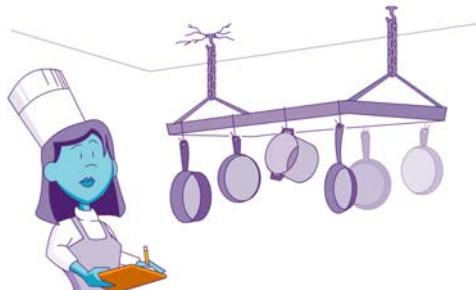
Notes:

Proactive measurement

This type of measurement is about providing information on how well you're managing health and safety **before** undesired events such as accidents, incidents and ill-health happen. To measure health and safety performance in this way you'll need to look at the things (inputs) that contribute to effective health and safety management.

For example:

- your work environment and equipment
- safe systems of work and procedures
- people – employees and contractors.



You'll also need to find ways of measuring these inputs.



For example, carrying out workplace inspections can help us check that work equipment is in good working order and the work environment is OK. It also gives us the chance to deal with any problems before they cause an incident. So, measuring the number of completed workplace inspections against the number planned provides a useful indicator of how well we're managing health and safety.

Similarly, giving people training helps them to do their jobs safely, so measuring how much training your staff are getting is another indicator of how well you're managing health and safety.

Remember, there's no 'one size fits all' – different organisations will need different indicators.

Good indicators are:

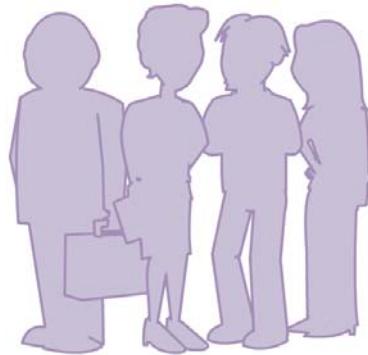
- objective and easy to measure and collect
- relevant to the organisation or group whose performance you're measuring
- able to provide prompt and reliable indications of the level of performance
- cost-effective in terms of the effort needed to gather the information
- understood and owned by the organisation or group whose performance you're measuring



Find out what performance indicators are used in your organisation.

There's a range of people who'll be interested in information about an organisation's performance measurement. Some will be internal to the organisation, for example:

- senior management
- line managers
- employees
- safety/employee representatives
- shareholders.



Some will be external to the organisation, for example:

- enforcement agencies
- insurers
- clients
- the public
- shareholders.

These people or bodies will need performance information in different formats and for different purposes.

Did you know...?



In a study of whether health and safety information was included in companies' annual reports, websites and other publicly available documents, based on 217 companies, health and safety performance was reported by 30 per cent of companies that reported health and safety information. (Peebles *et al.*, 2006).



Notes:

What is auditing?

Auditing aims to find objective evidence (or evidence that's as objective as possible) for whether the current way of managing health and safety meets the organisation's health and safety policy and aims.



There are two levels of auditing:

- **internal auditing** is done by staff within the organisation and helps managers by measuring the effectiveness of health and safety management
- **external auditing** is done by a third party and provides an independent view. It often represents the interests of other stakeholders as well as management.

Audits typically use three types of evidence:



- documentation – to check whether it adequately covers the hazards in the organisation
- interviews – to check that awareness, know-how and resources are appropriate
- observation – to check what's described in the documentation is really present in the workplace

Audit findings are of little use unless we act on them. As a manager, you may be involved, along with senior management, in producing an action plan to deal with audit findings.

Notes:

Getting it right

- Performance measurement is key in knowing how individuals, groups and organisations are performing.
- Reactive performance measures focus on the outputs of health and safety, which are often negative. They're easily gathered but have limitations.
- Proactive performance measures focus on the inputs to health and safety. They're powerful, as they can provide warnings of problems before they happen, but they must relate to the outputs and the organisation's objectives.
- An audit checks whether your overall approach to health and safety is delivering the results you want.



Notes:

Summary

1. Measuring performance is about...
2. You can measure health and safety performance by...
3. Auditing is about...



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IOSH is the Chartered body for health and safety professionals. With more than 37,000 members in 85 countries, we're the world's largest professional health and safety organisation.

We set standards, and support, develop and connect our members with resources, guidance, events and training. We're the voice of the profession, and campaign on issues that affect millions of working people.

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