

Managing Safely

Institution of Occupational Safety and Health



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Module 1 - Introduction, Overview and Environment

1.0 - Overview.

The 'Managing Safely' course is for those required to manage safely and effectively in compliance with both their organizations policy and best practice in health and safety.

1.1 - Aim.

To ensure that safety requirements are appreciated by people employed as line managers, and to enable them to review their own departmental systems, introducing new controls or implementing changes as appropriate to ensure safety in the workplace.

1.2 - Who should attend?

Any person who has to manage risk and resources within their organization.

1.3 - Learning objectives.

On successful completion of the course, delegates should be able to:

- Explain working safely.
- Explain the component parts of a recognized safety management system such as [HSG65](#).
- Identify the data and techniques required to produce an adequate record of an incident and [demonstrate](#) the procedure of an accident investigation, recognizing human factors involved.
- Describe the statutory requirements for reporting and procedures for checking non-reporting.
- Describe methods of basic [trend epidemiological](#) analysis for [reactive](#) monitoring data.
- Define 'hazard' and 'risk', and describe the legal requirements for risk assessment.
- Demonstrate a practical understanding of a quantitative risk assessment technique and the data required for records.
- Describe workplace precaution hierarchies.
- Prepare and use active monitoring checklists and [implement](#) schedules for active monitoring, recording results and analyzing records.
- Outline the main provisions of the Health and Safety at Work etc. Act 1974 and the Management of Health and Safety at Work Regulations 1999.

- Outline relevant health and safety legislation, codes of practice, guidance notes and information sources such as the Health and Safety Executive.

1.4 - Certification.

An IOSH 'Managing Safely' certificate is awarded to all those who enroll on this course and successfully complete both the online examination and practical assessment. Understanding of the course materials is evaluated by means of a 45 minute online examination consisting of 22 questions in multi-choice and short answer format and a practical assessment.

2.0 - Working Safely.

In this course we will use "working safely" to mean working in ways which [minimize](#) the chance of you:

- Being injured.
- Injuring someone else.
- Damaging your health.
- Damaging someone else's health.

From now on, we will use "harm" to mean injury or damage to health.

Try to think of some types of harm that may occur in your workplace and note them in the table.

Injuries.		Ill health.	
Injure yourself.	Injure other people.	Damage your health.	Damage to someone else's health.

2.1 - Why important?

There are a number of reasons why we need to work safely. They can be summarized in three main groups;

- Ethical and moral considerations.
- Legal requirements.
- Financial matters.

2.1.1 - a) Ethical and Moral Considerations.

Most people would agree that, whatever risks they choose to take themselves, it is unacceptable to put other people at risk, particularly when this is done without their knowledge or consent. Put simply, everyone is entitled to feel confident that they will go home in one piece! No-one wants to suffer an injury or to see a colleague injured.

Health and Safety Executive (HSE) statistics.

The reason that health and safety should be adequately managed is due to the fact that each year an average of 220 people are killed at work.

- The *rate* of fatal injury to workers also decreased in 2005/06, from 0.75 to 0.71 deaths per hundred thousand workers, a decrease of 5% and the lowest rate on record.
- There was a general downward [trend](#) in the rate in the 1990s, however it has risen twice since then, in 2000/01 and in 2003/04.
- Of the 212 fatal injuries to workers, 92 (43%) occurred in the two industries of construction (59) and agriculture, forestry and fishing (33).

The provisional number of members of the public fatally injured in 2005/06 was 384, of which 254 resulted from acts of suicide or trespass on railways. The finalized figures for 2004/05 were 370 and 253 respectively.

2.1.2 - b) Legal Requirements.

Health and safety legislation places a number of duties on employers and employees. Failure to carry out these duties can result in fines and, in extreme cases, imprisonment. We will look at various legal requirements later in the course. However, the basic principle is that every employee must take reasonable care for the safety of themselves and of others who may be affected by their acts or omissions.

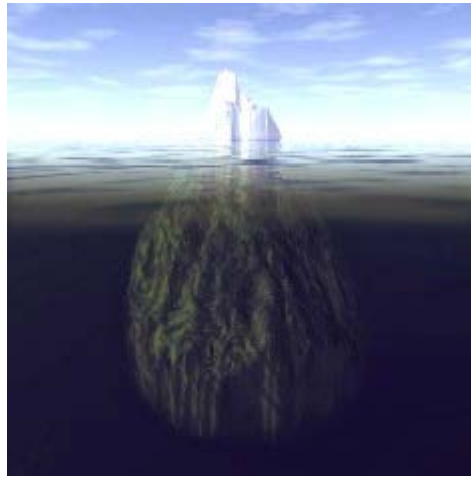
2.1.3 - c) Financial Matters.

Financial penalties should be obvious. If you are injured and cannot work, insurance will never fully compensate you for the financial loss. There is also the risk of being fined following action by the [HSE](#).

2.2 - How much may not be recovered through insurance?

Uninsured costs vary between businesses and types of incident. They are, however, several times more than the insured costs. They can be likened to an iceberg. The costs recoverable through insurance are visible. But hidden beneath the surface are the uninsured costs. Like an iceberg, most of the costs are not immediately visible.

Insurance costs.



Uninsured costs.

Studies have given different ratios for these insured to uninsured costs.

1. A study in a cheque-clearing department of a financial institution (a lower risk environment) found the **insured: uninsured ratio** to be **1:3.3**. That means for every £1 recoverable from their insurance, the company had to meet a further £3.30 themselves.
2. [HSE](#) studies found that the **insurance premium paid: uninsured losses** ranged from **1:8 to 1:36**. That meant for every £1 they paid in insurance premiums, the companies had to meet a further £8 to £36 themselves for losses arising from accidents.

3.0 - Introduction to the concept of a safety management system (HSG65).

In order to achieve the course aims, you need certain knowledge and skills. To provide a structure for your learning we will use a Health and Safety Executive ([HSE](#)) publication "Successful Health and Safety Management" which is more commonly known as [HSG65](#).

There are other guides to health and safety management but a quotation from HSG65 should make it clear why it has been chosen for this course:

"Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance as illustrating good practice."

However, HSG65 is not set out in an ideal order for teaching so the course is divided into seven teaching modules of which this introduction is the first.

We will now look at the HSG65 model and how it is linked with the course modules:

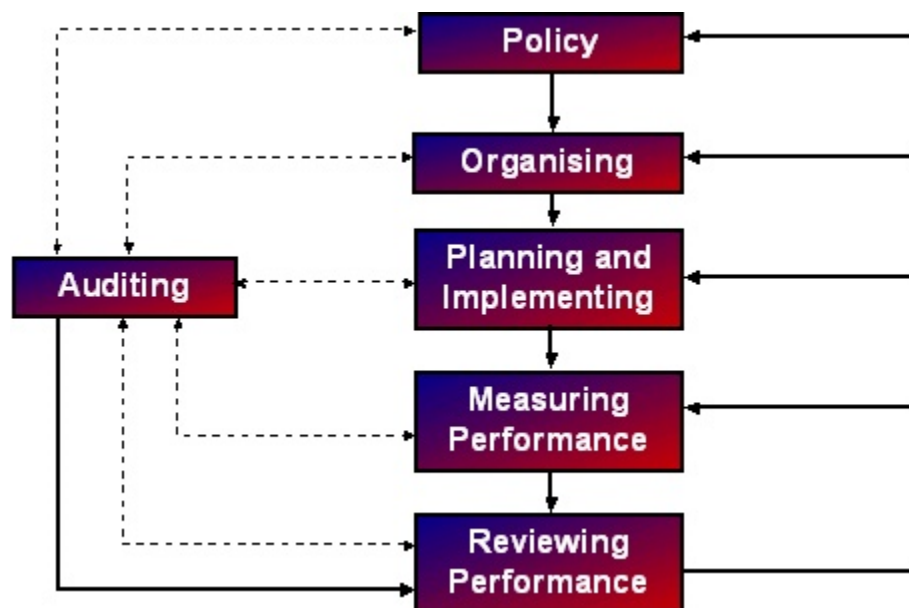
- Module 1.** Introduction and overview.
- Module 2.** [Reactive](#) monitoring.
- Module 3.** Risk assessment and risk control.
- Module 4.** Health and safety legislation.
- Module 5.** Common hazards.
- Module 6.** Active monitoring.
- Module 7.** Safety management systems.
- Module 8.** Protecting our environment.

This serves as both an introduction to HSG65 and as an overview of what we will be covering during the course.

3.1 - The main elements of HSG65.



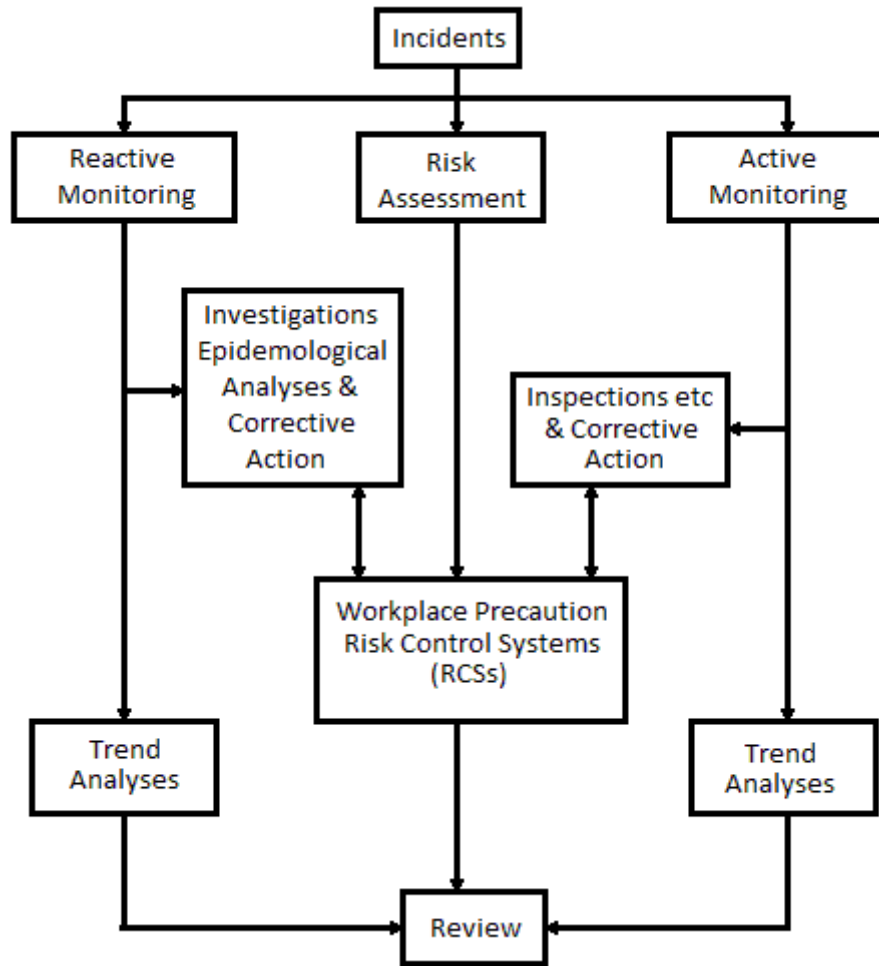
The following diagram shows all the sections of the [HSG65](#) model



Policy.	There is a legal requirement to have a health and safety policy and many other aspects of safety management are subject to legal requirements.
Organizing.	Policies are implemented by people and this requires their continued motivation and involvement. The HSE has identified that successful organizations establish, operate and maintain systems for the four C's (control, co-operation, communication and competence).
Planning and Implementing.	A key aspect of planning is risk assessment since if we do not know what risks there are in our area we are in no position to manage them. There is a risk assessment and risk control module which deals with risk assessment in detail. Implementing is primarily concerned with the actions required to deal with specific types of hazards and this is mainly dealt with in the module on common hazards.
Measuring Performance.	There are two parts to measuring performance, reactive monitoring and active monitoring. We will look at what these terms mean later in the course.
Reviewing Performance.	The primary purpose of performance review is to organizations to learn by experience and use the lessons learned to improve their health and safety performance.
Auditing.	Auditing is the process of obtaining a systematic and independent view of the health and safety performance of an organization.

3.2 - Loss Management Model.

The 'Successful Health and Safety Management' model ([HSG65](#)) provides a general approach to health and safety management, but more detail is required when we get to the management of specific losses such as injuries, damage, fires and ill health. This detail is provided by the loss management model. The diagram below shows the core elements in the loss management model as it is applied to 'incidents', which may be any of the losses just described. Each of the elements in the loss management model is explained in the notes which follow.



Reactive Monitoring.

Reactive monitoring deals with the reporting, recording and analysis of loss data including injuries and ill health. It serves two main functions:

- 1) Using [trend](#) analysis, it monitors whether performance with respect to losses such as accidents is improving or deteriorating.
- 2) Using investigations of individual incidents which have happened, and [epidemiological](#) analyses of aggregated data, it enables us to learn from what has gone wrong in the past.

There is a module on reactive monitoring which deals with these functions and how they are carried out.

Risk Assessment.	Risk assessment is concerned with identifying things which could go wrong, so that action can be taken before they do go wrong.
Workplace Precautions etc.	Workplace precautions are those actions which are taken to reduce identified risks to an acceptable level. A wide range of workplace precautions are available, some more effective than others. Typical workplace precautions include machinery guards, personal protective equipment (PPE) and safe systems of work.
Risk Control Systems (RCSs).	Risk control systems (RCSs) are the systems required to ensure workplace precautions continue to operate. For example, the RCS for PPE would include such things as purchase arrangements, training in the use of the PPE, maintenance and storage.
Active Monitoring.	Active monitoring is concerned with checking that workplace precautions and RCSs remain in place, and taking action when they are not.
Review.	Review is the same as the review element of the HSG65 model.

Module 2 - Reactive monitoring

1.0 - Introduction to Reactive Monitoring.

We will now start looking at [reactive](#) monitoring which is part of the "Measuring" element in [HSG65](#) and was covered in more detail in the loss management model which was introduced in a previous module. However, the loss management model is central to safety management and it is important that you remember it. We will begin by identifying what you, as a manager, have to do with respect to reactive monitoring and then we will go through the knowledge and skills you need to enable you to do these things effectively.

1.1 - Main Activities.

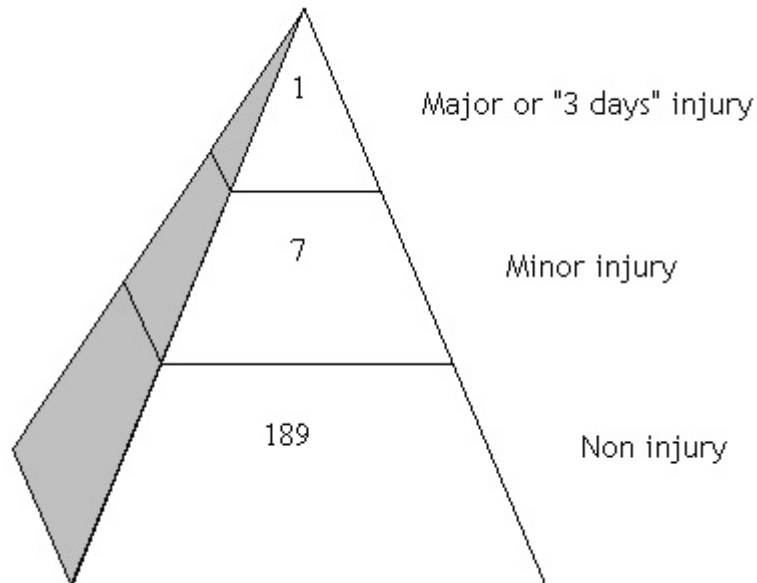
The main managerial activities, so far as [reactive](#) monitoring is concerned, are as follows:

- Explain to your staff what types of accident and incident they have to report, and how they report them.
- Check from time to time that the required reports are being made.
- Make adequate records of reported accidents and incidents.
- Analyze your accident and incident records regularly for trends.
This enables you to find out whether your performance is improving or deteriorating.
- Analyze your accident and incident records regularly to see whether there are any patterns.
This analysis for patterns in the occurrence of accidents and incidents is known as [epidemiological](#) analysis.
- Conduct investigations of individual accidents and incidents and record your results.

1.2 - Events and Outcomes.

Events which result in undesired occurrences are often described as accidents or incidents. Events are often referred to as "hazardous events". The difference between outcomes is primarily as a result of luck, coupled, to a lesser or greater extent, with the presence of workplace precautions. For example, once a brick has fallen from a scaffold, it can result in any number of outcomes. However, if everyone on site is wearing a hard hat (a possible workplace precaution) the [likelihood](#) of the brick causing a fatality is significantly reduced. It is the case that there are many less serious outcomes than there are serious outcomes and this is shown on the next section.

1.3 - The Accident Triangle.



Accident Triangle.

The ratio shown is an average produced by the Health and Safety Executive. Different studies, including a number by the Health and Safety Executive, have shown different numeric ratios but the important point to note is that there is a ratio. In practice, this means that for every serious injury, there will have been 189 incidents where there was no injury. To put it another way, there have been 189 opportunities to introduce workplace precautions and prevent an injury in the future. Waiting for serious accidents in order to try to prevent problems in the future is simply inadequate because of the relatively small numbers involved. If action is taken on the basis of the less serious incidents such as near misses and minor injuries the larger database will make it easier to identify patterns and help to prevent or reduce future fatalities or major injuries. The vital need is to ensure that all accidents and incidents are recorded and investigated in order for appropriate remedial action to be taken.

1.4 - Reporting and Recording.

Two of the main [reactive](#) monitoring activities are to **ensure that your staff know:**

- What has to be reported, and
- How these reports can be made.

In order to be able to do this properly, **you need to know the following:**

- ***What types of outcomes should be reported.***
- ***The procedures for reporting each type of outcome.***

We will now look at each of these two requirements in turn.

1.4.1 - Reporting.

In an ideal world all incidents would be reported and recorded, but this does not happen in practice. As the [severity](#) of the incident decreases, so does the percentage of the incidents which get reported. Whatever the reasons, it is a fact and it has practical implications.

1) *Useful learning opportunities are lost.*

It is possible to learn as much about weaknesses in your safety management from near misses and minor injuries as you do from a major accident, but few organizations make full use of near miss and minor injury data.

2) *If this situation is to improve, better reporting systems will be required.*

Later in the course we will look at ways in which you can improve incident reporting. However, before that we will look at the legal requirements for reporting contained in the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, 1995 ([RIDDOR](#)).



RIDDOR.

1.5 - RIDDOR - Introduction.

[RIDDOR](#) requires that various types of incident are reported and you need to know what these incidents are so that you are in a position to make the relevant reports if necessary. **RIDDOR** also requires that reports are made within specified timescales and, again, you need to know about these timescales so that you can meet the legal requirements.

Reports have to be made to the relevant "Enforcing Authority", which is usually the Health and Safety Executive or the Local Authority. However, it is likely that you will report internally, for example, to the personnel department or the safety department, who will then report to the Enforcing Authority on behalf of your organization. Written reports are also required by the Enforcing Authority and these are normally provided by completing a standard form. Again, it is most likely that this form will be completed by the personnel department or the safety department on behalf of your organization. It follows from this that a critical thing you need to know is to whom you report incidents. We will now look at the incidents which have to be reported under RIDDOR and to what timescales.

For more information please view **the Health and Safety Executives information on RIDDOR:**

<http://www.hse.gov.uk/riddor/what-must-i-report.html>

Clicking on the above link will open the document in a new browser window.

1.5.1 - Reportable Outcomes.

The relevant Enforcing Authority must be notified if an incident results in any of the following



outcomes.

- **Fatality as a result of an accident.**
- **Major injury to a person at work as a result of an accident.**
Major injuries include fractures (other than finger, thumb or toe), amputations, dislocations of shoulder, hip, knee or spine, loss of sight (temporary or permanent) and burns or penetrating injuries to the eye. Certain injuries which lead to unconsciousness or admittance to hospital for more than 24 hours are also included.
- **An accident which results in a person not at work being taken to a hospital.**
- **A dangerous occurrence.**

The majority of these are specific to particular equipment, for example pipelines and fairground equipment, or to activities such as diving or train operation. However, some involve more widespread activities, for example, the collapse of lifting equipment and the overturning of fork lift trucks. You should find out which dangerous occurrences may apply to your area by checking with your safety professional or reading the Regulations.

This notification must be by the quickest [practicable](#) means and this is usually by telephone. The notification must be followed by a written report within ten days and this is usually done using Form F2508.

RIDDOR also has reporting requirements for incidents with the following outcomes:

Absence from normal work for over seven days.	Incidents resulting in a personal injury which is not a specified major injury but results in absence from normal work for more than seven consecutive days. These seven days exclude the day of the accident, but include days which would not have been working days, e.g. weekends. Incidents of this type do not have to be notified immediately but a written report is required within ten days.
Death of an employee within a year.	Incidents resulting in the death of an employee as a result of a reportable accident within one year of that accident. Where this happens, the Enforcing Authority has to be informed whether or not the original accident had been reported.
Specified occupational diseases.	Incidents or working conditions resulting in an occupational disease. Only certain types of disease have to be reported, and then only if the person's work involves one of a specified list of activities. For example:

- **Cramp of hand or forearm:** Handwriting, typing or other repetitive movements.
- **Hand arm vibration syndrome:** Tools or activities creating vibration.
- **Rabies:** Work involving infected animals.

Various types of cancer, dermatitis and asthma are also included.

When an outcome of this type occurs, the Enforcing Authority must be notified "forthwith". This is normally done using form F2508A.

Records of reportable incidents must be kept by the organisation, not just sent to the Enforcing Authority. In addition, records of individual incidents must be retained for at least three years. We will now summarise the key activities under RIDDOR.

1.5.2 - RIDDOR Activities.

[RIDDOR](#) only deals with incidents having "serious" or potentially "serious" outcomes. It is unlikely, therefore, that you will have to deal with the RIDDOR requirements without assistance. However, it is extremely important that you know who in your organisation you should contact since, as we have seen, rapid notification is required for some RIDDOR incidents. Since most of the outcomes dealt with under RIDDOR are obviously serious ones, there is not usually any difficulty in deciding whether or not these incidents should be reported. However, you should pay particular attention to the following:

- ***Identifying sources of risk which may necessitate the reporting of a dangerous occurrence.***
For example, lifting machinery, fork lift trucks, and flammable materials.
- ***Identifying work activities which may necessitate the reporting of diseases.***
For example, work involving prolonged periods of repetitive movement or exposure to substances which might cause occupational dermatitis.

If you are not sure whether your sources of risk or work activities could result in the need to report under RIDDOR you should seek further advice. We will now look at the reporting and recording of incidents involving less serious outcomes.

2.0 - Reporting Other Outcomes.

The reporting of incidents involving less serious outcomes is not a legal requirement under [RIDDOR](#). Examples of these include minor injuries requiring first aid or resulting in less than 7 days off work, "near misses" and property damage. However, it is good practice to report these for the following reasons.

- It provides a more sensitive [measure](#) of safety performance.

Since there are relatively few incidents with serious outcomes, they do not provide a good measure of trends in performance. For the average manager, there will be long periods with no serious incidents at all, but this will not be the case with incidents with no outcome, or with a minor outcome.

- **We can learn from data analysis.**

By looking for patterns in the way incidents occur, we may be able to identify common causes and take appropriate action. This is the basis for [epidemiological](#) analysis.

- **We can learn from individual incidents.**

As we will see later in the course, it is the case that incidents have the same range of causes, and the nature of the outcome, near miss to serious, is a matter of chance. This means that we can often learn as much about the need for workplace precautions and risk control systems from investigating near misses as we can from investigating incidents with serious outcomes.

However, none of these aspects of good practice is possible unless the incidents are reported in the first place. We will now, therefore, look at ways of improving reporting.

2.1 - Improving reporting.

Getting people to report incidents can be difficult, particularly when the incidents are minor in nature, or involve near misses. However, the following will help to ensure improved reporting.

- **User friendly system.**

Reporting and recording systems which are too onerous for the quantity of data to be collected will not be used. For example, using "major" incident form for "minor" incidents.

- **Emphasise continuous [improvement](#).**

The reasons for collecting the data (continuous improvement and prevention of recurrence) should be clearly stated and repeated often.

- **No "blame culture"**

If incident reports are followed by disciplinary action or more minor forms of "blame", people will stop reporting.

- **[Demonstrate](#) use by taking corrective action.**

If people who have to report cannot see that use is being made of their efforts, they will stop making the effort.

- **Feedback.**

It is not always possible to take action on a report, but there should be feedback on the reasons for the lack of action to the people concerned.

Once an incident has been reported, it should be recorded and we will look at recording next.

2.2 - Recording.

Most organisations have an in house form which is used to record incidents, although it is often referred to as the "Accident Form". Unfortunately, many organisations incident forms have weaknesses. If you have identified any weaknesses, you should report them to the person in your organisation responsible for amending the form, usually the safety professional. Unless this person is informed of the problems you have with the form, he or she will not be in a position to correct weaknesses.

Your organisation may also use an "Accident Book" (BI 510) instead of or in addition to the in-house incident form. The Accident Book is a legal requirement under the Social Security (Claims and Payments) Regulations 1979 but the information which has to be recorded and the way the Accident Book is laid out makes it far from ideal for analysis of the incident data. This is probably the reason why most organisations have their own separate form. Once data have been recorded, they are available for analysis and we will look now at the analysis of incident data.

3.0 - Analysing Incident Data.

For the purposes of our discussion, it is useful to divide the incident data into two categories:

- **Incidents which have occurred in your own area of responsibility.**
These are data which you should analyse yourself and in a moment we will look at the sorts of analysis you should carry out.
- **Incidents in the organisation more generally.**
These are the data for the whole factory, site or building of which your area forms a part. Normally these data are analysed by the safety professional who will provide summaries which can be a useful benchmark for your own performance.

Each category of data can be analysed in two main ways and the next part of the session is a description of how you can analyse your own incident data in the following ways:

- **Trend analysis.**
This sort of analysis enables you to identify whether your performance, so far as incidents are concerned, is improving or deteriorating.
- **Epidemiological analysis.**
This sort of analysis enables you to identify patterns in the occurrence of incidents in your area which might indicate common causes.

We will deal with trend analysis first.

3.1 - Trend Analysis.

The simplest method of [trend](#) analysis is to count the numbers of incidents each month, or each quarter, and plot these numbers as a graph. You can, however, improve on this in the following ways:

- **Separate plots for different types of incident.**
For example, you could have separate lines on the graph for incidents resulting in injury, ill health and damage.
- **Plotting the days lost.**
For incidents resulting in injury or ill health, you can plot the number of days lost each month.

Plots of these types usually show quite a lot of fluctuation from month to month and it can be difficult to work out whether things are getting better or worse. However, there are ways of dealing with this problem and if you find it difficult to identify a trend, ask your safety professional. The first step is to do the plots and get some "hard" data on incidents in your area. Note that you may have particular problems if things are changing in your area, for example, if more or fewer people are being employed. In these cases, you will have to use an accident rate such as the ones illustrated next.

3.2 - Accident Rates.

Two accident rates are commonly used:

- **Incidence rate.**
This is the number of accidents divided by the number employed. The result is usually multiplied by 1,000 to give the number of accidents per 1,000 employees. It is used to take into account variations in the size of the workforce.
- **Frequency rate.**
This is the number of accidents divided by the number of hours worked. The result is usually multiplied by 100,000 to give the number of accidents per 100,000 hours worked. It is used to take into account variations in the amount of work done and part time employment.

You can use these rates for your own data when numbers of people or numbers of hours worked vary from month to month. Note that although they are called accident rates they can be used equally validly for incidents resulting in near misses and ill health. These two rates are widely used by safety professionals since they enable them to make fairer comparisons between, for example, departments employing different numbers of people. You may find that the summary incident data supplied by your safety professional are in the form of rates. In this case you will have to calculate equivalent rates for your own incident data if you want to use the summaries as benchmarks.

Safety professionals also use a third rate for comparison purposes:

- **Mean duration rate (also known as the [severity](#) rate).**
This is the number of days lost through accidents divided by the number of accidents, to give the average number of days lost per accident.

3.3 - Epidemiological Analysis.

[Epidemiological](#) techniques are used by safety professionals to analyse all of the incident data available. This enables them to identify, usually by trial and error, patterns in the occurrence of incidents. They then investigate these patterns to see whether causal factors can be identified and remedial action taken.

Epidemiology used in this way can identify problems which would not be apparent from single incidents, e.g. accidents occurring more frequently at particular locations. This enables the safety professional to make general recommendations and you may get guidance on specific types of incidents as a result of the safety professional's analyses. You can use similar techniques on your own data which will, of course, be less numerous than those available to the safety professional. Because you will have relatively few data, the techniques you need to use are basically simple. However, this does not mean that they cannot produce very useful results. We will look at these basic techniques next.

3.3.1 - Epidemiological Techniques.

The simplest method of [epidemiological](#) analysis is to tabulate your accident data using one aspect of the accident at a time. Some examples are given below:

- **Part of body injured.**
Simply listing the parts of the body injured in your accidents can identify, for example, that there is a disproportionate number of injuries to the feet, or that there is a number of potentially serious minor injuries such as eye injuries. Note that it is not unusual to have a high proportion of injuries to the fingers and hands since these are the parts of the body most at risk in the majority of tasks.
- **Time of day.**
Unless there is a good reason why accident numbers should fluctuate over the day, finding such a fluctuation will suggest that something is being done at the times of high accident rates where the risk is not well controlled.
- **Location.**
More than the expected number of accidents happening at a particular location suggests that it is a good place to carry out an investigation into what is causing these accidents.

What you are trying to do with your tabulations is to identify "clusters" of accidents that is numbers of accidents which are greater than you would expect. You should also look out for "holes", that is no accidents where you would expect some to occur, since this might indicate a failure in reporting or recording. Where you find "clusters" or "holes", the next step will be to carry out an investigation and we will be looking at investigation techniques in a moment.

You can also use a technique known as cross tabulation if you have a sufficient number of accidents to analyse. This involves analysing more than one aspect of the accident at a time, for example, part of body and process since it can be the case that common injuries, such as injuries

to the hand, are much more frequent during some processes than others. This will normally only be identified if part of body and process are cross tabulated.

4.0 - Incident Investigation.



Accident and incident investigation is essential to any health and safety management system.

We investigate accidents/incidents for the following reasons:

- To collect the information required for notifying the enforcing authority.
- To identify the cause of the accident/incident so that it can be prevented from happening again.
- To get information needed for insurance claims.
- To find out the cost of an accident/incident.

From a company point of view the benefits of investigating accidents and incidents include:

- To prevent further accidents and incidents.
- To prevent further business losses from disruption, down-time and lost business.
- Improve worker morale.
- It can develop skills that can be applied elsewhere in the organisation.

Investigating incidents is a major use of [reactive](#) monitoring data. However, to carry out these investigations effectively you need both knowledge and skills.

The main types of knowledge required are as follows:

- **The investigation procedure.**
That is, what you have to do, and in what order.
- **Human factors.**
People have accidents and the more you know about how people operate, and why they go wrong, the more detail you will be able to cover in your investigations.

The main types of skill required are as follows:

- **Observation and recording.**
So that you can identify all the relevant physical factors and complete an adequate description of what has happened.
- **Interviewing.**
So that you can obtain information from the people involved.

However, there are different types of investigations and we will begin by looking at these different types.



4.1 - Types of investigation.

There is an unfortunate tendency to equate investigation with "serious" incidents. The argument used is that you only have to carry out an investigation if the outcome of the incident is sufficiently serious to warrant the effort of an investigation. However, incidents have the same root causes and the outcome of an incident is largely a matter of chance.

Where the incident has a "serious" outcome it is likely that the incident will be investigated by specialists, for example, the company safety professional or even a Factory Inspector so that you will not be called on in the capacity of an investigator. You can learn a lot by conducting your own investigation of near misses and "minor" incidents. We will begin our consideration of this type of investigation with the knowledge requirements and the first part of these requirements is the Hale and Hale model.

5.0 - Hale and Hale Model.

The Hale and Hale model is a description of an individual's behaviour in a continuous cycle with, at each point of the cycle, the possibilities of error identified, together with possible reasons.

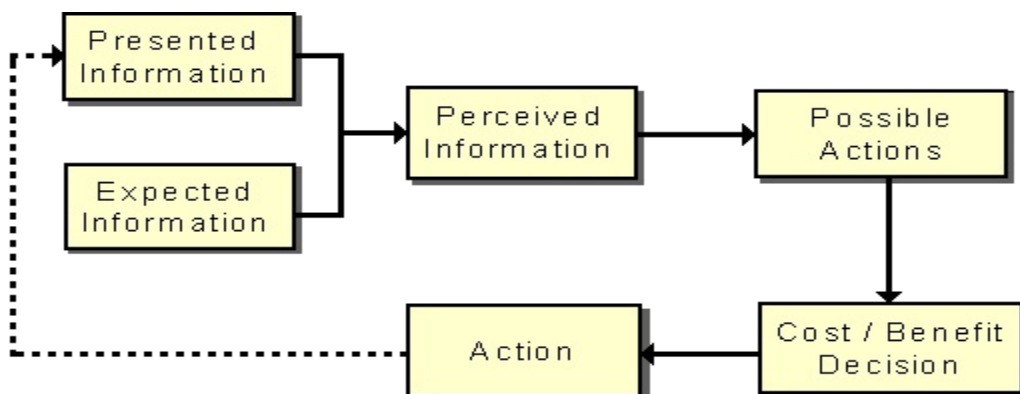
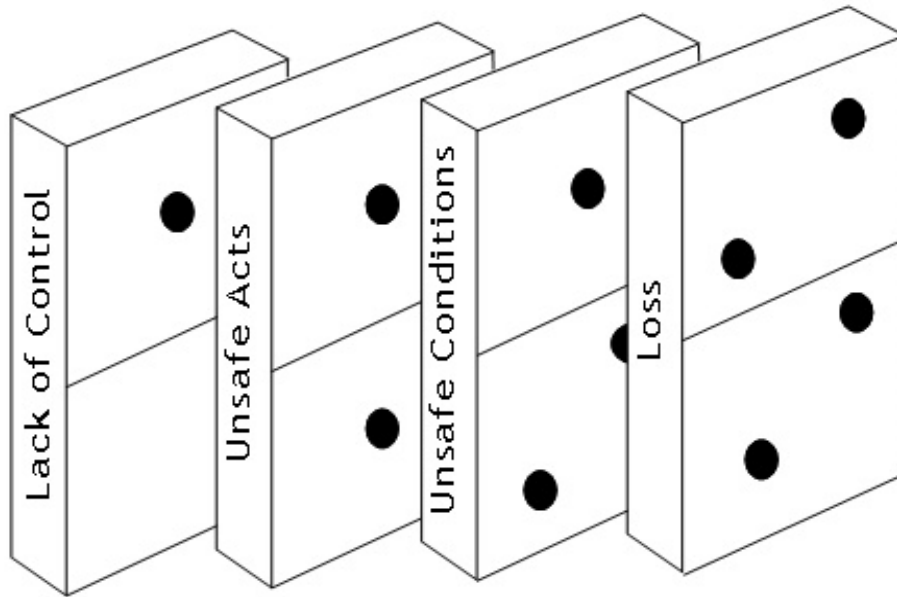


Figure 1. Hale and Hale Model.

The model begins with the situation in which the person is working and, for the purposes of illustration, we will assume that the work is driving a car, since we are all likely to be familiar with this sort of "work". Driving a car presents the person with certain information e.g. road signs and layout. The person also has certain expectations e.g. traffic will keep to the left. Presented and expected information are combined to produce perceived information, that is, the information used by the person at the time.

The person uses this information to prepare a list of possible actions (e.g. overtake or not) and carries out a cost benefit analysis and makes a decision on this basis. The chosen action is then carried out, which changes the situation, and the cycle is repeated. This cycle can go wrong at any point in a variety of ways and you can use the elements of the Hale and Hale model as a checklist during your investigations.

6.0 - Domino Theory.



What the Domino Theory says is that if one of the dominoes to the left of the Loss domino falls, it will knock over those to the right and a loss will occur.

For example:

- Lack of [supervision](#) (management control) results in a situation where oil can be spilt and not cleared up.
- An unsafe act occurs, spilling oil and not clearing it up.
- An unsafe condition results in a pool of oil on the floor.
- A loss occurs when someone slips on the oil, falls and breaks an arm.

6.1 - Investigating the dominoes.

When we investigate an incident, we can identify unsafe conditions, unsafe acts and lack of management controls and establish causes for these, as well as causes for the loss, if there has been one.

For example:

- Possible causes of a person slipping on a patch of oil might be not looking where they were going, or not wearing appropriate footwear.
- Possible causes of not clearing up spilled oil might be lack of time, or not seeing it as part of the job.
- Possible causes of spilling oil might be working in a hurry, inappropriate implements or a poor method of work.
- Possible causes of poor management control might be excessive pressure for production (resulting in hurrying), lack of funding for proper implements, or insufficient attention to designing appropriate systems of work.

The further to the left you go with the dominoes, the greater the implications of the causes identified. For example, lack of appropriate systems of work may apply to a large number of operations, not just to those which can result in oil spillages. It follows that if we can identify and remedy failures in management controls, there is the potential to eliminate large numbers of losses. Thus the usefulness of the investigation can extend beyond simply preventing a single accident happening again.

Note also that you do not have to wait for a loss to occur before conducting an investigation. You could investigate, for example, why a pool of oil has been left on the floor. Having looked at the Hale and Hale model and the Domino Theory, we are now ready to move on to the accident investigation procedure.

7.0 - Investigation procedure.

In this part of the session we will go through the whole of the accident investigation procedure required for minor incidents. We will start by looking at the whole procedure in outline and then go on to discuss interview techniques in detail. However, note that there will be additional steps required for investigations of serious accidents.

The main stages in the investigation procedure are as follows:

- **Site Visits and Recording Details of the Site.**
The site is one of the main sources of information on the accident and it is important that you visit the site as soon as possible, before it is cleared up.
- **On Site and Off Site Interviews.**

Interviews provide the majority of information about an accident and the initial interviews should be conducted on site. However, the accident site is not usually the ideal place to conduct interviews, so we need to consider alternatives.

- **Draft Report.**

Preparing a draft report gives you the opportunity to check that you have all of the required information. However, report writing is not always necessary or appropriate for the sorts of incidents you will usually be investigating.

- **Designing Remedial Actions.**

This is the overall aim of the investigation process and the implementation of effective remedial action should be seen as the primary purpose of the investigation.

- **Feedback.**

The people involved in the investigation should be informed of the results. This is important as a means of emphasizing the need for accident reporting and ensuring co-operation in future investigations.

We will now look at who may have to be interviewed in the course of an investigation.

7.1 - Interviews.

It may be necessary to interview people other than the injured person and the witnesses in order to identify accurately the root causes of an incident. For example, if someone has been injured as a result of using a corrosive liquid which has been put into a bottle labelled 'Hand Cleaning Fluid', you will need to find out who filled the bottle and interview that person, and the supervisor who allowed the filling to take place. It may be the case that you are in a position where you have to "interview yourself".

If there has been a failure in management control, and you are the manager, then you may have to identify weaknesses in your own performance. If, in these circumstances, you find it difficult to be objective, get help from someone else. For example, ask a colleague to investigate on your behalf. You may also have to collect information from people at locations other than the accident site. This would be the case if, for example, the corrosive liquid had been put into the hand cleaner container at another location. Whoever you are interviewing, you have to get the person talking and keep them talking and the best way to do this is to establish and maintain rapport.

7.2- Establishing rapport.

Although you cannot guarantee to establish rapport, the following will help:

- **Only have one interviewee at a time.**

In particular, do not interview people in the presence of their boss (unless, of course, you are their boss).

- **Only have one interviewer at a time.**

"Panel" interviews and investigation committees are not the best methods of obtaining information, especially in sensitive areas.

- **Make sure your introductions are good.**
Say who you are, what your role is, and, most importantly, why you are conducting the investigation.
- **Know your interviewee's name and role in the incident.**
We have already considered who might have to be interviewed, that is, the injured person, witnesses etc.
- **Establish common ground.**
In particular ensure that the interviewee knows that the purpose of the investigation is to prevent recurrences.
- **Get the interviewee on home ground at least initially.**
Do this literally by starting the interview on the incident site or the interviewee's place of work, and figuratively by discussing the interviewee's normal work before moving on to the incident.

7.3 - Maintaining rapport.

Once rapport has been established, the following will help maintain it:

- **No interruptions by you.**
This seems obvious but rapport is often broken by interviewers who "butt in" to clear up points, ask subsidiary questions, or even express their own opinions!
- **No other interruptions.**
If necessary, take the interviewee away from the accident site after the initial stages of the interview, to a place where you will be free from interruptions.
- **Use open questions.**
That is, questions which cannot be answered with "yes" or "no". Even when you simply want confirmation of a particular point, where a closed question would be appropriate, you may get extra information if you use an open question.
- **Avoid multiple or complex questions.**
These force the interviewee to concentrate on the question rather than their answer. In addition, multiple questions are rarely answered fully with both the interviewer and the interviewee forgetting at least one part.
- **Avoid judgements.**

You are there to collect information, not express your views, either for or against. Expressing negative judgements breaks rapport and expressing positive judgements biases the interviewee's responses.

7.4 - Recording interviews.

The recording of interviews is essential for the following reasons:

- **So that you do not forget what has been said.**
This is particularly important for long and complex investigations or when there will be a delay between interviewing and writing the report.
- **So that you do not confuse one interview with another.**
This is particularly important for investigations which involve a number of witnesses or interviews with other people. Remember that variations are to be expected and you will need an accurate record of these.
- **So that you do not have to interrupt.**
If you are recording the interview you can make a note of any matters you want to follow up and return to these when the interviewee reaches a natural pause.

There are a number of ground rules on note taking:

- **Do not start to take notes until rapport is established.**
It is almost impossible to establish rapport while taking notes.
- **Always get the interviewee's agreement and explain what the notes are for.**
- **Record everything.**
If you are selective in what you record you will bias the interviewee. And how do you know what may be relevant at a later date?

7.5 - Closing interviews.

There should be a set sequence for the end of interviews as follows:

- **Review your notes with the interviewee.**
This enables you to check their accuracy and it may "jog" the interviewee's memory, producing additional useful information.
- **Ask the interviewee specifically about their views on prevention.**
They are likely to know more about the work circumstances than you do, and may have very good ideas. However, you are often seen as the "expert" or the "authority" which makes people hesitant in expressing their opinions.

- **Mention that you may have to talk to the person again.**
This may be necessary if, for example, there is something you need to check. Mentioning this at the end of the interview will make it easier to establish rapport for subsequent interviews.
- **And don't forget the thank you!**

Module 3 – Risk Assessment and Risk Control

1.0 - Introduction.

Risk assessment and risk control are central to safety management. Risk assessment and risk control can be very complex subjects but on the Managing Safely course they are dealt with in a straightforward manner. In addition to providing you with a good introduction to risk assessment and risk control, this module will also provide you with a "common language" to use when discussing these topics with your workforce.

During the Managing Safely course, we will look more formally at risk assessment and risk control and what you have to do to meet your managerial responsibilities in these areas.



2.0 - Managing Safely.



In order to get the most out of the Managing Safely course, you need to know what is meant by hazard, risk and risk control.

2.1 - Hazard.



A live tiger is always a hazard.

A live tiger, except perhaps when it is anaesthetised, always has the potential to cause you harm and is, therefore, always a hazard. Even the proverbial toothless tiger can harm you because, not only can it give you a nasty suck, it still has claws! In general, a hazard is anything which can cause harm and, because a tiger can cause harm, it is a hazard.

2.2 - Risk.

A tiger which is free to roam about is a risk because it is likely that it will cause harm to someone. In general, a risk is the combination of the [severity](#)/consequence of harm and the [likelihood](#) that the harm will occur. Risk increases as the severity/consequence of the harm increases, or the likelihood of the harm increases, or both. A loose tiger in the centre of a town is a higher risk than a loose tiger in the jungle because it is more likely to harm someone in a town.

- A loose rabbit is a low risk because it cannot inflict severe harm.
- A tiger in a cage is a low risk because it is unlikely to have the opportunity to inflict harm.
- A rabbit in a cage is no risk at all - unless you are a lettuce!

2.3 - Risk Control.

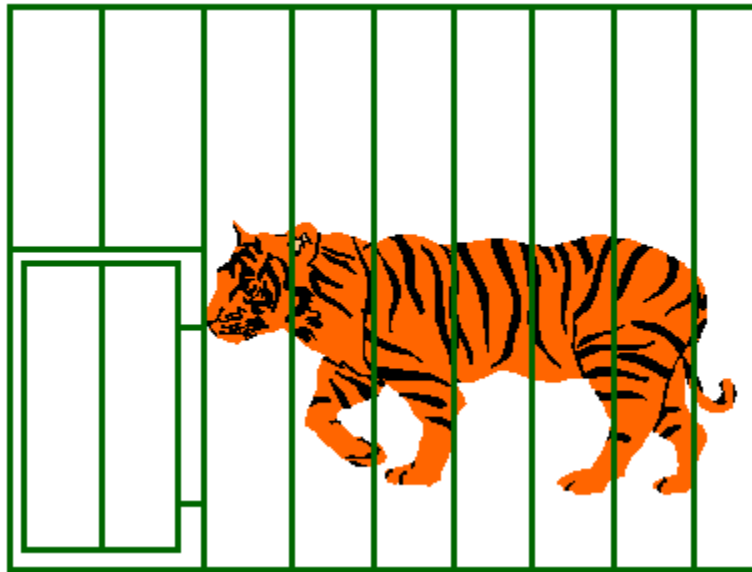
If there is a risk, the best solution is to - remove the hazard completely - keep goldfish! If you cannot remove the hazard, then - avoid the hazard - do not go to the zoo! Remember, however, that keepers still have to encounter tigers in a zoo. They do not have the option to avoid the hazard and, therefore, need to keep tigers in cages. A tiger is less of a risk if it is in a cage.

- ***Thus, a cage is a risk control [measure](#).***
- ***Another name for a risk control measure is a "workplace precaution".***

We will use both risk control measures and workplace precautions to mean methods of reducing risk. Remember, it is always better to remove or avoid hazards and the reasons why are illustrated on the next page.

2.4 - Weak Link.

The cage door is a weak link in the workplace precaution.



As we will see most, if not all, workplace precautions have weak links. Because almost all workplace precautions have weak links it is better, if we can, to remove the hazard completely, or avoid the hazard. Let us look at some workplace examples:

2.5 - An example - lifting weights.

Lifting weights is always a **hazard**.

It becomes a high **risk** if you lift the weights on your own or use poor lifting technique.

Where possible, the need for lifting heavy weights should be **eliminated** by, for example, using smaller packages. If lifting heavy weights is necessary, then the hazard should be **avoided** by, for example, using mechanical handling equipment. Where heavy weights have to be lifted manually then you should use **workplace precautions**. The basic workplace precautions for manual handling are - get help with lifting heavy weights, and use good lifting technique. We will look at lifting again in the module on manual handling.

3.0 - Key Information on hazards.

Hazards are sources of harm. They can be any of the following.

Thing. Anything can be a hazard, for example, weights, machines, electricity, fire, noise, tools, chemicals. Things can also become a greater risk if,

for example, they are damaged. A good, sound ladder, will be less of a risk than a damaged ladder

Living organism. For example, tigers, bacteria, viruses, people, insects

Way of working. For example, at height, in confined spaces, lifting, typing. Ways of working also vary in how serious a hazard they are, for example, short spells of typing are less hazardous than long spells of typing

We always have to be on the lookout for hazards and do something about them when we find them. We will look at how to identify hazards and what to do when we find them later in the module. We also have to work in ways which do not create hazards for ourselves or other people.

4.0 - Key Information on Risks.

Risks occur when a hazard and a person come together in circumstances which could result in harm to the person. The level of risk depends on how severe the harm could be, and how likely it is that the harm will occur.

Remember that some ways of dealing with risk are:

- **Remove the hazard.**

Removing the hazard is always the best method but it is not always possible.

-No tiger, keep goldfish

- **Avoid the hazard altogether.**

If you cannot remove the hazard, the next best is to avoid the hazard completely.

-Do not go to the zoo.

- **Use a workplace precaution.**

Workplace precautions should only have to be considered if it is not reasonable to remove the hazard or avoid the hazard.

-Keep the tiger in a cage.

5.0 - Managing Safely - Summary.

These are the things you have to do in order to work safely:

- ***Look out for hazards.***
- ***Remove hazards or avoid them completely if you can.***
- ***Find out what workplace precautions are required when a hazard cannot be removed or avoided.***

- ***Where workplace precautions are required, use the workplace precautions at all times.***
- ***Work in ways which do not create hazards for yourself or other people.***

Remember it is not always possible to work in a hazard free environment. However, by using appropriate workplace precautions it is possible to keep the risk in the environment at a very low level. We will now look in more detail at how you can identify hazards.

6.0 - Identifying Hazards.

If you are to avoid harm to yourself and others, the first step is to identify that there is a hazard. As we have seen, there are all sorts of hazards but some are more common than others. We will look in more detail at some of these more common hazards later in the course.



6.1 - Hazard Categories.

Hazards differ in the sort of harm they can cause:

- ***Some hazards mainly result in injuries.***
- ***Some mainly result in ill health.***
- ***Some can result in both injury and ill health.***

6.2 - Identification Problems.

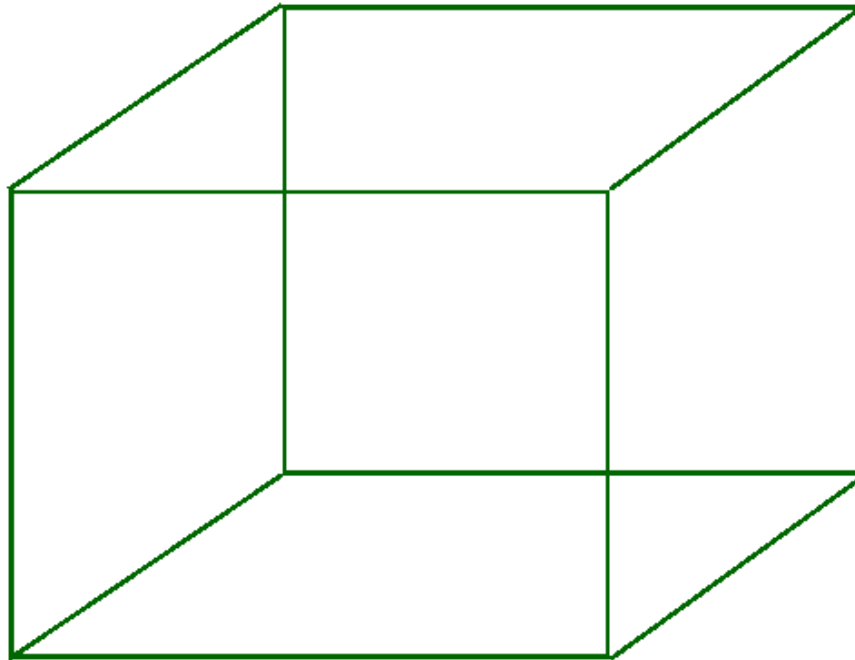
Identifying hazards is not always straightforward and we will now look at the reasons for this. There are some hazards we cannot see, feel, hear, smell or taste. And remember that not everyone has all their senses in full working order.

You may not know that a hazard can cause harm. We all know that fire burns and that falling from a height can be harmful, but many people are not familiar with the harms caused by, for example,

chemicals. You may be concentrating on your work and not paying attention to hazards. Look at the diagrams below:

6.2.1 - Necker Cube.

The diagram is a simple example of how you can change the way you see the world.



Two more examples are given below.



You can voluntarily change the way you see these images and if you consciously make the effort to see (or hear, or smell, or feel, or taste) hazards you will identify more than you normally would.

7.0 - Hazards and Risk.

The presence of a hazard does not necessarily mean that there is a high risk.

'The following text on risk assessment will help you to understand the risk assessment principles and practice'

7.1 - Risk Assessment.



What is Risk Assessment?

"An assessment of risk is nothing more than a careful examination of what, in your work, could cause harm to people so that you can weigh up whether, you have taken enough precautions or should do more."

A risk assessment is carried out to identify the risks to health and safety to any person arising out of, or in connection with, work or the conduct of their undertaking. It should identify how the risks arise and how they impact on those affected.

One part of risk assessment involves deciding whether or not a hazard is a high risk. If it is decided that there is a high risk then the next step is to decide what workplace precautions are required. For many of the jobs you do, the risk assessments will have already been carried out and you will have been told about the workplace precautions which are needed. Employers are required by law to carry out these risk assessments as part of their [duty](#) to protect the workforce. However, in some circumstances, you may have to carry out your own risk assessment and decide on workplace precautions for yourself. Next we will look at some hazards and practise deciding whether or not they are risks, and, if they are, what workplace precautions could be used. But before that we need to look at the idea of "reasonably [practicable](#)"

There are various reasons why a risk assessment should be undertaken, these include:

- To meet legal requirements (these will be discussed later in this module).
- To identify whether you are doing enough to protect your workforce and others that are affected by your activities.
- To [demonstrate](#) good business practice.
- To improve business performance.
- To save money (potential costs savings).
- To reduce the insurance premiums.
- To enhance the company's reputation.

7.1.1 - Five Steps to Risk Assessment.

The Health and Safety Executive have produced a free information leaflet entitled "**Five Steps to Risk Assessment**". This document can be viewed in full by clicking the following link: [LINK](#)

The 5 steps to risk assessment is the generally accepted steps for the risk assessment procedure.

However if you are assigned to undertake risk assessments in your work area only then you will need an additional step before the [HSE](#) 5 steps, this is to make a list of the work tasks that are your responsibility before undertaking the 5 steps.

All 6 steps would therefore be:

1. Make a list of the work tasks that are your responsibility.
2. Identify the hazard.
3. Estimate the risk.
4. Evaluate the risk.
5. Record your findings.
6. Review your findings.

7.1.2 - Information Required for the Risk Assessment Form.

When you are producing a risk assessment there are certain types of information that should be recorded on your form, this includes:

- Details of the person carrying out the risk assessment.
- The date and time of the assessment.
- Details of the location, people, equipment and activity being assessed.
- The hazards identified together with the risk level.
- Existing control measures and how well they work.
- The date for review of the assessment.
- Whether risk controls are needed.

7.2 - "Reasonably Practicable".



It is possible, in most circumstances, to reduce risk to a very low level. For example, you could always drive your car at 10 mph. This would reduce the chance of you having a crash, and, if you did have a crash, it is likely that your injuries would be less severe.

However, the inconvenience to you, and to other road users, caused by driving at 10 mph is so great that it outweighs the benefits of the risk reduction. In legal terms, it is said that driving at 10 mph is not 'reasonably [practicable](#)'.

This principle also applies at work and we will look at this now. **If the cost, in terms of time, effort, money or inconvenience, associated with the workplace precaution outweighs the benefits of the risk reduction, then it is not reasonably practicable to use that workplace precaution.**



If you think that any of the workplace precautions used at present involve too much time or effort, or cause a lot of inconvenience, it is always tempting to ignore them - DON'T.

What you should do is:

- ***Discuss them with your supervisor.***

You should only make your own decision on what is reasonably practicable if it is not possible to discuss it with your supervisor first.

When you have to make your own decision: **Always err on the side of caution.**

7.3 - Legal Requirements.

There are a number of health and safety regulations which require employers to make detailed assessments of risks, including the risks associated with the way work is done. One purpose of these risk assessments is to identify what workplace precautions are required. However, the regulations usually refer to risk control measures, not to workplace precautions so you need to know both terms. **Employers should identify workplace precautions which fall into any of the following categories.**

- | | |
|---------------------|---|
| Missing. | For example, no guards on machines. |
| Out of date. | For example, ear plugs having to be worn when the noisy machine has been replaced with a quiet one. |
| Unworkable. | For example, requiring a two person lift when there is only ever one person doing the job. |

You are likely to know as much about how you do your work as the people in your organisation who carry out the risk assessments. Indeed, you may know more. For this reason, the Health and Safety Executive ([HSE](#)) recommends that the people who carry out the work are involved in the risk assessments. What you have just learned about hazards, risks and risk controls will enable you to assist your organisation in meeting its legal requirement to assess risks.

The regulations state that an employer should control all reasonably foreseeable risks.

To determine if a risk is reasonably foreseeable you should use:

- Common knowledge - (it is obvious to you that a particular activity/piece of equipment is hazardous).

- Industry knowledge - (do industry standards or information tell you that certain activities, pieces of equipment are hazardous).
- Expert knowledge - (do the legislation or guidance for specific activities inform people of the risks).

7.4 - Workplace Precautions.

As we have seen, workplace precautions are used where it is not reasonably [practicable](#) to eliminate or avoid the hazard. Workplace precautions can take a number of forms. The best workplace precautions are those which do not rely on people having to do things. Below shows the hierarchy of risk control which includes some of the main types of workplace precautions in increasing order of reliance on people doing the right things and therefore in their preferred order of use.

8.0 - Risk Control Hierarchy.



The hierarchy of risk control is as follows:

Eliminate the hazard at source.

Reduce the hazard at source.

Remove the person from the hazard.

Introduce a workplace precaution.

Keep the hazard and the people apart: For example, high voltage electrical cables on pylons.

Have a barrier between the hazard and the person: Barriers include machinery guards as well as actual barriers.

Safe Systems of work and permits to work: A safe system of work is a procedure, usually written down, which describes how a task can be carried out in ways which [minimise](#) the risks associated with that task. For example, the procedure required to ensure that electrical equipment remains isolated during maintenance work. This is an example of a safe system of work which places heavy reliance on people doing the correct things in the correct sequence. In such cases, the safe system of work normally

includes the use of a permit to work. This also applies, for example, to entry into confined spaces.

Personal Protective Equipment (PPE). For example, gloves, goggles and hard hats.

Now look at some photographs as this will give an opportunity to practise hazard identification, risk assessment and the selection of appropriate risk control measures.

8.1 - Remove Hazard.

If everyone believes that removing hazards is someone else's job then no-one will remove hazards. Remove hazards when you can. If you create hazards in the course of your work make sure you remove them. Never leave hazards which might be a risk to someone else.



8.2 - Safe Hazard Removal.

Hazard removal is not always straightforward and it may involve its own risks. Do not try to deal with hazards unless you are sure you can do it without risk. If you are not sure, report the hazard to your supervisor or manager.



8.3 - Inappropriate Use.

Unnecessary risks are created by using equipment or tools inappropriately. Always use the equipment or tools for the job you have to do in an appropriate manner.



9.0 - Working and Managing Safely.

The IOSH Working Safely course provides a good grounding in what is meant by risk assessment and workplace precautions. It is appropriate for people who will be exposed to a wide range of hazards and who will have to carry out informal risk assessments in order to avoid risks to themselves and others. What the Working Safely course does not do is to provide the formal approach to risk assessment and risk control which is required at the managerial level. Nor does it provide the skills and knowledge required to meet specific legislative requirements on risk assessment and risk control. The remainder of this module, therefore, devoted to a more formal treatment of risk assessment and risk control and the legislative requirements for risk assessment. We will begin with a summary of the main activities required for risk assessment and risk control at the managerial level.

9.1 - Main activities.

The main management activities associated with risk assessment and risk control are as follows.

Make an inventory of sources of hazards and keep it up to date.

If we do not know exactly what we are managing, and record it in an inventory, we will not have a record of the sources of hazards we have to manage. We also have to keep this inventory up to date.

Identify hazards.

For each item in our inventory we have to identify the hazards associated with it. If we do not know about these hazards, we cannot manage them.

Rate risks.

Some hazards are more serious than others and the seriousness of hazards is established by rating the risk associated with each hazard.

Decide if the risks are acceptable.	Having rated the risk, we are then in a position to decide if the risk is acceptable or if we have to move to the next stage and select appropriate workplace precautions.
Select appropriate workplace precautions.	Workplace precautions are, as we have seen, the measures we put in place to reduce the risk associated with a hazard. Being able to select appropriate workplace precautions is an important aspect of managing safely.
Record risk assessments.	It is good practice to record the results of your risk assessments, but it is also a legal requirement in some cases.
<u>Implement</u> and maintain workplace precautions and <u>RCSs</u>.	The workplace precautions you select will have to be implemented and, once implemented, they will have to be maintained. This maintenance requires Risk Control Systems (RCSs) to be in place so that, for example, defective <u>PPE</u> is replaced and ventilation systems are tested
Monitor workplace precautions and RCSs.	Workplace precautions and RCSs will have to be monitored to check that they are being used properly and are producing the intended degree of risk reduction.
Review risk assessments.	Things change, and these changes can affect the appropriateness of your risk assessment. It is, therefore, good practice to review risk assessments from time to time and, in some circumstances, it is also a legal requirement

10.0 - Terminology.

Although there is much talk about risk assessment, there is no general agreement on terminology. For example, some writers include risk control as part of the risk assessment process, whereas we describe it as a separate topic. To get round this problem with terminology, we will, where possible, deal with specific stages such as inventory preparation, hazard identification, and so on. Where we use the terms risk assessment and risk control, they will be used as follows.

10.1 - Risk assessment.

Risk assessment = All of the activities described on the previous pages, with the exception of selecting workplace precautions, implementing and maintaining workplace precautions and RCSs, and monitoring workplace precautions and RCSs.

10.2 - Risk Control.

Risk Control = The three stages excluded from risk assessment, that is, selecting workplace precautions, implementing and maintaining workplace precautions and [RCSs](#), and monitoring workplace precautions and RCSs.

In this module we will look at the basic principles involved at each stage. Later in the course we will be considering how these general principles apply to a range of specific hazards such as noise, fire and chemicals.

11.0 - Inventories.

All of the people, things, activities and places you have to manage can, in some circumstances, be a hazard. It follows, therefore, that unless you know exactly what you are managing, you will not know all of the possible sources of hazards. We will refer to finding out what is being managed as inventory preparation. [HSG65](#) suggests that inventory preparation covers three main sources of hazards.

- | | |
|-------------------|---|
| Inputs. | This source of hazards includes physical resources such as components and raw materials, human resources such as employees and contractors, and the information required to operate a business. |
| Processes. | These will vary widely depending on the nature of the business but they all involve the transforming of inputs into products or services. |
| Outputs. | These are the products, services or information which the business is set up to produce. By-products such as waste materials are also included in this category. |

In some organisations, particularly those managing very high risks, inventory preparation is a formal, detailed procedure with everything recorded. However, this level of detail is not always required. What is always required is that you are absolutely sure about what you are managing, and what is being managed by other people. Inventory preparation may not be straightforward and common sources of ambiguity include the following.

- Who is managing your staff when they are working off site, or in other departments?
- Who is managing common areas such as car parks, corridors and stairs?
- Who is managing contractors and other people working in your area, for example carrying out cleaning and repairs?
- Who is managing shared items of equipment such as photocopiers and lifts?

Inventories also have to be kept up to date. This means that they have to be reviewed periodically to check that all the relevant inputs, processes, outputs and by-products continue to be correctly allocated.

12.0 - Hazard Identification.

We have seen how hazard identification is dealt with in Working Safely, but this is an informal approach. We now need to look more formally at hazard identification and, in particular, the techniques you can use to find out about hazards in the area for which you are responsible. There are four main techniques which can be used to collect information on hazards:

1. Observing the physical conditions at a workplace and the activities being carried out.
2. Interviewing people to find out their views on hazards.
3. Inspecting records of relevance to hazards.
4. Reading documentation on sources of hazards relevant to your area.

We will now look at each of these techniques in more detail:

Observation. The main method of hazard identification is direct observation and this should cover both the physical aspects of the situation and the work which has to be carried out. However, remember the Necker cube, you must be in "the right frame of mind" if you want to be able to identify hazards effectively. You will practise observation in the context of hazard identification during the exercise which ends this module.

Interviews. Interviews with your staff and their employee and safety representatives can produce valuable information on hazards. Indeed, if there are tasks which you are not able to observe, or which you can observe only infrequently, interviews may be the only way of finding out about any hazards associated with these tasks. You must take care during these interviews not to create an atmosphere which is critical. For example, if hazards arise from failure to follow impractical systems of work, it may be acceptable to criticise the system of work, but it is not acceptable to criticise the people who have to work in a hazardous manner because the system of work is impractical.

The interview skills taught during the [reactive](#) monitoring module will help you get the most out of interviews concerned with hazard identification.

Record Inspection. Most organisations keep a variety of records and some of these can be useful in hazard identification:

Incident records- These records will tell you what hazards have caused incidents in the past and it is possible that those hazards exist in your part of the organisation.

Hazard records- These records tell you what hazards have been identified in other parts of the organisation and it may be the case that similar hazards exist in your part of the organisation.

Maintenance records- Failures in workplace precautions may be identified during maintenance work. For example, machine guards which have been disabled, or [LEV](#) systems which have been blocked to reduce noise or draughts. Maintenance

records should, therefore, be inspected to check for items of this sort which are of relevance to your area.

Repair records- Repairs may be required as a result of accidental damage which, in slightly different circumstances, could have resulted in injury. Inspection of repair records will, therefore, give you clues about hazards which might not have been remedied.

Documentary Sources.

There are numerous documentary sources which should be consulted in the course of hazard identification. These include the following:

Legislation and Approved Codes of Practice (ACoPs)- Much legislation focuses on specific hazards such as noise, chemicals or electricity. This type of legislation and the ACoPs produced in association with it, provide detailed information on hazards

Health and Safety Executive (HSE) guidance and guidance produced in house- These types of guidance do not have a legal status like legislation and ACoPs but they contain valuable information on hazards

British Standards Institution (BSI) and international standards- Many standards are concerned with sources of hazards and how to deal with them. For example, there is a British Standard on machinery guarding.

Industry and trade association guidance- Many industry and trade periodicals provide up to date information on new hazards identified in the relevant industry or trade.

We will be looking at some of these sources of information at appropriate points during the module on commonly occurring hazards.

13.0 - Hazard and Risk.

As we have seen, one of the problems with hazard identification is that large numbers of hazards will be identified, some obviously more 'serious' than others. What we usually find is that a high proportion of hazards are not serious enough to warrant further action and these are referred to as hazards with 'trivial' risks.

Risk is the term used to describe the seriousness of a hazard and a risk is formally defined as:

The likelihood that the hazard will cause harm.
Multiplied by.
The severity/consequence of that harm were it to occur.
That is Risk = Likelihood x Severity/consequence.

We will now look at the procedure to be used for risk rating.

There are a number of techniques available for formal risk rating of major complex hazards, for example, Hazard Operability Studies (HAZOPs), Failure Modes and Effect Analysis, Event Tree Analysis and Fault Tree Analysis. You need to be aware that these techniques are available so that you can, if necessary, request that they be carried out on hazards you feel are too complicated for you to deal with, but the techniques themselves are outside the scope of this course.

However, the vast majority of hazards are relatively straightforward and what is required for these is a simple method of risk rating. The usual method is to devise scales for likelihood and severity/consequence, rate hazards on the scales and combine the ratings.

The number of points on each scale is arbitrary but [HSG65](#) uses three points on each scale and the HSG65 scales are illustrated as follows:

Likelihood.	
High.	When it is certain or near certain that harm will occur.
Medium.	Where harm will often occur.
Low.	Where harm will seldom occur.

Severity/Consequence.	
Major.	Death or major injury or illness causing long term disability.
Serious.	Injuries or illness causing short term disability.
Slight.	All other injuries or illness.

However, because of the possible confusion with words when we try to combine the scales for likelihood and severity/consequence, it is easier to use numbers for the scales so that they can be multiplied. We will now look at the numerical scales for our formal work on risk rating:

One suggested 'numerical' format would be as follows:

Severity/consequence.	
1.	No harm or illness.
2.	First aid injury.
3.	3 day reportable injury.

4.	Major injury or illness.
5.	Fatality.

Likelihood.	
1.	Very Unlikely.
2.	Possible.
3.	50/50 chance.
4.	Very Likely.
5.	Almost certain.

By using a numerical scale (such as the one above) the risk rating can be easier to see when represented in a table.

The most common risk rating matrix is the 5 X 5 Risk matrix table shown below:

		Likelihood				
		1	2	3	4	5
Severity	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

The higher the number then the higher the risk rating.

For example, if you feel the **likelihood** of a hazard is 4 (will occur immediately or shortly) and the **severity/consequence** of the hazards is 3 (hazard can result in serious illness, severe injury), then the **risk rating** would be 12.

This type of system is an ideal way of rating risk but only if the final risk rating given can point you into what action needs to be taken.

Therefore, an action table needs to be devised, such as:

Risk Rating	Risk	Action
25-13.	High.	Stop the work/process. Immediate action needs to be taken to reduce work.
12-4.	Medium.	Consider and implement actions to reduce the risk.
3-1.	Low.	Consider actions that could reduce risks when after dealing with high and medium risk first.

13.1 - Risk Control.

There are two topics to be dealt with under the general heading of "Risk Control".

1. Reducing risk by using workplace precautions.
2. How the reduced levels of risk are maintained by using Risk Control Systems ([RCSs](#)).

Workplace precautions and RCSs will also have to be monitored but we will deal with this aspect in the active monitoring module. We will now look at workplace precautions.

13.2 - Workplace Precautions.

Workplace precautions are the measures put into place to reduce the risk.

Some types of workplace precautions are more effective than others and there are various hierarchies of workplace precautions, ordered according to their effectiveness.

We have already seen a simple risk control hierarchy in the Working Safely course and we will now look at a more detailed version which you should use in your own work on deciding on workplace precautions. As with the hierarchy in Working Safely, the more detailed version also includes the other risk control options.

14.0 - Risk Control Hierarchy.

The hierarchy we will use is shown below but note that the first two items in this hierarchy are not workplace precautions since what they do is eliminate, or reduce, the need for workplace precautions. However, it is convenient to have a single hierarchy.

- **Eliminate Hazard at Source.**

- E.g. use a non hazardous substance instead of a hazardous one, stop using a noisy machine.
- **Reduce Hazard at Source.**
E.g. use a substance less hazardous than the one used at present, replace a noisy machine with a quieter one.
- **Remove Person From Hazard.**
E.g. paint spraying by unattended robots, do not allow people to work near noisy machines.
- **Contain Hazard by Enclosure.**
E.g. do all painting in a proper, enclosed painting bay, put soundproofing round noisy machine.
- **Reduce Employee Exposure.**
E.g. four people exposed for two hours each, not one person for eight hours. Applies to exposure to substances or noise.
- **Systems of Work.**
E.g. written procedure for work with paint which minimises evaporation.
- **Personal Protective Equipment (PPE).**
E.g. gloves and goggles for substances, and ear defenders for noise.

When deciding on which risk control to use, it is best to consider the following requirements:

- How many people need to be protected.
- How reliant is the effectiveness of the risk control on human behaviour.
- How often will the risk control need to be tested.
- How often will the risk control need to be maintained.
- How often will the risk control need to be replaced.
- How much does the risk control cost.
- How much is it going to reduce the risk by.

14.1 - Deep Hole - Control Measures in descending hierarchy.



- Get rid of the hole - Fill it in.
- Cover it over.
- Fence it off.
- Put up notices in many languages.
- Put up notices only in English.

14.2 - Risk Control Systems.

As we have seen, risk is reduced by using appropriate workplace precautions. However, workplace precautions do not just "happen", they have to be implemented and, once implemented, maintained. The systems which ensure that adequate workplace precautions are implemented and maintained are known as Risk Control Systems ([RCSs](#)).

The nature of the RCS required will depend on the nature of the workplace precaution being used but some examples are given below:

Use of ear defenders. The RCS will have to deal with such things as [provision](#) of the ear defenders, training in their use, storage facilities, cleaning arrangements, inspection and maintenance, and replacement of lost or damaged ear defenders.

Use of Local Exhaust Ventilation ([LEV](#)). The RCS will have to deal with such things as training in the use of the LEV, periodic testing, routine maintenance and arrangements for repairs.

Use of Permits to Work. The RCSs will have to deal with such things as the design of Permit to Work procedures and training in the correct use of the Permit to Work documentation.

We will look at the requirements for RCSs in more detail in the exercise towards the end of this session.

15.0 - Deciding on Risk Reduction.

Your decision on whether a particular risk should be reduced will depend on two main factors.

1. The absolute level of the risk. The higher the risk the more important it is that the risk is reduced.
2. How easy it is to reduce the risk.

The law says that risks should be reduced "so far as is reasonably [practicable](#)", and this is also referred to as the level which is "as low as reasonably practicable" ([ALARP](#)). We will now consider reasonably practicable in more detail.

15.1 - Reasonably Practicable.

[HSG65](#) states that:

"So far as is reasonably [practicable](#) means that the degree of risk in a particular activity or environment can be balanced against the time, trouble, cost and physical difficulty of taking measures to avoid the

risk. If these are so disproportionate to the risk that it would be unreasonable for the people concerned to have to incur them to prevent it, they are not obliged to do so. The greater the risk, the more likely it is that it is reasonable to go to very substantial expense, trouble and invention to reduce it. But if the consequences and the extent of the risk are small, insistence on great expense would not be considered reasonable."

In order to decide whether risk reduction is reasonably practicable, therefore, you need to know:

- **What resources will be required to [implement](#) and maintain the workplace precaution, and RCS, and**
- **How much it will reduce the risk.**

We will now look at each of these in turn.

15.2 - Resources.

To avoid repetition in this part of the course, we use [RCSs](#) as a short hand for RCSs and their relevant workplace precautions. Even the simplest RCS will require some resources and it is useful to divide the required resources into two categories.

1. The resources required to set up or install the RCS. These are usually referred to as the implementation resources.
2. The resources required to keep the RCS running effectively. These are usually referred to as the maintenance resources.

As we saw from the [HSG65](#) quotation given earlier, various types of resources may be required for the implementation and maintenance of RCSs. In theory, all of these resources could be translated into costs and this is done for some of the more advanced work on risk assessment and risk control. However, we do not usually need to do this in order to decide whether a risk is [ALARP](#). We will now look in more detail at implementation and maintenance resources.

15.3 - Other Points of Resources.

- The examples we have just worked through, in addition to illustrating the wide range of resources which may be required to [implement](#) and maintain an RCS, also illustrate the following points.

An RCS which requires few resources for implementation may require significant resources for its maintenance.

An RCS which requires a lot of resources for implementation may require few, if any, resources for its maintenance.

This means that it is important to consider how long the RCS will be required when making a decision about the resources required for that RCS. It may also be the case that the RCS "frees up" resources as well as requiring them and some examples are given below.

- ***A quiet machine, because it is newer, may also be faster or consume less energy.***
- ***A less hazardous chemical may enable people to work without uncomfortable and restricting [PPE](#).***
- ***A safe system of work may also be more efficient as a result of the thought which has been put into the way the work is done.***
- ***Mechanical handling may be faster and more effective than manual handling.***

Any possible benefits of an RCS should be taken into account when deciding on the "true" level of resources required to implement and maintain the RCS.

16.0 - Calculating Risk Reduction.

Since **risk = [likelihood](#) x [severity](#)/consequences**, there are only three basic ways of reducing risk.

1. Reduce the likelihood.
2. Reduce the severity/consequences.
3. Reduce both likelihood and severity/consequences.

For any RCS you are considering, you should be able to estimate the extent to which it reduces risk as follows:

- ***Rate the likelihood and severity/consequences of the hazard as they would be if the RCS was in place and calculate the new risk value.***
- ***Subtract the new risk value from the value for risk without the RCS in place, that is, as things are now. The difference between the two risk values is the extent to which the RCS will reduce the risk.***

Once you know the extent to which the risk will be reduced by the RCS you are in a position to make a judgement about whether the existing risk is [ALARP](#), that is, whether it is reasonably [practicable](#) to introduce the proposed RCS.

16.1 - Deciding on ALARP.

A decision on whether a risk has been reduced to a level which is [ALARP](#) will be a subjective one and depend on your knowledge and judgement at the time. However, where it is clear that the risk is not ALARP you should [implement](#) an RCS. If you are unsure, or the resources required to implement and maintain an RCS are beyond those you have available, you should recommend to your manager or safety professional that further work be carried out on the requirements for an RCS. The following "rules of thumb" may help you with your decision making:

<p>If the risk can be reduced without any additional resources then it should be reduced, even if it is already at a low level.</p>	<p>Since no additional resources are required, you should implement the appropriate RCS as soon as possible.</p>
<p>If the risk is high, for example 16, you should normally do something to reduce the risk</p>	<p>If this requires more resources than you are able to commit, you should seek advice from your safety professional or manager</p>
<p>If you are not sure whether or not a particular risk should be reduced, you should seek advice from your safety professional or manager.</p>	

You will also have to record the results of your risk assessment and details of any [RCSs](#) you have implemented, or are recommending, and we will look at this next.

16.2 - Recording Requirements.

Where the risks involved are not trivial you should record the results of your risk assessment and decisions on workplace precautions and [RCSs](#). The basic information you should record would include the following:

- *The date of the assessment, where it was carried out and the names of the assessors.*
- *The activity being assessed and the equipment, machinery, people etc. involved in this activity.*
- *The hazards identified and their associated risk ratings.*
- *The existing workplace precautions and RCSs and any additional or improved workplace precautions or RCSs being implemented or recommended.*

The required information is usually recorded on a Risk Assessment Form. You should find out about the risk assessment forms used in your organisation and use these forms for recording your results and decisions.

16.3 - Reviewing.

Whatever method of risk assessment is used, there is a legal requirement to review the assessment if:

- (a) There is reason to suspect that it is no longer valid; or
- (b) There has been a significant change in the matters to which it relates.

(Management of Health and Safety at Work Regulations, 1999.)

However, regular reviews are best practice in safety management and successful organisations also carry out reviews aimed at identifying ways in which they can improve their safety performance. For example, existing workplace precautions can be reviewed to see whether they can be moved up the hierarchy of workplace precautions given earlier.

16.4 - Final Points.

Effective risk assessment is central to good safety management. If at any stage in your risk assessment work you are not sure you are able to deal fully with a particular hazard you should seek advice from your safety professional or manager.

Do Not simply rely on luck!!

In the next session, you will practise applying these principles to hazards recorded on slides but before that we will look at the other legal requirements for risk assessment.

17.0 - Legal Requirements.

There is a useful leaflet which summarises the legal requirements for risk assessments, "A Guide to Risk Assessment Requirements", INDG218. It deals with eight sets of regulations and these are listed below. Note that the abbreviation in brackets after each full title is the abbreviation used to identify the regulations in the summary tables on the following pages.

- Management of Health and Safety at Work Regulations, 1999 (MHSW).
- Manual Handling Operations Regulations, 1992 (Man. Hand.).
- Personal Protective Equipment at Work Regulations, 1992 ([PPE](#)).
- Health and Safety (Display Screen Equipment) Regulations, 1992 ([DSE](#)).
- The Control of Noise at Work Regulations, 2005 (Noise).
- Control of Substances Hazardous to Health Regulations, 2002(COSHH).
- Control of Asbestos at Work Regulations, 2006 (Asbestos).
- Control of Lead at Work Regulations, 2002 (Lead).

These are the risk assessments which will be required in most organisations but note that some specialised risks, for example major hazards, genetic manipulation and ionising radiation, have their own legal requirements for risk assessment.

18.0 - Risk Assessment and Risk Control - Exercise.

In this exercise you will look at pictures (1 - 4) to follow, of a variety of types of hazard using a template downloadable [from here](#) (right click the link and select 'save as').

For each picture, you will:

- Identify the main hazard.
- Carry out a risk rating.
- Suggest appropriate workplace precautions.
- Identify the requirements for a RCS.
- Suggest circumstances which would necessitate a review.

Please use the risk rating system already covered in this module (for your convenience it is attached within the download).

Risk Exercise

Picture No.1



Picture No.2



Picture No.3



Picture No.4



Risk Assessment exercise

Picture Number:	
------------------------	--

Identified Hazards and Risks:			
Hazard and Risks	Severity	Likelihood	Risk Rating

Workplace Precautions Required:

After Workplace Precautions have been implemented:			
Hazard and Risks	Severity	Likelihood	Risk Rating

Risk Control Systems:

Date of Assessment:	
Review Date of Assessment:	

Risk Rating Aid

Likelihood	
4	Likely to occur immediately or shortly.
3	Probably will occur in time.
2	May occur in time.
1	Unlikely to occur.

Severity	
4	Imminent danger exists, hazard capable of causing death and illness on a wide scale.
3	Hazard can result in serious illness, severe injury, property damage and equipment damage.
2	Hazard can cause illness, injury or equipment damage, but the results would not be expected to be serious.
1	Hazard will not result in serious injury or illness, remote possibility of damage or injury beyond minor first aid case.

Risk Rating Matrix		Likelihood			
		4	3	2	1
Severity	4	16	12	8	4
	3	12	9	6	3
	2	3	6	4	2
	1	4	3	2	1

Risk Rating	Risk	Action
16-9	High	Stop the work/process. Immediate action needs to be taken to reduce work.
8-4	Medium	Consider and implement actions to reduce the risk.
3-1	Low	Consider actions that could reduce risks when after dealing with high and medium risk first.

Module 4 – Health and Safety Legislation

1.0 - Introduction.

In this section on health and safety legislation we will consider two pieces of legislation which are central to all aspects of health and safety management. The two pieces of legislation are as follows.

The Health and Safety at Work etc. Act, 1974.

The Management of Health and Safety at Work Regulations, 1999.

However, before we look at legislation it will be useful to have certain key information about the law and how it is enforced. We will start, therefore, by considering civil and criminal law.

1.1 - Civil and Criminal Law.

There are two basic legal systems in England - Civil and Criminal law.

Civil law has the following characteristics:

- It is intended to compensate victims for damage or injury they have sustained.
- Claims for damages are initiated by the person who sustained the damage.
- You can insure against claims made against you under civil law.

Criminal law has the following characteristics:

- It is intended to punish bodies corporate and individuals with, for example, fines or imprisonment.
- It is initiated by the State, for example, by the Police or by Factory Inspectors.
- You cannot insure against the sanctions imposed under criminal law.

Note that certain types of insurance, for example employers' liability insurance, are required by law. However, organisations can take out other types of insurance to reduce their losses in the event of, for example, a fire. The companies which provide insurance can make it a condition of the insurance that they are allowed to inspect a company's premises and recommend remedial action if necessary. Any recommended remedial action must normally be carried out as a condition of obtaining or continuing the insurance cover.

1.2 - Interaction - Civil and Criminal Law.

The two types of law can be illustrated by the domestic example of an accident in which a car injures a pedestrian. If it is felt that the driver of the car is wholly or partly to blame for the accident, the police

may prosecute the driver within criminal law. If the driver is found guilty of an offence (for example, driving without due care and attention or even reckless driving) the driver may be fined and/or banned from driving for a period or, in a serious or repeat case, imprisoned. Whether or not there is a criminal prosecution, the injured pedestrian may claim damages from the driver for hospital bills, loss of earnings, or any other costs created by the accident, and even for pain and suffering. This is through the civil law.



1.3 - Statute and Common Law.

Statute law, which is mainly criminal law, is written down in a number of types of document and the main types are listed below.

- | | |
|---|--|
| Acts of Parliament. | These are primary legislation, usually setting out a framework of principles and objectives. The Health and Safety at Work etc. Act, 1974 is an example. |
| Regulations and Orders. | These are secondary legislation made on the advice of the Health and Safety Commission (HSC) to cover specific risks such as chemicals, noise at work and display screen equipment. |
| <u>Approved Codes of Practice (ACoPs).</u> | These supplement regulations and contain advice on requirements and implementation. ACoPs have a quasi-legal status in that failure to comply is not technically an offence provided the people charged with an offence can show that they have implemented arrangements which, in their situation, are equally effective. |
| Guidance. | This is issued by the Health and Safety Commission (HSC) or the Health and Safety Executive (HSE) at a lower level than an ACoP . It has no legal status but is "persuasive" and is seen by lower courts as a guide to the "reasonable standard prevailing" in industry at large. |

Common law, which is mainly civil law, is decided by judges and it is only "written down" if the judgements are recorded.

2.0 - Key legal phrases.

Certain legal phrases are used frequently and we will look now at what is meant by the following legal words and phrases.

- I) Reasonable care.
- li) Negligence.
- lii) Vicarious liability.
- liii) Levels of [duty](#).



2.1 - Reasonable Care.

We are all responsible, under the common law [duty](#) of care for employees, visitors, members of the public and anyone whom we can reasonably foresee would be affected by our activities.

Employers must:

- Understand the risks inherent in the work.
- Protect against foreseeable injury, disease or death.

The duty of care is normally discharged by the [provision](#) of:

- Adequate materials, plant and premises.
- Proper systems of work and effective [supervision](#).
- Competent staff.

An employer who fails to provide any of the above may be deemed negligent and we will look at negligence next.

2.2 - Negligence.

In order to prove negligence, a plaintiff must show that:

- A [duty](#) of care exists
- There was a [breach](#) of that duty

- Damage resulted from that breach

Recent cases have extended the definition of damage beyond what was traditionally considered to be health and safety into areas such as stress. In a civil case, Walker v Northumberland County Council, a social worker was awarded damages having successfully argued that a nervous breakdown was due to the negligence of his employer.

2.3 - Vicarious liability.

The concept of vicarious liability simply means that an employer (and or those at a senior level) can or maybe responsible for the torts in civil law for the actions or omissions of employees who are acting within the course of their employment.

2.4 - Levels of duty.

There are three levels of [duty](#) found in legislation.

Absolute. The person upon whom the duty is laid "shall ". There is no choice or evaluation of risk or feasibility to be made. The requirement will be discharged

[Practicable.](#) At its simplest, if it is technologically feasible to carry out a requirement, then it must be done.

Reasonably practicable. This implies a computation to be made between the risk to be addressed on the one hand, and the total cost in terms of time, money and trouble on the other. If the risk is insignificant in relation to the total cost then the remedial action may be considered to be not "reasonably practicable".

Having looked at these key legal terms, we will now consider how safety legislation is enforced.

3.0 - Enforcement.

Health and safety legislation is enforced by the [HSE](#) through its various inspectorates, including the Factory Inspectorate, or by the Local Authority. Inspectors provide advice and assistance on the management of health and safety as well as discharging their enforcement duties.

Inspectors have very wide powers, including the following:

- The right of entry to premises.
- The right of examination of premises, equipment, materials, etc.

- The right to order part or all of a premises to be left undisturbed (e.g. after an accident).
- The right to seize or render harmless any article or substance.
- The power to require any person to give help and assistance.

3.1 - Notices.

Inspectors can issue two types of notice if they feel that safety or health is threatened.

These are as follows:

An Improvement Notice.

This type of notice requires matters to be put right within a specified period. The Notice will refer to a specific breach of law.

A Prohibition Notice.

This type of notice requires that a particular activity is stopped until matters have been put right. The Notice need not refer to law, only that, in the opinion of the Inspector, there is a risk of serious personal injury.

We will now look at the complete range of safety legislation which inspectors have to enforce.

4.0 - Range of legislation.

There is a large amount of detailed health and safety legislation. However, much of it is specific to one or other of the following:

A type of industry.

For example, some legislation applies only to railways or to mines and quarries.

A particular source of risk.

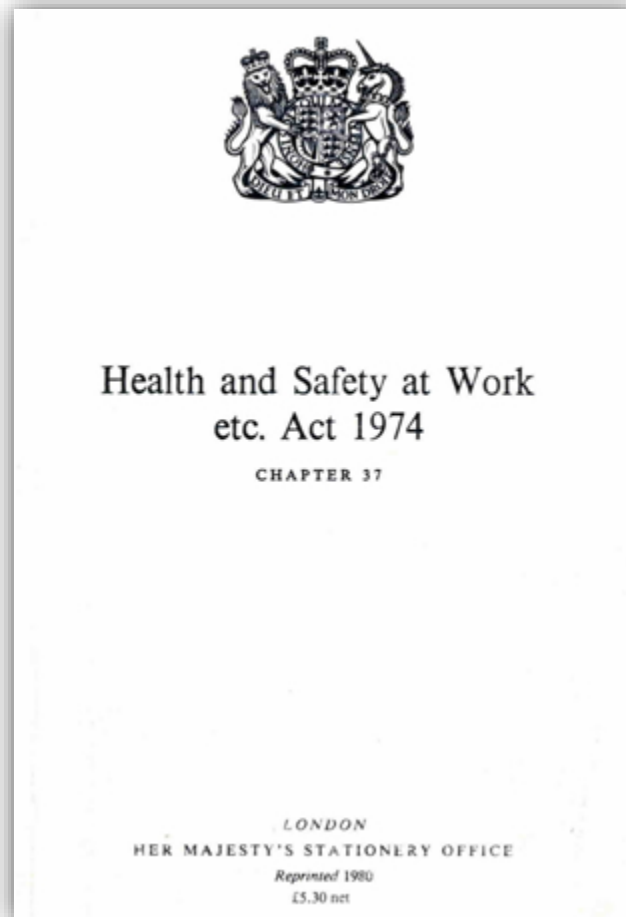
For example, there is legislation which applies to such things as pressure vessels or transportable gas containers

Obviously, you only have to deal with safety legislation if it is relevant to your industry and you are managing the sorts of risks covered by the legislation.

You can find out what legislation is relevant to your responsibilities by checking with the lists of legislation available on the Health and Safety Executives website.

However, as was mentioned at the beginning of the session, there are two generally relevant items of legislation and we will now look at these in detail starting with the Health and Safety at Work Act.

5.0 - Health and Safety at Work etc Act 1974.



5.1 - Health and Safety at Work etc Act 1974.

The Health and Safety at Work etc. Act 1974 consists of a number of sections. However, we need to consider only some of these sections.

Section 1.

This section outlines the main purposes of the Act as follows:

- To secure the health, safety and welfare of persons at work.
- To protect other people from hazards arising from work.
- To control the keeping and use of dangerous substances, including highly flammable materials and explosives.

The other sections of the Act set out various requirements designed to enable these purposes to be achieved and we will look at some of these sections now.

Section 2(1).

"It shall be the [duty](#) of every employer to ensure, so far as is reasonably [practicable](#), the health, safety and welfare at work of all his employees."

Section 2(2).

The matters to which that duty extends include in particular:

- *"The [provision](#) and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health"*
- *"Arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage, and transport of articles and substances."*
- *"The provision of such information, instruction, training and [supervision](#) as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees."*
- *"So far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risks to health and the provision and maintenance of means of access to and egress from it that are safe and without such risks."*
- *"The provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work."*

Section 2(3).

It is the duty of every employer (of five or more persons) to prepare and keep up-to-date a written statement of general health and safety policy. The policy must contain details of the Company's organisation and arrangements for carrying out the policy. The policy, and any revisions, must be brought to the notice of all employees.

Section 2(4).

This section provides for the appointment of Safety Representatives, and introduces the Safety Representatives and Safety Committees Regulations 1977.

Section 2(6).

The employer has a duty to make and maintain arrangements to [co-operate](#) with Safety Representatives in promoting and monitoring health and safety measures.

Section 2(7).

Sets up the framework to allow Safety Representatives to ensure that a Safety Committee is established.

Section 3.

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

Section 4.

It is the duty of each person who has to any extent control of a non domestic premises, to ensure that access, egress, plant and substances in the premises pose no risk to the health of anyone, who, although not an employee of theirs, may be at work on those premises.

Section 7.

"It shall be the duty of every employee while at work:

- *To take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work; and*
- *To co-operate with his employer in order to enable statutory health and safety requirements to be complied with."*

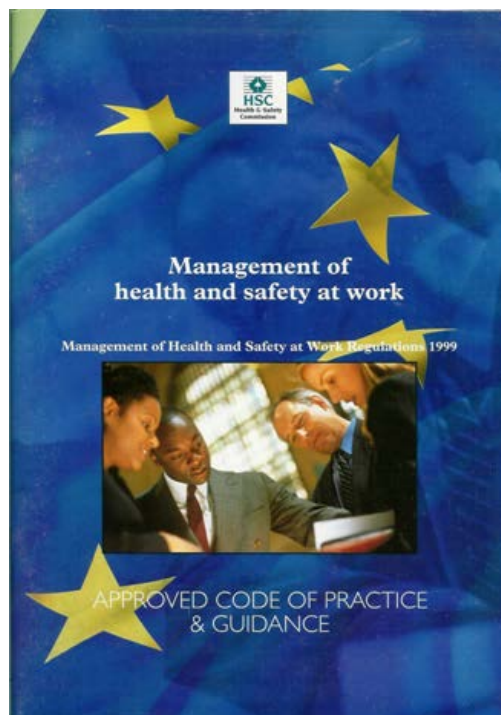
Section 8.

Everyone has a duty not to interfere with or misuse anything provided in the interests of health and safety or welfare, as a result of legal requirements.

Section 9.

No employer may charge employees for health and safety measures carried out as a result of specific legal requirements.

6.0 - Management of Health and Safety at Work Regulations 1999.



6.1 - Management of Health and Safety at Work Regulations 1999.

The Management of Health and Safety at Work Regulations 1999 (MHSW) is a detailed set of regulations but we will only consider the key points in this session.

Regulation 3 - Risk assessment.

Requires employers to make suitable and sufficient assessments of health and safety risks, including risks from fire, to employees and to others who may be affected by their activities for the purpose of ascertaining what they have to do to comply with their obligations under health and safety legislation. Particular attention has to be paid to risk assessment where young persons (that is, people under 18 years of age) may be at risk. This regulation also requires employers to record the results of risk assessments and to review risk assessments.

Regulation 4 - Principles of prevention to be applied.

Requires employers who are implementing risk control measures (referred to as preventive and protective measures) to follow the principles set out in Schedule 1 of the Regulations. These principles are a hierarchy of risk control measures of the type described in the Risk Assessment module. The Schedule 1 hierarchy begins with "avoiding risks" and ends with "giving appropriate instructions to employees".

Regulation 5 - Health and safety arrangements.

Requires employers to make, give effect to and in certain cases, record appropriate health and safety arrangements. These arrangements should cover planning, organisation, control, monitoring and review of preventive and protective measures.

Regulation 6 - Health surveillance.

Requires employers to ensure that their employees are provided with appropriate health surveillance.

Regulation 7 - Health and safety assistance.

Requires employers to appoint an adequate number of competent persons to assist them to comply with their obligations under health and safety legislation. Where more than one person is appointed there must be arrangements for ensuring adequate co-operation between them.

Regulation 8 - Procedures for serious and imminent danger and danger areas.

Requires employers to establish and give effect to procedures to be followed in the event of serious and imminent danger to persons working in their respective undertakings.

Regulation 9 - Contacts with external services.

Requires employers to ensure that any necessary contacts with external services are arranged, particularly as regards first-aid, emergency medical care and rescue work.

Regulation 10 - Information for employees.

Requires employers to provide their employees with information on, for example, the risks to their health and safety identified by assessments and the preventive and protective measures required. This regulation also deals with certain aspects of employing children.

Regulation 11 - Co-operation and co-ordination.

Requires every employer and self-employed person who shares a workplace with any other employer or self-employed person to [co-operate](#) with that other person so far as is necessary to enable him to comply with his statutory health and safety obligations; co-ordinate the measures he takes in compliance with his statutory health and safety obligations with the measures being taken in that regard by that other person; and take steps to provide that other person with specified health and safety information.

Regulation 12 - Persons working in host employer's or self employed person's undertakings.

Requires host employers to ensure that the employers of people working in the host employer's undertaking are provided with comprehensible information on risks to the employees' health and safety and the measures taken by the host employer. Host employers also have to provide employees of other organisations with comprehensible information on the risks to their health and safety. In addition, there are particular requirements with respect to the [provision](#) of information on evacuation procedures.

Regulation 13 - Capabilities and training.

Requires employers to consider their employees' capabilities prior to assigning tasks and to ensure that in specified circumstances their employees are provided with adequate health and safety training. There are also requirements to provide refresher training where appropriate and to adapt training to take account of new or changed risks to health and safety. All health and safety training must be during working hours.

Regulation 14 - Employees' duties.

Regulation 14(1): Employees should use all work items supplied by their employer in accordance with the training and instructions in their use which the employees have received.

Regulation 14(2): Employees must inform their employer of any work situation which they consider represents a serious and imminent danger, and any shortcoming in the employer's protection arrangements for health and safety.

Regulation 15 - Temporary workers.

Requires employers to provide temporary workers with specified health and safety information before they commence their duties.

Requires employers to provide any employment business whose employees are to carry out work in their respective undertakings with specified health and safety information about the work to be done by those employees; and requires any employment business provided with information by an employer or self-employed person in pursuance thereof to pass that information on to the employees to whom it relates.

Regulations 16 to 18 - New or expectant mothers.

Regulation 16: Requires employers of women of child-bearing age to include in their risk assessments risks to new or expectant mothers. Where there are such risks, and they can be avoided by altering working conditions or hours of work, this should be done. If it is not reasonable to alter working conditions, or hours of work, or this would not avoid the risk, the employee should be suspended from work.

Regulation 17: Requires that new or expectant mothers who work at night should be suspended from work if they have a certificate from a medical practitioner or midwife showing that this is necessary for her health or safety.

Regulation 18: Is to the effect that employers need not take action to avoid risk unless they have been notified in writing by an employee that she is pregnant, given birth within the previous six months, or is breast feeding. Employers are also able to request and receive a certificate from a medical practitioner or midwife confirming a pregnancy as a condition of continuing risk avoidance measures.

Regulation 19 - Protection of young persons.

Every employer shall ensure that young persons employed by them are protected from risks which are a consequence of their lack of experience, absence of awareness of risks, or lack of maturity.

Employers shall not employ young persons for specified tasks including tasks which are beyond their physical or psychological capacity, tasks which involve exposure to agents which chronically affect human health, tasks involving harmful exposure to radiation and tasks which pose a risk from extreme heat or cold, or noise, or vibration. However, such tasks may be carried out if they are necessary for training, supervised by a competent person, and the risk is reduced to the lowest level that is reasonably [practicable](#).

7.0 - Duties of Employers to their Employees.



These start with a broad general [duty](#):

It shall be the duty of every employer to ensure, so far as is reasonably [practicable](#), the health, safety and welfare at work of all his employees.

This means that the main responsibility for health and safety at work lies with the managers of a business, as they are the individuals who have the most control over how it is organised and run. This general duty is then split into the key duties so that all the various aspects of work are safely managed. These duties encompass the four risk creation areas detailed in [HSG65: \(Four P's\)](#)

1. Premises.

2. Plant & Substances.
3. Procedures.
4. People.

The general duties of employers are written so that they do not refer to any specific work situation but to all of them, and so are able to remain up to date and relevant. All these duties are limited by what is reasonably practicable.

7.1 - Premises.

Employers have a **duty** to:

Maintain any place of work under the employers control and provide and maintain the means of access to and egress from it, in a condition that is, so far as is reasonably **practicable**, safe and without risks to health.

This means that any buildings, open air sites, temporary structures like scaffolding etc. should be kept in a safe state and should not pose any risks to health. This also applies to the ways into and out of work places.

Employers also have to:

Provide and maintain a working environment for their employees that is, so far as is reasonably practicable, safe, without risks to health and adequate as regards to facilities and arrangements for their welfare at work.

This covers environmental issues such as heating, lighting, ventilation and noise. Welfare facilities include sanitary and washing facilities, drinking water, rest rooms and canteens, changing and locker rooms and facilities for pregnant and nursing mothers.

7.2 - Plant and Substances.

For plant, the employers **duty** is to:

Provide and maintain plant that is, so far as is reasonably **practicable**, safe and without risks to health.

Any plant, machinery or equipment used at work must be provided and kept in a safe condition. For example, all office equipment, such as photocopiers, computers and printers, must be provided in a safe state and kept that way.

In addition, employers have a **duty** to:

Make arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances.

All machinery, tools, raw materials, substances, components, products, etc. must be used, handled, stored and transported safely. For example, this means that manual handling of loads must be as safe as is reasonably practicable, exposure to chemicals should be prevented or adequately controlled and finished products should be packaged, stored and moved safely.

7.3 - Procedures.

Employers have a **duty** to:

Provide and maintain systems of work that are, so far as is reasonably [practicable](#), safe and without risks to health.

Safe systems of work are the way the work is organised.

These include:

- The order in which the job is carried out.
- The layout of the workplace.
- Any special precautions to be taken before carrying out hazardous tasks.
- Any procedures which have to take place prior to, during or after the main work is carried out, such as tool setting prior to the work starting or cleaning and maintenance after the work has finished.

7.4 - People.

Employers have a **duty** to:

Provide information instruction, training and [supervision](#) as is necessary to ensure, so far as is reasonably [practicable](#), the health and safety at work of their employees.

Employers have to provide:

- Information about hazards in the workplace and how to avoid them, for example, legal requirements, guidance, hazard data sheets etc.
- Instruction and training to ensure that employees, managers and supervisors are competent to carry out their jobs in a safe manner with the minimum of risks to themselves or others.
- Supervision, as it is vital in identifying hazards and ensures that safety rules are complied with.

Module 5 – Common Hazards

1.0 - Introduction

The material to be presented for each of the commonly occurring hazards will be in four sections as follows.

1. **The relevant Working Safely material.** You need to know how to work safely yourself, as well as to manage safely. This material will also provide a "common language" for discussing the hazards with those of your workforce who have been on a Working Safely course.
2. **Key management activities required for the hazard.** This section is concerned with the key management activities required for the hazard, for example, the choice of workplace precautions and the use of [RCSs](#) to ensure that the workplace precautions remain effective.
3. **Any relevant legal requirements.** This section contains brief summary of the key points from any legislation of relevance to the hazard.
4. **Sources of further information.** Where appropriate, sources of further information on how to manage the hazard are given in this section.

We will begin with the hazard of - fire.

2.0 - Fire.

It is useful to divide this session on fire into two main topics.

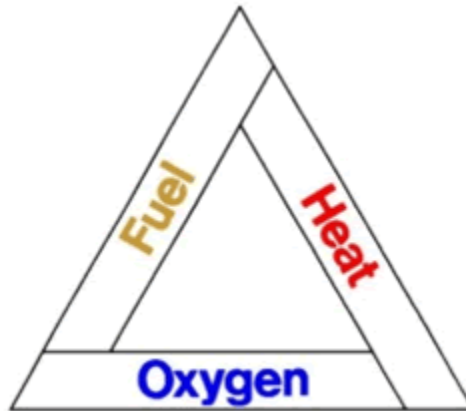
1. **Preventing fires starting.**
2. **Reducing the risk of injury and death if a fire does spread.**

We will deal with each of these topics in turn.



2.1 - Fire Triangle.

Before a fire can start, three things are required:



- Oxygen.** We need oxygen to stay alive so that any air which is suitable for humans to breathe will also support a fire.
- Heat.** Some things are designed to produce heat and act as ignition sources, for example matches and pilot lights, but other things can produce heat and become unwanted ignition sources.
- Fuel.** We are used to burning fuels such as coal and gas but many other things can become fuels.

2.2 - Preventing Fires.

The absence of one of the three elements required for a fire will mean that a fire cannot start. Usually, there is nothing we can do about oxygen, although it is removed in some special circumstances. We can do something about sources of heat and fuel.

Never leave sources of heat unattended.	Unless, of course, they are specifically designed to operate in this way, for example, pilot lights on gas boilers.
Make sure that all sources of heat are properly put out.	And check again after a period of time to make sure there is no "smouldering".
Do not allow possible sources of fuel to build up in your workplace.	For example, remove waste materials to a proper store.
Keep heat sources and fuels apart.	For example do not store waste paper near a heater.

<p>Pay particular attention to flammable liquids and gases.</p>	<p>Some gases, for example LPG, and some liquids, such as petrol, can be ignited with a single spark. This is what makes flammable gases and liquids such high risks. In addition, if the mixture of gas (or vapour from a liquid) and air is within certain limits, all of the gas may "burn" in a single instant, producing an explosion. For these reasons, if you have to work with flammable gases or liquids, you should find out exactly what workplace precautions are required, and observe them at all times.</p>
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2.3 - Fire Fighting Action.

Remember.

- If a fire breaks out or you discover a fire the first thing you should do is sound the alarm.

You should never try to extinguish a fire using fire fighting equipment unless:

- It is a small fire.
- You have been trained to use the equipment required, and
- It is safe to tackle the fire.

Otherwise, leave the building or the location of the fire. All new fire extinguishers should be coloured red, but they may have a strip of colour (maximum 5%) to identify their type. The main types, and their colour codes are listed below.

Type.	Colour Code.	Description and Uses.
Water.	Red.	The most common portable extinguisher. Water from hoses is also used. Used for fires involving most solid materials. Do not use on electrical, flammable liquid or fat fires.
Dry powder.	Blue.	Extremely effective at putting out almost any fire.
Foam.	Cream.	Used for burning liquids (e.g. oils). Works by smothering the fire.
Carbon Dioxide (CO ₂).	Black.	Used for electrical fires.

Fire blankets are also extremely useful, for small, contained fires such as chip pans and clothing.

Halon fire extinguishers were regarded for many years as the most effective fire suppressants for a wide range of applications. Amendments to the Montreal Protocol of 1987 focused on the manufacture of Halons, however, and their production has now ceased in recognition of their virulent destruction of the ozone layer. As a result, recent years have seen a substantial reappraisal of approaches to fire protection. FM-200, a gaseous agent has emerged as a viable alternative to the Halons on the basis of extensive trials. FM-200 is fast and effective with a low space/weight [characteristic](#) which is also environmentally-acceptable and safe for human exposure. FM-200 is the most widely used Halon replacement.

FM-200 is a colourless, odourless gas containing only carbon, hydrogen and fluorine, thereby lacking the ozone-depleting presence of bromine atoms. Highly penetrative and achieving an homogeneous dispersion in the hazard zone, it acts on fires largely by physical means, lowering the temperature of the flame and fuel to a point at which combustion reactions cannot be sustained. There is no significant obscuration on discharge and this non-corrosive and electrically non-conductive agent causes no damage to sensitive equipment with no post-discharge clean-up required.

FM-200 has a zero ozone-depletion potential and a short atmospheric lifetime. When used in a fire event, FM-200 mitigates the effects of an uncontrolled fire and at the end of the lifetime of the system, the gas can be readily recovered and recycled.

2.4 - Reducing the Risk of Injury.

Fires injure and kill people either because of the heat and flames or because of the smoke produced by the fire which can suffocate people or poison them. Once a fire has started, the main method of reducing the risk of injury and death is to get people away from the fire and out of reach of the smoke.

Since fires can spread very rapidly, it is important that evacuation is carried out quickly. This is why fire exits and fire escape routes should never be blocked. It is also essential that all fire and smoke stop doors are kept closed.

Smoke from a fire can also make it difficult for people to find their way out, and this can be made more difficult if the fire has interrupted the supply of electricity to the lighting system. For this reason, fire escape routes should have emergency lighting and fire exit signs should be illuminated.

2.5 - Key Actions on Fire.

Minimise the risk of fire by:

- Controlling sources of heat.
- Not allowing build up of possible fuels.
- Not allowing heat sources and fuels to come together.

Make sure that you know the following about your workplace:

- What the fire alarm sounds like, the escape routes, and the assembly points.
- The evacuation procedure for any part of a building in which you work.
- Where the fire alarm buttons are, and the location of fire fighting equipment.

Finally:

- Never block fire escape routes or fire exits.
- Never block open fire doors.
- Always leave the workplace immediately the fire alarm sounds.
- Sound the fire alarm as soon as you discover a fire.
- Never try to fight a fire unless you have been trained to do so.
- Never try to fight a fire unless it is safe to do so.

2.6 - Key Management Activities.

The key management arrangements so far as fire safety is concerned are as follows.

- **Ensure knowledge of Working Safely course.**
The people who report to you will need to know all of the IOSH Working Safely course but other people, for example visitors, will need to know only parts of it.
- **Identify the fire prevention arrangements for your area.**
You may have decided on the fire prevention arrangements yourself, or they may have been specified by specialists in fire. In either case, you should know what they are.
- **Check the fire prevention arrangements.**
All fire prevention arrangements should be checked at appropriate intervals and corrective action taken when weaknesses are found.
- **Identify the arrangements for response in the event of a fire.**
As with the arrangements for fire prevention, you may have to decide on response arrangements for yourself, or they may have been decided for you. In either case you should know what they are.
- **Check the arrangements for response in the event of a fire.**
All arrangements for response to fire should be checked at appropriate intervals and corrective action taken when weaknesses are found.

We will now look at each of these key activities in more detail.

2.7 - Ensuring Knowledge.

There are two groups of people who require knowledge of fire safety.

1. The people who report to you.
2. Other people in the area for which you are responsible, for example visitors and contractors.

There are various ways of providing the required information.

- **Verbal briefing or written details.**

In some organisations, people are briefed verbally, while in other organisations they are given a leaflet with written details of the arrangements for fire safety.

- **Reception or host.**

There are also various arrangements for delivering the necessary information with reception staff being responsible in some organisations and the host being responsible in other organisations.

- **No unattended visitors.**

An alternative adopted in some organisations is not to allow visitors to remain unaccompanied. However, this is not usually a practical option for contractors carrying out extensive work.

2.8 - Fire Arrangements.

We will deal with all of the fire arrangements together since the management principles involved are the same. There will normally be two sets of fire arrangements in the area for which you are responsible.

1. **Arrangements to prevent the start and spread of fire.**

These will include workplace precautions for work involving, for example, ignition sources or flammable liquids. They will also include your arrangements for preventing the build up of potential fuels such as waste paper.

2. **Arrangements for response in the event of a fire.**

These will include arrangements for fire alarms and evacuation procedures.

You need to know the details of both types of arrangements since a key management activity is to check that they are in place. A good way of recording the arrangements is to have a checklist of what should be in place since a checklist will also provide a good basis for the inspections you will have to carry out to check that the required arrangements are in place. The results of these inspections will have to be recorded, together with details of any corrective actions taken or required. A suitable checklist can be used to record the necessary details. The preparation and use of checklists are dealt with in the Active Monitoring module.

2.9 - Legislation and Information.

Fire legislation has now been overhauled and the new Regulatory Reform (Fire Safety) Order 2005 has been produced to make fire legislation less difficult to understand.

One of the major changes with the Regulatory Reform (Fire Safety) Order 2005 (which repeals all other fire legislation) is that Fire Certificates have been replaced by Fire Risk Assessments. Under the Order, the responsible person must carry out a fire safety risk assessment and [implement](#) and maintain a fire management plan.

Fire Risk Assessments include details of:

- The fire hazards (identifying sources of ignition, sources of fuel, sources of oxygen and structural features which may spread fire.
- The population who would be at risk (maintenance staff, cleaners, operatives, contractors, public etc.).
- The existing controls (segregation, emergency plans etc.).
- Any additional controls which may be needed if current controls are not sufficient.

Fire risk assessments have to be kept up to date so before you change the layout of your working accommodation, you should check that this will not invalidate the Fire Risk Assessment.

3.0 - Electricity.

The main type of harm from electricity is electric shock caused by the electric current passing through your body.

Electricity passing into and through the body can cause:

- **Convulsions** these are involuntary contractions of muscles caused by the electrical current passing through them.
- **The heart to stop beating (cardiac arrest).**
- **Burns, either internal or external where the current enters or leaves your body.**

Any one of these, or a combination of them, can kill.

The detailed procedures for dealing with a person who has received, or is still receiving, an electric shock are not dealt with on this course. If you do not already know the procedures you should talk to your supervisor. What is important to know now, and to remember, is that you should not touch the victim of an electric shock until you are sure that the electricity has been switched off, or the victim is no longer in contact with a live surface.

In addition to electric shock, electricity can cause harm less directly.

- **When electrical equipment overheats.**
This can result in burns to people who touch it, or it can start a fire which injures people.
- **Short circuits of electrical equipment.**
These too can start fires.
- **Overloading of electrical equipment.**

This can cause it to break up or explode and injure people.

- **Small electric shocks startle people and cause them to have an accident.**

For example, people have fallen from ladders as a result of an electric shock when changing a light bulb.

3.1 - Electric Shock Hazards.

For electricity to pass through the body you have to either:

- **Touch a "live" surface.**
- **Get close enough to a live surface for an arc to form.**
Remember that with high voltages, for example, 25 kV overhead lines, an arc can jump several feet. This makes things like aluminium ladders a high risk near high voltage overhead lines.

The risk control measures for electric shock are, therefore:

- **Make sure that there are no live surfaces.**
- **If you have to have live surfaces make sure no-one touches them.**

3.2 - Work with Live Surfaces.

Certain tasks have to be carried out with live surfaces exposed but these tasks should only be carried out by someone who is competent to carry out the work safely. Unless you are an electrician by trade, or you have received specific training in work with particular live surfaces you should never work on or near live surfaces. This also means that you should not expose live surfaces by, for example, removing the casings from electrical equipment. This should only be done by a person competent in working with live surfaces. ***If a live surface becomes exposed***, for example through damage, or because someone else has removed a casing you should not continue working until you have received guidance from a competent person, and talk to your supervisor or manager if you do not know where to find a competent person.

3.3 - Preventing Live Surfaces.

Many electric shocks occur because surfaces which should not be live become live. Examples of how this can happen include the following:

- **Incorrect wiring.**
- **Damage to cabling or to the equipment itself.**
- **Misuse of electrical equipment.**

You should never misuse electrical equipment and you should report any damage to electrical equipment as soon as you notice it. A number of risk control measures are used to reduce the [likelihood](#) of surfaces staying live. These include fuses and residual current devices (RCDs). Where such risk control

measures are fitted, or are a requirement of a safe system of work, they should always be used, and used in the manner specified. No nails used to replace fuse wire!

3.4 - Overheating Hazards.

Overheating of electrical equipment can occur for a variety of reasons. The risk control measures for overheating of electrical equipment follow naturally from the sorts of causes we have just identified.

They include the following:

- **Where possible, switch off electrical equipment when it is not in use.**
- **Do not use adaptors.**
- **Do not cover electrical equipment which may get hot.**
- **Do not use fuses higher than the recommended rating.**
- **Do not use damaged electrical equipment.**
- **Do not store flammable materials near to any electrical equipment which gets hot, or may get hot.**

3.5 - Checking and Maintenance.

The regular checking and correct maintenance of electrical equipment are important risk control measures for both electric shock hazards and overheating hazards. Everyone should carry out visual checks of electrical equipment and report damage when they find it. Simple examples of the sort of damage you may find include cracked plugs, worn or loose cables and damaged casings. Since these checks take very little time, you can do them daily, or before using a particular piece of equipment after a period of time. Damaged equipment should be reported and not used until it has been repaired by a competent person. Testing and maintenance of electrical equipment should only be carried out by a competent person and there should be a system for ensuring that the tests are carried out at appropriate intervals. You should not use privately owned electrical equipment unless it has been officially accepted for use and entered in the register used to ensure that equipment is properly tested and maintained.

3.6 - Key Management Activities.

The key management activities, so far as electrical safety is concerned, are as follows:

- **Identify all of the electrical equipment for which you are responsible.**
- **Make arrangements which will ensure that all electrical equipment is tested at appropriate intervals.**
- **Ensure that all relevant personnel know the Working Safely material on electrical safety.**
- **Allow work on electrical equipment to be carried out only by competent people.**
- **Check from time to time for damaged electrical equipment.**

We will now look at each of these key activities in more detail.

3.7 - Electrical Equipment.

It is essential that you identify all relevant electrical equipment and relevant equipment covers the following categories.

- | | |
|--|--|
| Electrical equipment for which you are responsible. | <ul style="list-style-type: none">• The items of electrical equipment for which you are responsible will vary depending on what it is that you manage, however, it is unlikely that you will have no electrical equipment. |
| Electrical equipment used by the people for whom you are responsible. | <ul style="list-style-type: none">• Many items of electrical equipment may not be your responsibility but they are used by the people for whom you are responsible. Equipment of this type ranges from photocopiers to abrasive wheels, depending on the types of work done by your staff. |
| "Personal" electrical equipment. | <ul style="list-style-type: none">• This category covers items of electrical equipment people bring to work for personal use. Typical examples include radios, heaters and kettles. |

All electrical equipment used at work should be tested periodically by a competent person, but your responsibility for these tests will vary depending which of the three categories listed above the equipment falls into.

- | | |
|--|--|
| Electrical equipment for which you are responsible. | <ul style="list-style-type: none">• You will have to make arrangements to have this category of equipment tested, either by contracting directly with a competent person or by using in house resources. We will look at what is meant by a competent person in a moment |
| Electrical equipment used by the people for whom you are responsible. | <ul style="list-style-type: none">• You are not responsible for having this equipment tested but you should check that the tests have been carried out. Tested equipment is normally marked with a dated label which makes it easy to find out whether or not it is "in date". |
| "Personal" electrical equipment. | <ul style="list-style-type: none">• Here are two ways of dealing with this category of electrical equipment. Either treat it as equipment for which you are responsible and include it in the test arrangements, or do not allow the equipment into the workplace. It is not acceptable to have untested equipment in the workplace, irrespective of the category into which it falls. |

3.8 - Personal Competence.

So far as people working with electrical equipment, are concerned, the key action is to ensure that they are familiar with the IOSH Working Safely course (or an equivalent course). The Working Safely course covers the basic requirements for working safely with electrical equipment and, since practically

everyone has to work with electrical equipment, knowledge of these requirements is essential for most people.

So far as people involved in the testing, maintenance and repair of electrical equipment (usually referred to as working on electrical equipment) are concerned, the main requirement is to: ensure that only "competent" people work on electrical equipment.

The competence required to work on electrical equipment depends on two main things:

- **The nature of the work to be carried out on the electrical equipment.**

Work required on electrical equipment ranges from routine testing, through simple repair jobs like replacing a fuse, to complex repairs which have to be done with the equipment "live". The level of competence required will, therefore, depend on the task to be carried out. If there is any doubt about whether a person is competent to carry out a particular task you should seek advice before allowing that task to be carried out.

- **The nature of the electrical equipment being worked on.**

Electrical equipment ranges from simple, low voltage items such as battery torches to major pieces of plant operating with high voltages. The more complex the equipment, and the higher the voltages, the more competence is required to work safely on them. Again, if there is any doubt about a person's competence for a task you should seek advice before allowing the task to be undertaken.

3.9 - Damaged Equipment.

Visual checks of electrical equipment are straightforward and they can identify a number of different types of problem. These include physical damage to casings, cables which are damaged or not secured in a plug, scorch marks which may indicate overheating, and sparks or arcs which may be the sign of some fault. You should carry out such visual checks on a continuous basis as you go about your normal work and on a periodic basis as part of your active monitoring. Any damaged item of electrical equipment should be removed from use until such time as it has been repaired and passed safe for use by a competent person. When damaged electrical equipment is reported to you, you should deal with it in the same way as you should if you identify the damage yourself. You should also be checking for non-visual signs of damage, including the following.

- **Overheating.**

Overheating of electrical equipment can be detected by touch, or by smell if the overheating is resulting in "scorching".

- **Sparking or arcing.**

These are usually detected visually but they can sometimes be detected by the [characteristic](#) sounds they make.

3.10 - Legislation and Information.

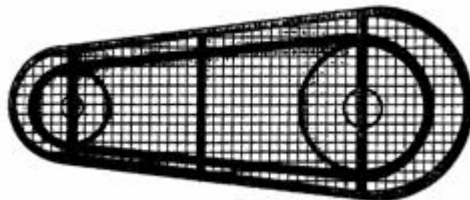
The main legislation on electricity so far as we are concerned is: The Electricity at Work Regulations, 1989. These regulations are very detailed and highly technical in nature and they cover both the electrical equipment itself and work with and on electrical equipment. However, you do not normally need to know the details of the legislation unless your work is primarily concerned with electrical equipment. There are various sources of information on the safe use of electricity at work including the following [HSE](#) publication: Electricity at Work. New edition, 2003, ISBN 0 7176 2164 2.

4.0 - Work Equipment Hazards.

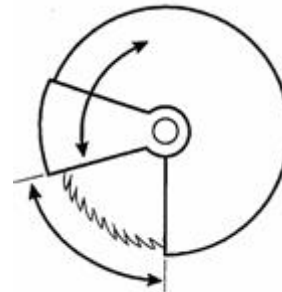
Work equipment comes in all shapes and sizes and varies from simple tools to complex machinery. However, even simple equipment can be a high risk. One of the most common injuries is severe cuts sustained while using knives such as "Stanley knives"- and a "Stanley knife" is quite a simple item of work equipment. However simple or complicated the work equipment, there will be safe ways to use it and unsafe ways to use it. The safe ways of using work equipment, especially machines, are often referred to as "safe systems of work" for that equipment or machine. Before using any work equipment make sure you know the safe ways to use it. Usually this will involve asking your supervisor or other competent person before first using the equipment. Once you know the safe ways to use the equipment, always use it in these safe ways.

4.1 - Machinery Guards.

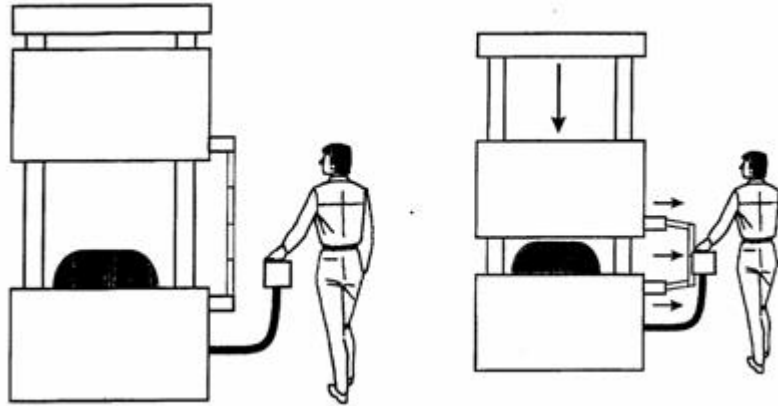
Guards on machinery are a common type of workplace precaution. The guards can be straightforward fixed guards, like the grill on an office fan, or the guard on the blade of a guillotine. However, there are also highly sophisticated guards which interlock with the machine's power supply. When these guards are interfered with, or removed, they automatically cut off the power supply to the machine. Typical guards are illustrated in the diagrams below.



Fixed



Adjustable



Automatic

The problem with guards is that they all have one or more weak points (remember the door in the tiger's cage). People do try to find these weak points and use them to their own advantage, for example they may be able to work faster if the guard is not working. Defeating guards in this way is bad practice, it is not working safely, and it is also illegal. We will see why it is illegal later. If you find that machinery guards make the work difficult, talk to your supervisor and try to get the design changed.

4.2 - Key Activities for Machinery.

In order to work safely with machines you have to:

- Find out what the safe system of work is for that machine.
- Make sure you are competent in the safe system of work.
- Follow the safe system of work at all times.

It is also essential to find out how to stop the machine in the event of an emergency. So far as machinery guarding is concerned, you have to find out whether the machine should be fitted with a guard. If a machine should have a guard then you should never operate the machine without the guard in place, and never try to defeat the guard.

4.3 - Key Management Activities.

The key management activities, so far as all work equipment is concerned, are as follows.

- Select appropriate workplace precautions. The various sorts of workplace precautions, and how they should be selected, are dealt with in the Risk Assessment and Risk Control module.
- Train work equipment users in the relevant workplace precautions.
- Devise and maintain appropriate RCSs.

The various sorts of RCSs, and how they should be maintained, are dealt with in the Risk Assessment and Risk Control module.

When you are responsible for machinery, you will have additional key activities as follows.

- Identify the need for machine guards or other types of workplace precaution.
- Ensure the required guards etc. are fitted and maintained.
- Check that the guards etc. are used in the proper manner.

We will now look at these machine requirements in detail.

4.4 - The Need for Guards.

Machine guards may be required to protect people from one or more of the following types of machinery hazard.

A useful mnemonic for machine hazards is **ENTICE**:

- **E**ntanglement.
Injuries resulting from the entanglement of e.g. hair, rings, items of clothing in moving (particularly rotating) parts of machinery.
- **N**ips.
Shearing or crushing injuries can occur when a part of the body is drawn into an in-running **nip**, such as a V-belt and pulley or chain and sprocket. **Nips** are also formed between counter-rotating drums or rollers, between material wound onto a drum or by material passing over roller conveyors.
- **T**raps.
The body or limb(s) become trapped between closing or passing motions of the machine. In some cases the trap occurs when the limb(s) are drawn into a closing motion, for example in-running nips.
- **I**mpact.
Injuries can result from being struck by moving parts of the machine.
- **C**ontact.
Injuries can result from contact of the machine operator with sharp or abrasive surfaces. Alternatively, contact with hot or electrically live components can cause injury.
- **E**jection.
Injuries can result from elements of the workpiece or components of machinery being thrown out during the operation of the machine, for example sparks, swarf, chips, molten metal and broken components.

4.5 - The hazards presented by a range of equipment.

The following chart is a summary of the main hazards associated with various workplace equipment.

EQUIPMENT.

MAIN HAZARDS.

Abrasive wheels.	Friction/abrasion, ejection, entanglement.
Cement mixer.	Entanglement, traps.
Circular saw.	Cutting/severing.
Compactor.	Drawing-in.
Conveyor systems.	Entanglement nips/traps.
Cylinder mower.	Entanglement, ejection, sharps.
Drill.	Puncture, entanglement.
Guillotine.	Shearing.
Lathes.	Entanglement, ejection.
Paper shredder.	Entanglement, cutting.
Photocopier.	Electrical, burns, nips, entanglement.
Portable power tools.	Depends upon the power tool and its power source.
Presses.	Crushing, shearing.
Simple robots.	Impact/crushing.
Strimmer.	Ejection, entanglement.

4.6 - Selecting Guards.

Details of the requirements for most types of machinery guarding are to be found in "**Safety of Machinery**", BSEN 292-1, 1991 and BSEN 292-2, 1991. The main types of guarding for machinery are outlined below, and again an pneumatic may be helpful in remembering them - FIATPAD.

- **Fixed Guards.**

Fixed guards are robust sheets of material, usually metal or some form of rigid plastic (such as perspex) which are permanently fixed in place around the dangerous part of a machine. If these sheets or panels have any holes in them, then they must be mounted far enough away from the

dangerous parts to prevent anyone from reaching a finger, hand or arm through the hole and being able to reach the dangerous part.

- **Interlock Guards.**

Interlock guards are devices which are used when access to the machinery is required sufficiently often to cast doubts on whether it is reasonable to expect the operator, or maintenance engineer, to keep undoing and replacing the nuts and bolts of a fixed guard, every time they require access. An interlock guard is a panel which allows access to the dangerous parts of a machine, but which has a device attached to it which stops the machine from working immediately when it is removed or opened. Since there is a well documented history of operators defeating interlock switches by inserting objects, such as matches and chewing gum, into the devices, you must have a regular and rigorous regime of inspections which check that all interlocks are correctly adjusted and operate properly.

- **Adjustable Guards.**

These are generally a series of sliding panels which are fitted to machines where the dangerous part, such as a drill bit, may vary in location. They can be effective but they do require a great deal of management since the operator has to adjust the guard as well as the machine tool.

- **Trip Guards/Devices.**

Trip devices are damage limitation devices used where the nature of the work and of the machinery involved precludes the use of proper guarding. Typically a trip device is a telescopic probe located near the drill bit of a radial arm drill, for example. The telescopic trip should be adjusted every time the machine is used, so as to ensure that if the operator were to become entangled on the drill bit, he would hit the trip device as the drill dragged him round. The trip device must cause the machine on which it is mounted to stop **immediately**. It must therefore be checked regularly. Trip bars and trip wires are similar items which are positioned around machinery, and which, if pressed or struck, will stop the machine to which they are connected. Light guards, which stop a machine when a light beam is broken, and pressure mats which stop a machine when they are trodden on, serve similar functions. Where guarding is impracticable, the use of two-handed controls offers a means of protecting the operators' hands. When designing and installing two handed controls the following criteria must be met.

- **Controls cannot be spanned.**

- The controls should be located and separated from each other such that it is not possible to span both controls, for example, with one hand, or with one hand and another part of the body.

- **Time limit between controls.**

- It should not be possible to start the machine unless both buttons are pressed almost simultaneously.

- **Stop if either control inoperative.**

- The continued movement or operation of any dangerous parts of the machine must depend on continued pressure being applied to both controls.

- **Return controls to original position.**

It should not be possible to initiate a subsequent cycle of the machine unless both controls have been returned to their original positions. This is to prevent one control being locked in the start position.

- **Pressure sensitive mat / Photo-electric trip device.**

Pressure sensitive mats are a device that operates by means of a number of suitably spaced electrical or fluid switches / valves contained within a mat connected to a control unit and covers the approach to a danger area set up around the machine. If someone were to approach the danger area then the device would be triggered and in turn a signal sent to the machine to stop the machine from operating.

Photo electric trip device provides a curtain of light which can be arranged in either a horizontal or vertical position around the dangerous (moving parts). If the light is disrupted while the machine is in operation then the signal to the machine stops and renders the machine itself to stop operating.

- **Automatic Guards.**

This guard is closes automatically when the machine cycle is initiated and is arranged so that the, machine will not move until the guard id in the safe position.

- **Distance Guard.**

Is simply a barrier sited at an appropriate distance from the danger. The degree of risk being faced will determine whether a fixed rail or fence is necessary.

4.7 - Legislation.

The main legislation on work equipment is the - [Provision](#) and Use of Work Equipment Regulations, 1998 ([PUWER](#)). Work equipment is defined as any machinery, appliance, apparatus or tool and any assembly of components which are arranged and controlled to function as a whole. The definition is wide-ranging and includes an air compressor, lawn-mower, computer, crane, road tanker, tractor, dumper truck, lift truck, vehicle hoist, overhead projector, ladder, laboratory apparatus, microbiological safety cabinet, portable drill, scalpel, hammer, power press, lathe, photocopier, soldering iron, scaffolding, robot line, [LPG](#) filling plant, solvent degreasing bath etc. Work equipment does not include livestock, substances, structural items or private cars.

We will now look at **PUWER** in more detail.

4.7.1 - PUWER: The Provision and Use of Work Equipment Regulations.

The [Provision](#) and Use of Work Equipment Regulations are very detailed and highly technical on certain aspects of machinery safety. However, the notes which follow give key points from [PUWER](#) which apply generally.

- **Work equipment must be suitable for the purpose for which it will be used.** This applies not only to complex machinery but also to simple items of work equipment such as hand tools and stepladders.

- **Work equipment must be maintained in a safe condition.**This will require suitable [RCSs](#) to check on the condition of work equipment and to take corrective action when defects are found.
- **Users must be given information, instruction and training as appropriate.**What is appropriate will depend on the risks associated with the work equipment and the level of competence required to keep these risks at an acceptable level.
- **Machinery must be adequately guarded.**We have already looked at the hazards which might make a guard necessary, and the sorts of guards which might be used.
- **There must be adequate stop, and emergency stop, controls.**Stop controls must bring the work equipment to a safe condition and in a safe manner and, where necessary for health and safety, they must bring the equipment to a complete stop. Emergency stop controls must be provided where necessary.
- **Controls and their functions must be easily identifiable.**The aim here is to ensure that the wrong controls are not used by mistake since this could put people at risk.
- **Machines must be capable of being isolated from their power source.**This may be as simple as being able to unplug an electrical kettle, but high voltage equipment, for example, will require special arrangements for isolation.
- **Machines must be stable in use.**Machines have been known to fall over and hurt people!
- **The lighting provided must be adequate for the task being carried out.**This is particularly important, for example, with fine work using high speed drills where accurate positioning of the bit and guard are essential.
- **Equipment must be capable of being maintained safely.**Many accidents occur during machine maintenance and particular thought has to be given to ways of reducing the risks encountered during maintenance work.
- **There should be markings and warnings as appropriate.**Hazardous parts of work equipment should be marked as such, especially when the hazard is not obvious.

Note that there are special requirements for lifting equipment and these are set out in the **Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)**.

5.0 - Movement of People.

The most common hazards from the movement of people arise from falls as a result of slips and trips.

These falls are usually divided into two categories:

- Falls on the level; and
- Falls from a height.

The latter are potentially much more serious. Another potentially serious hazard involving the movement of people is entry into confined spaces and we will also look at this subject. However, we will first look at the workplace precautions for falls on the level and falls from a height.

5.1 - Falls on the Level.

The main workplace precautions for avoiding falls on the level include the following:

- ***Walk on designated walking routes where these are available.***
It is often tempting to take a short cut, but these rarely have adequate surfaces.
- ***Always wear appropriate footwear at work.***
It is not only high heels which create a risk, shoes with smooth soles can also create risks .
- ***Avoid walking on uneven surfaces, even if this means going a longer way round.***
- ***Avoid areas where there are, or might have been, spillages.***
This is particularly important if the spillages might be of materials which would cause you to slip. Oils are obvious examples of this type of material but small particles, especially if they are smooth, can be equally risky.
- ***Avoid poorly lit areas.***
It is more difficult to see any tripping or slipping hazards if the lighting is poor.

If you find any slipping or tripping hazards, deal with them in the same way as for any other hazard.

5.1.1 - Falls on the Level.

The general workplace precautions for preventing slips and trips which could result in falls on the level are in the "good housekeeping" category of workplace precautions and include the following:

- ***Ensure that walkways are level.***
For example, no damaged carpets in offices, no pot holes in the car park, and no unexpected changes in level anywhere.
- ***Ensure walkways are non-slip.***

This is particularly important for walkways which are likely to get wet, ice up, or be contaminated with other materials likely to make them slippery.

- **Ensure that any obstructions which are likely to constitute a tripping hazard are kept out of walkways or removed promptly.**
- **Ensure that walkways are adequately lit.**
The lighting should be such that people can see any slipping or tripping hazards. Note, however, that some slipping hazards are invisible even in good light, for example black ice and clear oils, and special precautions must be taken for these.
- **Where necessary, walkways should be clearly marked and the use of these walkways enforced.**

Where it is not reasonably [practicable](#) to remove all slipping hazards, appropriate footwear should be supplied and measures taken to ensure that it is worn.

5.2 - Falls from a Height.

The best way of reducing the risk for falls from height is to **avoid having to work at a height in the first place**. If you have to work at a height, you should take a few moments to carry out a risk assessment. **Ask yourself if there is a risk associated with what you intend to do**. Where necessary, use the following workplace precautions.

- **Use appropriate access equipment.**
Swivel chairs are never appropriate access equipment! What is appropriate will depend on the task but could be anything from a library step to a large scaffold.
- **If necessary, get training in the use of the access equipment.**
Most people think they know how to use ladders safely, but few untrained people do.
- **If the risk is too great, leave the job and report it to your supervisor.**



5.2.1 - Falls from a Height.

Falling from a height is a potentially very serious incident and, in recognition of this, there is legislation which applies (a brief guide to the Work at Height Regulations 2005 can be viewed by clicking on the following [Link](#)). Where a fall is possible, workplace precautions should be implemented according to the following hierarchy.

providing instruction in the safe use of ladders, or specifying that the job may only be carried out under [supervision](#).

- **Remove the need for the task.**
Do not, for example, store materials at a level which requires people to use stepladders or chairs to reach them.
- **Provide permanent means of access with suitable handrails.**
This would be appropriate where, for example, there is storage at a height.
- **Provide appropriate means of temporary access.**
Where the [provision](#) of fixed means of access is not reasonably [practicable](#), temporary access should be provided, for example, library ladders or stepladders.
- When temporary access has to be provided, this should be backed up with the following arrangements.
- **A safe system of work and information and training for the people who have to use this safe system.**
An appropriate safe system of work will depend on the circumstances but it may be as simple as providing instruction in the safe use of ladders, or specifying that the job may only be carried out under [supervision](#).
- **Appropriate means of ensuring that the safe system is followed.**
This will normally involve adequate supervision and, where appropriate, active monitoring.

5.3 - Confined Spaces.

You should never enter a confined space if you are working alone since it may contain gases which will suffocate or poison you. People think that they will be able to detect the symptoms of these gases in time to get out safely but this is not always possible and people are killed every year in confined spaces. If entry into a confined space is required, a full risk assessment should be carried out by a competent person before anyone is allowed to enter. The risk assessment should include the following:

- **Measurement of the atmosphere in the confined space.**
Check for sufficient oxygen and for levels of any toxic, asphyxiating, flammable or explosive gases.

- **Design of a safe system of work.**
This will almost always include a written permit to work.
- **The need for [PPE](#).**
- **Any rescue measures which should be in place before anyone enters.**
No-one should enter the confined space until the risk assessment has been completed and all the necessary workplace precautions are in place.



5.4 - Key Management Activities.

The key management activities, so far as movement of people is concerned, are as follows:

- **Ensure that all of the people for whom you are responsible know 'Working Safely'.**
Where there are specific hazards in the area for which you are responsible, you will need to make special arrangements for visitors and contractors.
- **Reduce the risks associated with falls on the level.**
There are a number of actions you should take to deal with this aspect of risk reduction and we will look at them in a moment.
- **Reduce the risks associated with falls from a height.**
As with falls on the level, there are a number of actions you should take to deal with this aspect of risk reduction and we will look at these too in a moment.
- **Eliminate or reduce the risks associated with entry into confined spaces.**
You should identify all of the confined spaces in your area of responsibility or which your staff may have to enter. Workplace precautions and [RCSs](#) which keep the risk of these entries to an acceptable level will be required.

You may also have to make arrangements for special workplace precautions and RCSs if certain other risks are present and we will look at these risks later in the session.

5.5 - Special Requirements.

It is known that movement in certain areas is particularly hazardous and, in recognition of this, there is special legislation or special requirements for workplace precautions covering these areas. You will need to find out about these special requirements if the work you control involves any of the following.

- **Work over water.**
Where there is a risk of drowning, special rescue arrangements have to be in place.
- **Where head injury is likely.**
This may arise either from falling objects or as a result of a person banging their head against something. Where head injury is likely, there are requirements for head protection such as hard hats or bump caps.
- **Work in atmospheres which differ in atmospheric pressure.**
There are special requirements when people have to, for example, carry out tunnelling operations or diving operations.
- **Condition of floors and traffic routes.**
All floors and traffic routes should be suitable for their purpose and, in particular, there should be no holes or slopes which present a risk, and the surfaces should not be uneven or slippery.
- **Lighting.**
"Every workplace shall have suitable and sufficient lighting" which, so far as is [practicable](#) should be natural light. Where failure of artificial lighting could result in high risks, emergency lighting shall be provided.

5.6 - Legislation and Information.

The main items of legislation dealing with movement of people are as follows:

- ***The Health and Safety at Work etc. Act, 1974.***
- ***The Workplace (Health, Safety and Welfare) Regulations, 1992.***

The first of these items of legislation is dealt with in the Health and Safety Legislation module. The latter Regulations cover the following movement of people issues.

Sources of information on movement of people include the following:

- Slips and trips: guidance for employers on identifying hazards and controlling risks (HSG155), 1996, ISBN 0 7176 1145 0.
- Lighting at work (HSG38), 1997, ISBN 0 7176 1232 5.
- Health and safety in roof work (HSG33), 1998, ISBN 0 7176 1425 5.

6.0 - Vehicle Hazards.

Sources of hazards associated with vehicles can be put into four main categories.

- ***Moving vehicles as a source of harm to you.***
- ***You causing injury or damage while driving a vehicle.***
- ***Loading or unloading vehicles resulting in injury to you or others.***
- ***Refuelling or recharging of vehicles leading to injury or fire.***

We will now look at each of these in turn.

6.1 - Moving Vehicles.

Many people each year are knocked down, crushed or injured in other ways by moving vehicles.

The ways in which most transport-related accidents result in people being injured include:

- Being hit or run over by moving vehicles
- Being struck by objects falling from vehicles
- Falling from vehicles while loading
- Falling from vehicles while unloading
- Vehicles overturning

The key workplace precautions for moving vehicles include the following:

- **Do not walk or stand in areas or roadways designated for vehicle use.**
This should be obvious, but people still do it!
- **Use pedestrian routes when these are available.**
Often pedestrian routes force people to "go the long way round" for example over a footbridge rather than across the road. This should not be used as an excuse for taking high risk short cuts.
- **Treat vehicles using on-site roadways as you would vehicles on the public highway.**
The risks are similar!
- **Do not ride in or on a vehicle unless it is fitted with passenger accommodation.**
And only then if you can occupy the passenger accommodation.

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

- **Minimise the need for vehicles to reverse.**
- **Have someone watch the vehicle back.**
- **Never stand behind a vehicle when it is reversing.**

6.2 - Driving Vehicles.

Many people assume that because they are competent to drive a car they are also competent to drive other vehicles.

- It is not true that car drivers are automatically competent to drive other vehicles.

Never drive any vehicle unless you have been trained to drive it or have achieved competence in other ways. Remember, it may seem to have the same controls as a car and start up and drive like a car but you will only find out it is not a car when it is too late. There are also specific requirements for particular types of vehicle with, for example, different types of vehicle each having its own list of safety checks. You need to know what these checks are if you are to drive it safely. Certain vehicles also have specific risks associated with them and you should know what these risks are before driving. For example, fork lift trucks have a range of specific risks, including the risk of overturning.

6.3 - Loading and Unloading.

In addition to the possible harm from moving vehicles during loading and unloading, there is also the possibility of a fall if you have to work on a vehicle or from a loading bay.

Key workplace precautions in these circumstances are as follows:

- **Fall prevention equipment.**
Fall prevention measures, such as barriers, which reduce the [likelihood](#) of falling from a height to near zero should be in place for all loading and unloading operations where there is a risk of such a fall.
- **Fall arrest equipment.**
In exceptional circumstances it may be necessary to work without barriers but in these cases you should only work if you are wearing fall arrest equipment or there is some other protective equipment to stop you being hurt if you do fall, for example safety nets. Note that this type of equipment may also be necessary in other circumstances where a fall from a height is possible.

There is also the possibility of back injury if you have to load or unload manually but we will look at the workplace precautions for this when we deal with manual handling. Remember also that the loads may themselves be harmful. This may be an obvious hazard, like the effect of rough packaging on the hands, or it may be a less obvious hazard arising from, for example, the fact that the load contains chemicals.

- Always know what you are unloading and the types of harm, if any, it may cause.
- Use appropriate workplace precautions for any hazards associated with the load.

6.4 - Refuelling and Recharging.

Most work vehicles use a liquid fuel (petrol or diesel), Liquefied Petroleum Gas ([LPG](#)) or are powered by batteries. Petrol, diesel and LPG are flammable. During recharging, batteries give off highly flammable hydrogen gas.

Essential workplace precautions are, therefore:

- Ensure good ventilation; and
- Never use sources of heat near to refuelling or recharging points.

Special precautions are required for refuelling and recharging. You should not take part in these activities unless you have been trained or are being supervised by a competent person. Just because you fill your own car with petrol and recharge your own lawn mower, do not assume that this domestic experience means you can carry out similar activities with work vehicles. There are stricter rules which apply in the workplace.

6.5 - Key Management Activities.

The key management activities, so far as vehicles are concerned, follow from the topics raised in the Working Safely material.

Primarily, the key management activities involve providing appropriate workplace precautions and [RCSs](#) for the following:

- **Moving vehicles which might injure people.**
You may not have responsibility for vehicles yourself, or have vehicles in the area for which you are responsible, but you should check whether the people for whom you are responsible have to go into areas where they may be at risk from moving vehicles. If this is the case, you should ensure that they have the information and training necessary to avoid risks to themselves and others.
- **Ensuring that those who drive vehicles are competent to do so.**
The required competences depend on the vehicles being driven but there should always be written evidence of the required competences, for example, a current driving licence or an in date training certificate for fork lift truck driving.
- **The loading and unloading of vehicles.**
Where your responsibilities include the loading or unloading of vehicles, you should read appropriate guidance on how these tasks can be carried out safely, one source of guidance is given below.
- **The refuelling and recharging of vehicles.**
Where your responsibilities include the refuelling or recharging of vehicles, you should read appropriate guidance on how these tasks can be carried out safely.

Guidance on vehicle safety is given in the following [HSE](#) publications Workplace transport safety (HSG136), 1995, ISBN 0 7176 0935 9 Safety in working with lift trucks (HSG6), 2000, ISBN 0 7176 1781 5.

7.0 - Poor Housekeeping.

Poor housekeeping results in untidy, overcrowded and obstructed workplaces, and workplaces which are unhygienic or dirty. Poor housekeeping creates hazards for yourself and for other people and the results of poor housekeeping are a causal factor in many incidents.

7.1 - Key Actions - Housekeeping.

Do not create hazards for other people by working in ways which result in a workplace which is untidy, overcrowded or obstructed.

This is particularly important where:

- Slipping or tripping hazards could result in someone falling from a height.
- Fire exit routes or fire doors become obstructed.

Similarly, do not create hazards for other people by working in ways which result in an unhygienic or dirty workplace.

This is particularly important where:

- There is a risk of infection.
- Chemicals are being used which are harmful to health.

We will be looking later at the hazards associated with chemicals and substances. Finally, report poor housekeeping whenever you find it, especially if you have not been able to do anything about removing the hazard.

7.1.1 - Housekeeping and hazards at home (Game).

<http://www.sheilds-elearning.co.uk/file.php/71/images/kitchen.swf>

7.2 - Key Management Activities.

The key management activities, so far as housekeeping is concerned, are as follows:

- **Identify the housekeeping requirements.**
It is essential that you identify what is required to keep the area for which you are responsible clean, tidy and hygienic.
- **Allocate responsibility for identified housekeeping requirements.**

Many of the problems with poor housekeeping arise because everyone thinks that keeping the workplace clean, tidy and hygienic is someone else's job.

- **Provide any resources necessary for good housekeeping.**
This may be relatively simple, for example providing an adequate number of waste storage containers. However, certain housekeeping problems such as dealing with fine dusts may require extensive thought and complex equipment.
- **Provide any competences necessary for good housekeeping.**
People must be able to use properly any of the workplace precautions necessary to deal with housekeeping, for example, people may have to be trained to use [LEV](#) properly.
- **Check at appropriate intervals that housekeeping standards are being maintained.**
This should form part of your normal active monitoring and it is dealt with in the Active Monitoring module.

7.3 - Legislation.

The main item of legislation dealing with housekeeping is - the Workplace (Health, Safety and Welfare) Regulations 1992. These Regulations deal with a number of issues including the following housekeeping issues.

- **Cleanliness and waste materials.**
The main points are that workplaces should be kept "sufficiently clean" and that "so far as is reasonably [practicable](#), waste materials shall not be allowed to accumulate in a workplace except in suitable receptacles".

7.4 - Manual Handling.

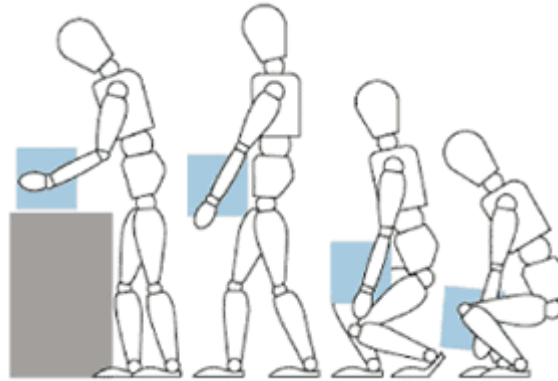
<http://www.sheilds-elearning.co.uk/file.php/71/images/ManualHandling.swf>

8.0 - Hazards from Manual Handling.

The main type of harm from manual handling is back injury, although it can also result in sprains and strains of other parts of the body. Falling or shifting loads, or loads while they are being moved, can also produce cuts and crush injuries. We will concentrate on back injuries because this is the main harm associated with manual handling. Manual handling covers a number of activities, including the following.

- Lifting and lowering.
- Carrying.
- Pushing and pulling.

However, we will deal with all of these manual handling activities as a single topic.



Proper Lifting Techniques

8.1 - Factors Affecting Risk.

The following factors affect the risk of back and other injuries from manual handling:

- **The weight of the load.**
In general, the heavier the load, the higher the risk of back injury from manual handling of that load.
- **The size and shape of the load.**
Loads which are small and easy to grasp are, in general, less of a risk than large, awkwardly shaped loads.
- **Your posture during manual handling.**
If you have to carry out manual handling while in an awkward posture, or while seated, the risks of back injury are greater.
- **The distance you have to lift the load.**
The higher, lower, or wider you have to reach to pick up or put down the load, the higher the risk.
- **The nature of the manual handling movement.**
If you have to twist your body, or reach over, during manual handling, the risk of injury is higher.
- **The frequency of the manual handling movement.**
Having to carry out a manual handling operation more than 30 times per hour increases the risk of injury.
- **The working environment.**

Anything which makes the manual handling more difficult increases the risk of back, or other, injuries. For example, uneven floors or having to carry loads from one level to another.

- **The capability of the person.**
People differ in physical strength and such things as height and reach.

8.2 - Manual Handling Key Activities.

The most important activity so far as manual handling is concerned is to take the time to carry out a risk assessment before embarking on the manual handling task. This risk assessment should take into account all of the factors we have just discussed which are relevant to the task you intend to carry out. In particular, do not move heavy or awkward loads unless:

- Mechanical handling aids can be used; or
- You have assistance from another person; and
- You are trained in manual handling techniques.

Finally, report to your supervisor any manual handling tasks where it is not possible to meet these requirements.

8.3 - Key Management Activities.

The key management activities, so far as manual handling is concerned, are as follows:

- Identify all tasks which involve, or might involve, manual handling.
- Assess whether there is a risk of injury from the manual handling operation.
- If there is a risk, decide whether the risk can be removed completely by eliminating the manual handling operation.
- If the risk cannot be removed completely, carry out a more detailed assessment of the nature and magnitude of the risk.
- If necessary, [implement](#) appropriate workplace precautions.
- Monitor workplace precautions to check that they continue to be used. This should be done as part of your normal active monitoring and the requirements are dealt with in the Active Monitoring module.

We will now look at each of these activities in turn, with the exception of monitoring.

8.3.1 - Identifying Tasks.

All tasks involving manual handling operations have to be identified, including tasks which take place away from the normal place of work, for example, deliveries. Where such information is not already available, this can involve a significant effort on your part. However, if risk assessments are being carried out which properly satisfy the requirements for general risk assessment then tasks which involve manual handling risks should already have been identified.

When carrying out manual handling task identification, you should consider "peripheral" tasks including the following:

- Delivery of components, raw materials etc. to the place of work and removal of finished items and waste materials.
- Manual handling requirements in the event of an emergency or a breakdown.
- Manual handling requirements for cleaning and maintenance.

8.3.2 - Assessing Risk of Injury.

A large number of manual handling operations involve little or no risk of injury and the risk assessment requirements for these tasks are met as part of the requirements of general risk assessment. In effect, manual handling operations which are assessed during general risk assessments as having little or no risk require no further action.

Where there is a risk of injury, your next step should be to consider whether the need for manual handling can be removed.

The need for manual handling can be removed in a number of ways, including the following:

- **Altering systems of work.**
Some manual handling is made necessary because loads have to be moved several times before they reach their destination or because loads are put at floor level and then have to be lifted onto the work surface. Altering systems of work can eliminate the need for these types of manual handling operations.
- **Using mechanical handling.**
There is a wide range of mechanical handling aids which can be used to eliminate the need for manual handling, for example, hoists, wheeled trolleys and wagons, and roller conveyors.

8.3.3 - Detailed Risk Assessment.



Where there is a risk of injury and it is not reasonably [practicable](#) to eliminate the manual handling operation completely, you should carry out a more detailed risk assessment and suggest workplace precautions which reduce the risk to an acceptable level. When carrying out these detailed risk assessments you should consider each of the four factors listed below:

- **Task:** Certain aspects of manual handling tasks, for example, having to twist your body while lifting, increase the risk of an injury.
- **Individual:** Some people are more at risk from manual handling operations than others, for example, people with existing back injuries or pregnant women.

- **Load:** The risk of an injury increases as the weight and awkwardness of the load increase.
- **Environment:** A poor working environment, for example poor lighting or uneven floors, increases the risk of injury during manual handling operations.

This can easily be remembered by using the acronym T.I.L.E

There is a wide range of workplace precautions available for manual handling operations and we will look at these now. We will deal with each of the four topics listed above, starting with the task.

8.3.4 - The Task.

Changing the layout of a task, or the way a task has to be carried out, can reduce the risk in a number of ways. The scope for changes to the task, and how these changes might be made, will vary from task to task but some suggestions for possible changes are given below.

- **Reorganise the layout of the workplace.**
For example, to reduce carrying distances or the distances through which loads have to be lifted or lowered.
- **Change the task design.**
This can eliminate or reduce the need for twisting, stooping and stretching.
- **Make it possible to work with loads near the body.**
This is especially important during lifting and carrying.
- **Ensure that required effort is supplied by the leg muscles.**
Leg muscles are stronger than back or arm muscles and good lifting technique, using the leg muscles, can be taught.
- **Reduce or eliminate the need for awkward postures.**
This can be done by, for example, reorganising the layout of work benches.
- **Reduce frequency of repetitive tasks.**
Where repetitive manual handling operations are required, reduce the frequency, allow sufficient, operator selected rest breaks, allow self pacing of the task, and consider job rotation so that one person is not subject to too much strain.
- **Avoid lifting from floor while seated.**
Where handling while seated is unavoidable, eliminate lifting from the floor while seated and ensure that the seat is at the best height and distance from the work bench for the task involved.
- **Consider team handling.**

This is particularly important where loads are heavy, bulky or otherwise difficult to move single handed.

8.3.5 - The Load.

Manual handling risks may arise from a number of factors associated with the load.

- **Making the load lighter or smaller.**
Certain materials can be repackaged so that they are in lighter, smaller units. This type of risk reduction [measure](#) is used when loads exceed guidelines for weight limits or their size causes problems during handling. Other methods of reducing weight include substituting materials, for example light alloys for steel, and taking weight out of metal containers by drilling holes in them.
- **Making the load easier to grasp.**
Where the load is difficult to grasp, handles or grips can be fitted, or the load can be made with indentations to help lifting and carrying. If the load itself cannot be modified, it can be put in, or on, a container or tray fitted with appropriate handles. Care should be taken in placing handles and grips so that they produce the maximum reduction in risk.
- **Making the load more stable.**
Where loads might be unstable, risk reduction measures such as repacking in rigid containers should be used.
- **Making the load less damaging to grasp.**
The nature of the load can contribute to risk by, for example, having sharp edges or corners, or by being extremely hot or cold. Where direct action cannot be taken to reduce these risks by altering the load itself, suitable covering of the load should be used. Where even this is not possible, adequate [PPE](#) should be provided and used.

8.3.6 - The Working Environment.

A number of factors in the working environment can contribute to manual handling risks and, in general, the relevant risk reduction measures are straightforward. The main factors are as follows.

- **Ensuring sufficient space.**
Ensure that there is sufficient space for the manual handling operation, including sufficient headroom, otherwise operators may be forced to adopt inappropriate postures.
- **Improve floors and platforms.**
Floors and platforms should be stable and free from slipping and tripping hazards. Where working on unsuitable surfaces is unavoidable, it may be necessary to reduce significantly the weight guidelines for loads being handled.

- **Minimise changes between levels.**
Manual handling operations should ideally be carried out on one level but where changes of level are unavoidable, they should be via gentle slopes or adequate steps. Manual handling on steep slopes should be avoided. Where a number of benches or work surfaces are used in a task, they should all be at the same height.
- **Improve heating, lighting and ventilation.**
Where manual handling is being undertaken in poor environments, the environment should be improved or the work relocated.

8.3.7 - People.

Where a task requires a person with an unusual capacity, for example, above average height or strength, effective arrangements should be put in place to ensure that the task is undertaken only by those with the required capacity. Tasks may also be a risk to people with a pre-existing medical condition such as back trouble or hernia, or to women who are pregnant. Where this is the case, there must be effective arrangements to ensure that these people are not put at risk. It is frequently the case that manual handling operations can only be undertaken with an acceptable degree of risk by people with appropriate information or training. The Working Safely material will help with the information [provision](#) but the [HSE](#) suggests the following as an outline of the contents of a safe manual handling training course.

- **How hazardous handling operations can be recognised.**
- **How to deal with unfamiliar handling operations.**
- **The proper use of handling aids.**
- **The proper use of [PPE](#).**
- **Features of the workplace environment that contribute to safety.**
- **The importance of good housekeeping.**
- **The factors affecting individual capability.**
- **Good handling technique.**

8.4 - Legislation.

The main legislation on manual handling is the Manual Handling Operations Regulations, 1992.

This legislation requires employers to do the following:

- Avoid hazardous manual handling operations so far as is reasonably [practicable](#).
- Carry out a risk assessment on any hazardous manual handling operation which cannot be avoided.
- Reduce the risk of injury from manual handling operations so far as is reasonably practicable.
- Provide employees with information on, for example, the weight and the heaviest side of loads.

The legislation also places a [duty](#) on employees as follows:

"Each employee while at work shall make full and proper use of any system of work provided for his use by his employer in compliance with regulation 4(1)(b) part (ii) of these Regulations."

8.5 - Sources of Information.

The [HSE](#) has produced a number of documents giving advice and guidance on implementing the Manual Handling Operations Regulations including two detailed booklets:

- Manual Handling: Guidance on Regulations, L23, 1998, ISBN 0 7176 2415 3.
- Manual handling: Solutions you can handle (HSG115), 1994, ISBN 0 7176 0693 7.

The following guidance may also be relevant in some circumstances:

- A pain in your workplace? Ergonomic problems and solutions (HSG121), 1994, ISBN 0 7176 0668 6.
- New and expectant mothers. New edition, 2002, ISBN 0 7176 2583 4.
- Thermal comfort in the workplace: Guidance for employers (HSG194), 1999, ISBN 0 7176 2468 4.

9.0 - Hazards from DSE.

We look at display screen equipment ([DSE](#)) as a separate topic because there is a set of Regulations which deals with DSE. However, the Regulations are not well named because they deal with much more than display screens. They also cover "*workstations*" which include a screen. The main hazards associated with workstations all arise from extended periods of work and they are as follows:

- Upper Limb Disorders ([ULDs](#)).
These disorders include Repetitive Strain Injury ([RSI](#)). Typically, they arise from using a keyboard or mouse.
- Back injuries from sitting with an awkward posture.
- Eye strain from looking at the display screen.

The key workplace precautions for workstations are given below.

9.1 - DSE Workplace Precautions.

For [ULDs](#) arising from the use of keyboards:

- Type while in the correct posture. For example, without having your wrists at an acute angle.
- Take frequent short breaks during extended periods of keyboard use.
- Look out for early symptoms of ULDs.
Typical symptoms include "tingling" in the fingers after keyboard use. Report any symptoms you experience to your supervisor.

For back injury arising from sitting with an awkward posture:

- Use an adjustable chair set up properly for you.
- Get training in how to set up an adjustable chair to meet your requirements.

For eye strain arising from looking at a display screen:

- **Position the screen properly.**
Proper positioning would mean that there is no glare or reflection, it is at "eye height" and it is not too far away or too near. If you do not know how to set your screen up properly ask your supervisor.
- **Wear the necessary spectacles.**
If you need to wear spectacles in order to see the screen clearly, wear them all the time you are using the screen.
- **Have your eyes tested regularly.**
Your employer will pay for this if you have to use [DSE](#) for most of your work.

9.2 - Key Management Activities.

The key management activities, so far as [DSE](#) is concerned, are as follows:

- **Identify the workstations for which you are responsible.**
As we have seen, DSE includes associated workstations.
- **Assess workstation risks.**
These include risks which could lead to [ULDs](#) , back injuries and eye strain.
- **Provide workplace precautions and [RCSs](#).**
We have already looked at the main workplace precautions for workstation risks.
- **Provide training as necessary.**
People will have to be trained to deal effectively with the workstation risks to which they are exposed.
- **Monitor.**
The use of workplace precautions and the effectiveness of training should be monitored as part of your active monitoring procedures.

We will now look in more detail at ULDs.

9.3 - ULD (WRULD).

[FLASH VIDEO]

9.3.1 - WRULD.

Upper Limb Disorders is the collective term for a number of medical conditions affecting the hand and arm. Examples include Tenosynovitis and Carpal Tunnel Syndrome. Where [ULDs](#) arise as a result of activities at work, they are referred to as Work Related Upper Limb Disorders ([WRULDs](#)). ULDs do not just cause pain.

They make many daily tasks impossible or difficult to do. People with advanced ULDs will have problems with, for example, turning taps, washing up, gardening, fastening clothes, and opening jars and packets. They also increase tension at work and at home because of the handicap itself, and sometimes because of disbelief among colleagues (it is difficult to see Tenosynovitis). If you leave the symptoms too long, it may cause irreversible damage and prevent you from doing any job, let alone the one that caused the ULD. Surgical operations to relieve ULDs at a late stage often have no effect. For these reasons, early detection of the symptoms of ULDs is very important.

9.4 - Training.

Training should be aimed at reducing or minimising the three main risks from [DSE](#) use, that is, [ULDs](#), back injury and eye strain.

Training, should include the following items:

- Detection and recognition of hazards and risks.
- The way in which harm develops.
- The importance of good posture and postural changes.
- The adjustment of furniture and equipment.
- The arrangement of workstation components.
- The importance of breaks from tasks.
- In-house requirements for reporting symptoms resulting from DSE use.

9.5 - DSE workstation set-up.

Interactive Display Screen Equipment Presentation (FLASH VIDEO)

9.6 - Legislation and Information.

The main legislation on [DSE](#) is the Health and Safety (Display Screen Equipment) Regulations, 1992.

These Regulations deal with a number of topics including the following:

- **Risk assessment.**
The risks associated with DSE and workstations have to be assessed and we have already looked at how this should be done.

- **Work routines.**
As we have seen, work with DSE should be designed so that there is a mixture of tasks, or breaks are built into the work procedures.
- **Information and training.**
All users should be provided with adequate health and safety training which is best combined with general training on use of DSE. Details of the required training have already been given.

Further information is available in [HSE](#) guidance as follows:

- **The Law on VDUs:** An Easy guide (HSG90), 2003, ISBN 0 7176 2602 4.
- Working with display screen equipment (L26), 2003 ISBN 0 7176 2582 6.
- Working with VDUs (INDG36 rev2), 2003, ISBN 0 7176 2222 3.
- Seating at work (HSG57), 1997, ISBN 0 7176 1231 7.
- Upper limb disorders in the workplace: A guide to prevention (HSG60), 2002, ISBN 0 7176 1978 8.

10.0 - Noise.

High levels of noise damage your hearing, whether you are exposed to the noise at work or away from work. Where the noise levels are very high, for example close to an aeroplane's jet engine, the damage can happen very quickly. These very high noise levels kill the parts of the ear which enable us to hear. If these parts of the ear are killed, you will never be able to hear again. Exposure to these very high noise levels will be painful and, ***if you are ever exposed to noise which causes pain in your ears, you should:***

- Get away from the noise as quickly as you can.
- Report what has happened to your supervisor; and
- Have your hearing checked by a nurse or doctor.

Fortunately, these very high noise levels are rare and most hearing damage is caused by less loud noises over a long period of time. Noise which is loud enough to make a normal conversation difficult at two metres can be enough, over a long period of time, to damage your hearing. It is important to remember this "2 metre" [measure](#). We will now look at why this is so.

10.1 - Effects of Noise on the Ear.

High levels of noise tire the ears. If you move away from the noise into a quiet area, the ears are able to rest and your hearing returns to normal. How long it takes the ears to return to normal depends on two things:

- How loud the noise was.
- How long you were exposed to the noise.

These two are linked. A low level of noise for a few hours will tire the ears as much as a higher level of noise for a short period. The combination of level of noise and length of exposure is known as the noise dose. You get long term damage to your hearing if the time between noise doses is not long enough for the ears to recover completely, and high noise doses will need longer recovery times than low noise doses.

10.2 - Noise Controls.

The actions you can take to avoid long term damage to your hearing follow from what we have just learned about how hearing damage is caused:

- **Reduce your time of exposure.**
Do not work in a noisy environment for longer than you have to, and take all of your breaks in a quiet place.
- **Reduce the level of noise you are exposed to.**
You can do this by keeping as far away as possible from the source of the noise and wearing ear plugs or ear defenders (we will look at these later).
- **Check your noise exposure away from work.**
The ear is tired by noise whether it is work noise or noise away from work. Noisy hobbies are as damaging to your hearing as noisy work.
- **Have your hearing checked from time to time.**
This is for the same reason that you have your eyesight checked. Signs of hearing damage can be detected at an early stage and action taken to prevent matters getting worse.
- **Wear hearing protection.**
As we have seen before, [PPE](#), in this case ear plugs or ear defenders, is the least satisfactory form of workplace precaution. However, where they do have to be used, there are special requirements which we will look at next.

10.3 - Ear Plugs and Ear Defenders.

There are many types of ear plugs and ear defenders but all ear plugs and ear defenders suffer from the same problems.



<p>They are only effective if they are worn.</p>	<p>This is obvious but how often have you seen people with their ear defenders round their neck?</p>
<p>They have to fit properly.</p>	<p>Even simple ear plugs are only effective if they are inserted properly.</p>
<p>They are designed to protect against different sorts of noise.</p>	<p>You have to wear the right type for the noise to which you are exposed. For example, ear defenders designed for high pitched noises will not provide good protection against low pitched noises.</p>
<p>They have to be kept clean and undamaged.</p>	<p>Dirty ear plugs can cause ear infections and damaged ear protectors will not provide as much protection as they should.</p>

Because of these problems with ear plugs and ear defenders it is better, if possible, to tackle the source of the noise with, for example, quieter machinery or sound proof enclosures. Where you have to wear ear plugs or ear defenders, you should have adequate instruction and training in their use and maintenance.

10.4 - Noise Summary.

If you have difficulty having a normal conversation at two metres because of the noise level it may be necessary to take action to avoid damaging your hearing.

Key actions are:

- Keep your exposure time to the minimum.
- Keep as far from the noise source as you can.
- Wear ear plugs or ear defenders which.
 - Are the correct ones for the type of noise to which you are exposed.
 - Fit properly.
 - Are clean.
 - Are not damaged.
- Check your exposure to noise outside work
- Have your hearing checked from time to time.

10.5 - Key Management Activities.

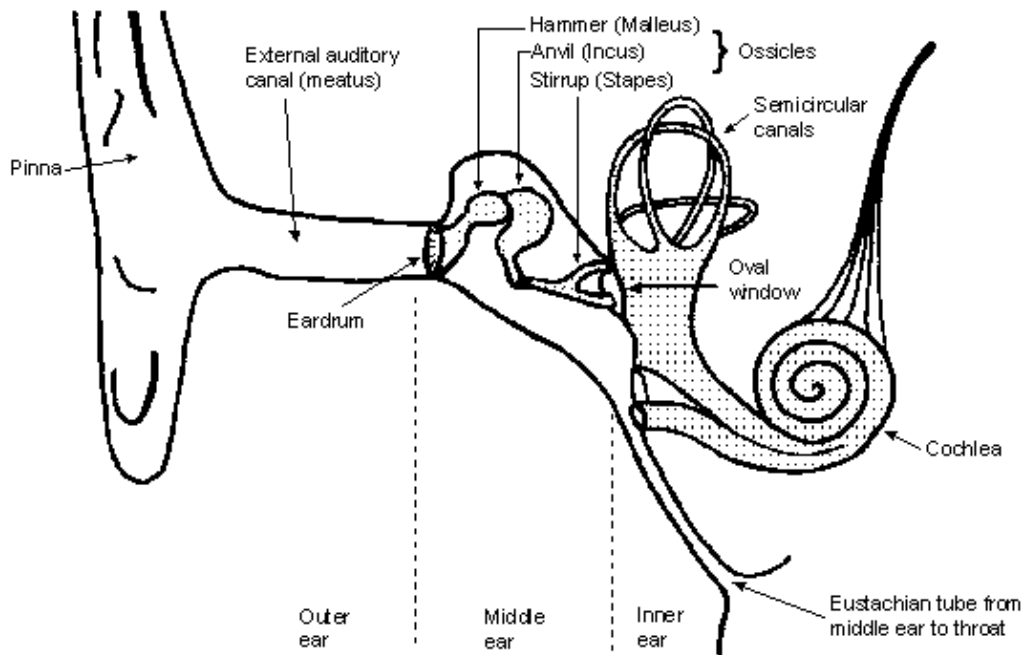
The key management activities, so far as noise is concerned, include the following:

- Identifying noise sources in your area.

There are usually some sources of noise in every area but action may not be required unless the noise is above a certain level.

- Identifying other noise to which your people may be exposed.
The people for whom you are responsible may be exposed to noise outside the area for which you are responsible, for example, when visiting workshops or making deliveries.
- Carry out a noise survey, which can be done by yourself or on your behalf. This helps you to estimate whether action to reduce noise is required.
- Where noise levels are too high, they will either have to be reduced, or hearing protection will have to be supplied. We will look at what constitutes "too high" a noise level in a moment.
- Where hearing protection has to be provided, its use will have to be monitored as part of your normal active monitoring. However, we need to start this section with some background information required to understand noise.

10.6 - Structure of the Ear.



10.6.1 - The Ear.

You can see that the ear is divided into the following three sections.

The outer ear.

This consists of the outer pinna, the auditory canal, and the ear drum.

The middle ear.

The middle ear's main parts are the three bones (ossicles), commonly known as the hammer, anvil, and stirrup (malleus, incus and stapes).

The inner ear.

This consists of the semicircular canals, which are the organs of balance and are not relevant to our consideration of hearing, and the cochlea. The cochlea encloses the Organ of Corti which is the part of the ear responsible for hearing. It is equivalent to the retina in the eye which is enclosed by the eyeball.

If any section is damaged it can have an effect on the hearing.

10.7 - Sound and Noise.

Sound is energy that takes the form of air pressure fluctuations, or pressure waves.

The sources of these fluctuations are normally vibrating systems, such as rotating parts on a machine. When these fluctuations reach our ears they are translated by the ear into sound. Noise, for our purposes, is defined as "unwanted" sound. Unwanted is obviously subjective. For example, a person playing a stereo does not consider it to be unwanted sound, the next door neighbours might well consider it that way. Note that sound need not be loud to be unwanted. For example, quiet noises at inappropriate times can cause stress. Note also that sound of a high level is no less damaging to the hearing than noise of the same level. Since sound and noise are so closely related, we will use the terms interchangeably, unless there is a particular reason for making a distinction. The two main characteristics of sound so far as we are concerned are frequency and amplitude.

- **Frequency ("pitch").**

The frequency of a sound determines whether we hear a high pitched sound (high frequency) or a low pitched sound (low frequency). A piano keyboard has the notes arranged from the lowest frequency on the left, to the highest frequency on the right.

- **Amplitude ("loudness").**

The amplitude of a sound determines whether we hear a loud sound (high amplitude) or a quiet sound (low amplitude). The loudness of a sound is measured on a special scale, the Decibel scale and we will look at this scale next.

10.8 - Typical Decibel Values.

Typical Decibel values are listed below. The Decibel scale is logarithmic, so that normal rules of addition do not apply. Do not try to do any numerical work with the Decibel scale unless you are familiar with the methods needed for use with logarithmic scales. Note in particular that a 3 dB increase represents a **doubling** in the strength of the sound and the strength of the sound is important in causing hearing loss.

Decibel Level – d(B)A	Example
140	30m away from jet engine
130	Threshold of pain
110	Chainsaw
100	Disco / Nightclub
80	Kerbside of a busy road
60	Conversational speech
30	Quite bedroom at night
0	Threshold of hearing

10.8.1 - Noise Meter.

EXPOSURE TO MORE THAN 85 dB CAN CAUSE HEARING LOSS	
Whisper	: 30 dB
Normal Conversation	: 60 dB
Ringing Telephone	: 30 dB
Powerlane Mower	: 90 dB
Belt Sander	: 93 dB
Tracter	: 96 dB
Hand Drill	: 98 dB
Impact Wrench	: 93 dB
Bulldozer	: 105 dB
Spray Painter	: 105 dB
Continuous Miner	: 108 dB
Chain Saw	: 110 dB
Jack Hammer	: 110 dB
Ambulance Siren	: 120 dB
jet Engine Take Off	: 140 dB
12 Gauge Shotgun	: 165 dB
Rocket Launch	: 180 dB

10.8.2 - Usefulness of dB Scale.

Most sound is a combination of various frequencies, at different amplitudes. However, the human ear is not equally sensitive to all frequencies. This means that sound of a given amplitude at a frequency to which the ear is sensitive will produce more hearing damage than a sound of the same amplitude at a frequency to which the ear is less sensitive. In order to mimic the effect

of sound on human hearing, the sound being measured can be weighted by enhancing those frequencies to which the ear is more sensitive and suppressing those to which it is less sensitive. There are various weighted scales in use but the A weighted scale is the one which is most suited for measurements to do with human hearing and it is written as dB(A).

10.9 - Noise Dosage.

Noise dosage depends on the intensity of the sound and the time period for which people are exposed. Measuring noise dosage is complicated by the fact that sound levels at the ear normally vary, either because the sound itself is fluctuating, or because the person is moving about. For this reason, exposure to sound is normally expressed in terms of "daily personal dose", that is, the average amount of sound reaching the ear over an eight hour period. This [measure](#) is used in the legislation on noise which we will look at next.

10.10 - Noise Legislation.

The key legislation, so far as noise is concerned, is the Control of Noise at Work Regulations, 2005. We will now look at the main requirements of these Regulations. The Control of Noise at Work Regulations, 2005 require employers to prevent or reduce risks to health and safety from exposure to noise at work. Employees have duties under the Regulations too.

The Control of Noise at Work Regulations 2005 require the employer to take specific action at certain 'action levels'.

These relate to:

- The levels of exposure to noise of employees averaged over a working day or week; and
- The maximum noise (peak sound pressure) to which employees are exposed to in a working day.

The values set out in the Regulations are as follows:

Lower exposure action values:	Daily or weekly exposure of 80 dB.	Peak sound pressure of 135 dB.
Upper exposure action values:	Daily or weekly exposure of 85 dB.	Peak sound pressure of 137 dB.

There are also levels of noise exposure which must not be exceeded.

These are:

- Daily or weekly exposure of 87 dB.
- Peak sound pressure of 140 dB.

10.11 - Legislation and Information.

As an employer you have the following requirements placed upon you under the Control of Noise at Work Regulations 2005.

These are outlined below:

- Assess the risks to your employees from noise at work.
- Take action to reduce the noise exposure that produces those risks.
- Provide your employees with hearing protection if you cannot reduce the noise exposure enough by using other methods.
- Make sure the legal limits on noise exposure are not exceeded.
- Provide your employees with information, instruction and training.
- Carry out health surveillance where there is a risk to health.

The Regulations do not apply to the following areas:

- Members of the public exposed to noise from their non-work activities or making an informed choice to go to noisy places.
- Low-level noise which is a nuisance but causes no risk of hearing damage.

11.0 - Chemicals and Substances.

All chemicals and substances can be hazardous to health, and can create risks if they are not used with care. Think about the chemicals we may have on the table during a meal: Salt, Vinegar, Mustard, Pepper, Sugar. Each of these, in different circumstances, can create a risk. Although we will be dealing mainly with health hazards, remember that chemicals and substances can be harmful in other ways. For example, moving chemicals about, especially manual handling, can cause injuries, as can inadequate stacking and storing of chemicals. The way that chemicals can cause corrosion may also result in machine failure and subsequent injury. In order to avoid, or control, the risks associated with chemicals and substances we need to know a number of things starting with which chemicals are in the workplace.

11.1 - Which Chemicals?

The first thing you have to do is find out which chemicals and substances you are working with, or are exposed to. Most of the time this is fairly straightforward since the containers for the chemicals and substances are labelled and we will look at labels in a moment.

However, special arrangements may be needed in the following circumstances:

When the chemical or substance is supplied in unlabelled containers.	This is bad practice, and may be illegal, but it does happen.
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<p>When the chemicals or substances cannot be detected by the human senses.</p>	<p>For example, carbon monoxide and carbon dioxide cannot be seen and have no smell. Special detection equipment will be needed for these chemicals and the detection equipment is usually combined with an audible alarm which sounds when the presence of the chemical is detected.</p>
<p>When the concentration of the chemical or substance increases slowly.</p>	<p>If the concentration in the atmosphere builds up very slowly, we are unable to detect that this is happening. For example, small leaks in gas pipes are often not detected by the people in the room, but anyone coming into the room for the first time can detect the gas quite readily.</p>
<p>When the concentration remains the same for a period of time.</p>	<p>People get used to the smell of a chemical or substance and stop noticing it is there. This can lead to high exposure levels and again, special detection equipment may be needed.</p>
<p>When the chemical or substance is produced as a result of a chemical reaction in the workplace.</p>	<p>Some chemical reactions are complex and produce a range of different chemicals and substances. Even simple chemicals, when mixed, can be extremely harmful. For example, bleach, when mixed with an acidic substance, such as toilet cleaners, produces lethal chlorine gas.</p>

11.2 - Labelling of Chemicals.

Hazard Symbols.



Explosive



Oxidising Agent



Extremely or Highly Flammable



Toxic or Very Toxic



Corrosive



Harmful or Irritant



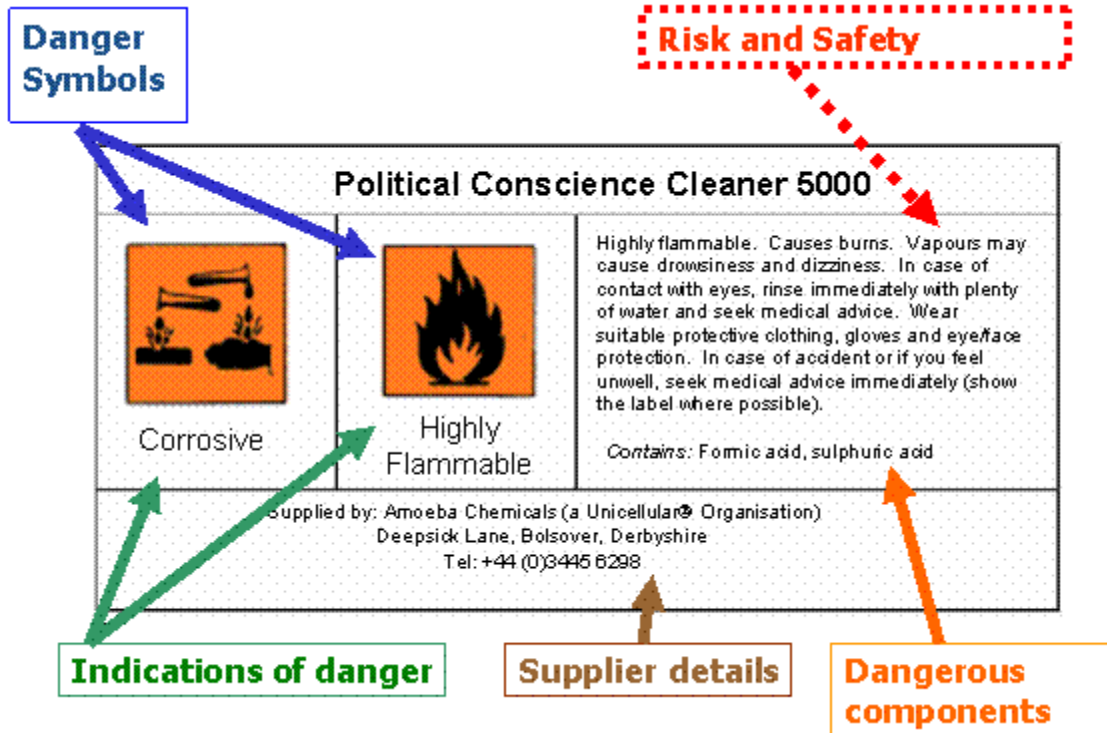
Dangerous for the Environment

All containers for chemicals and substances should be accurately labelled. If you find a container of chemicals which is not labelled, or you think the label is not correct, you should report this as a hazard.

Labels for chemical containers should have information on the following:

- ***The name of the chemical or substance.***
- ***Any hazards associated with the chemical or substance.***
This may take the form of a Hazard Symbol as illustrated above and these are always orange and black.
- ***There may also be printed warnings.***
For example, "Do not breathe vapour".
- ***There may be safety advice.***
For example, "Wear [PPE](#)".

11.2.1 - Example Label.



Chemical Label

11.3 - Routes of Entry.

A chemical or substance can only harm you if it gets onto your skin or into your body.

This may be obvious, but it means that chemicals can only harm your health in the following circumstances:

- **Chemicals come into contact with your bare skin or eyes.**
Corrosive chemicals will damage your skin and eyes, and some chemicals can pass through the skin and harm you in other ways. Some poisons and carcinogens, for example, can pass through the skin and others can get into your body via cuts and grazes. Chemicals can also get into the body by injection, either deliberate or accidental.
- **You breathe in chemicals.**
The lungs' main functions are to get oxygen into your body and carbon dioxide out of your body. They are, therefore, very good at letting gases into the body, even when these gases are harmful. We can also breathe in dusts which can stay in the lungs and cause a variety of diseases.
- **You swallow chemicals.**
This usually happens when we swallow contaminated food or drink. This is why it is not a good idea to eat or drink in workplaces where chemicals or substances are being used.

11.4 - Workplace Precautions.

The best workplace precautions are those which prevent chemicals getting into the atmosphere in the first place because these protect everyone, including yourself. These sorts of workplace precautions include the following:

- **Enclosure and ventilation.**

These workplace precautions keep chemicals out of the workplace atmosphere and, when they are installed, you should make sure that you know how they should be used, and always use them properly.

- **Use the smallest possible amount.**

This will mean that the minimum amount of chemical is available to get into the atmosphere and that skin contact is reduced if the chemical is spilled or splashed.

- **Use appropriate work methods.**

Choose work methods which [minimise](#) the chances for evaporation and the creation of dusts. The work methods should also be such that they minimise the chance of spills and splashes.

When you are exposed to chemicals, either because you are working with them or because they are in the atmosphere, you should, as necessary, use workplace precautions to protect against all three routes of entry:

- **Use gloves, goggles and other [PPE](#) to prevent contact.**

- **Use masks or breathing apparatus to prevent breathing in chemicals.**

When using masks, make sure you have the correct type for the chemical to which you are exposed, that the mask is clean and undamaged, and that it fits properly. You should receive training in the use of masks and training is essential before using breathing apparatus.

- **No eating, drinking or smoking.**

You should not eat, drink or smoke in contaminated atmospheres, or when working with chemicals. If you have been exposed to chemicals you should take suitable personal hygiene precautions before eating, drinking or smoking.

11.4.1 - PPE (Game).

[FLASH GAME]

11.5 - First Aid measures.

When you are working with a chemical or substance you should know what action to take if something goes wrong. The labels on the packaging of chemicals usually have information on the first aid measures. When there is no label, or the label has no first aid information, you should find out about the first aid measures **before you start work.**

You should not start working with a chemical or substance until you know what to do if:

- It gets onto your skin or into your eyes.
- You swallow any of it.
- You breathe it in.

11.6 - Monitoring Adverse Effects.

Some chemicals and substances have adverse effects which can be detected at an early stage. Some of these effects you can detect for yourself, for example, dermatitis, dizziness, or "wheezy" breathing. However, some effects can only be detected by a nurse or doctor using special instruments or techniques. The process of checking for adverse effects is known as health surveillance. You should find out if health surveillance is required for any of the chemicals or substances with which you work. If it is, you should find out what the health surveillance requires and carry it out properly, whether it involves self checks or visits to the surgery. Even when health surveillance is not required, you should monitor your own general health and report if you experience any symptoms which you think might be associated with the chemicals or substances with which you are working.

11.7 - Chemicals - Key Activities.

Find out whether you are working with, or exposed to, chemicals or substances.

For each chemical or substance you work with, or are exposed to:

- Find out what harm, if any, it may cause
- Find out how it can cause harm and, in particular, its hazardous routes of entry
- Find out what workplace precautions are necessary - and use them
- Find out what first aid measures are appropriate - and learn them
- Find out how to check for any symptoms of harm
- Make the checks for symptoms of harm yourself, or have them done for you.

11.8 - Key Management Activities.

The key management activity, so far as chemicals and substances are concerned, is to identify the chemicals in your area. For each of these chemicals you will then have to establish the following.

- ***What form(s) the chemical takes.***
A particular chemical in liquid form may not create a risk, while the same chemical as a gas may create a high risk. It is essential, therefore, to know the forms the chemicals in your area of responsibility may take.
- ***How much there is of each form of the chemical.***
Many chemicals are only a risk if they exceed certain levels. It is essential, therefore, to know how much of each form of the chemicals there will be in your area of responsibility.
- ***What hazards the chemical may cause.***

Different chemicals cause different hazards, and the same chemical may cause different hazards in its different forms. Accurate information on possible hazards is essential if appropriate workplace precautions are to be selected.

- **The workplace precautions required.**

Different chemicals in different forms require their own workplace precautions and these have to be identified accurately.

Once workplace precautions have been identified, all the relevant personnel will have to be given information on the workplace precautions and the continued use of the workplace precautions will have to be monitored as part of your normal active monitoring. However, before looking at these key activities it will be useful to have some background information on chemicals.

12.0 - Physical Forms.

Chemicals take three physical forms with which we are all familiar, solids, liquids and gases. These are the only forms chemicals can take but, for practical reasons, it is useful to have the following terms.

Dust.

All dusts are solids. The term is used to identify the small solid particles which become suspended in the atmosphere when a solid is physically broken up during, for example grinding, or an already finely divided solid (powder) is dispersed.

Vapour.

All vapours are gases. The term is used to identify the gaseous state of substances which are more usually in the form of a liquid or solid, for example petroleum vapour or lead vapour.

Fume.

All fumes are solids. The term is used to identify the small solid particles which form when a vapour condenses in the atmosphere, for example due to lower temperatures, or when a vapour reacts chemically with the atmosphere, for example the formation of metal oxides.

Mist.

All mists are liquids. The term is used to identify the small liquid droplets which form when a gas condenses in the atmosphere, for example due to lower temperatures, or when a liquid is atomised, for example with an aerosol.

Note that it is important to avoid confusing the substance with its form. Most substances can exist in solid, liquid or gaseous form although extremes of temperature and pressure may be required.

13.0 - How Much?

How much of a hazardous substance is present is usually not a simple question to answer. However, there are two main factors to take into account.

- **Concentration.**
For inhalation this is usually expressed as units of harmful substance per volume of air. The units will vary depending on the substance, for example fibres for asbestos and percent or parts per million (ppm) for gases.
- **Variation Over Time.**
For most substances, the extent of the harm increases as the amount which enters the body increases. In practice, this can mean that exposure to low concentrations for a long period is as harmful as exposure to high concentrations for short periods. This makes sampling an important issue.

Depending on the substance, different methods may be used:

- **Continuous measurement.**
For some substances, usually the most harmful ones, continuous measurement is required so that an accurate [measure](#) of quantities is available.
- **Sampling.**
For less harmful substances, estimates based on samples will usually be adequate.

14.0 - WEL's.

The Control of Substances Hazardous to Health Regulations 2002 detail the amount of exposure time allowed when working with chemicals and insist that employers:

- Ensure that the Workplace Exposure Limit ([WEL](#)) is not exceeded; and
- Ensure that exposure to substances that can cause occupational asthma, cancer, or damage to genes that can be passed from one generation to another, is reduced as low as is reasonably [practicable](#).

WELs.

The regulations introduce a new occupational exposure limit system with:

- Maximum Exposure Limits (MELs) and Occupational Exposure Standards (OESs) being replaced with a single type of limit - the Workplace Exposure Limit (WEL); and
- All the MELs, and most of the OESs, being transferred into the new system as WELs, retaining their previous numerical values.

Guidance will also be published on 6th April, good practice advice on controlling chemicals is available at [HSE's COSHH Essentials website](#).

New versions of the COSHH [Approved](#) Code of Practice - EH40, and the brief guide to COSHH leaflet, will be available from [HSE Books](#).

"The new system is about clarifying existing duties, rather than introducing new ones. Therefore, employers who currently comply with COSHH will still be able to do so by continuing to apply good practice. However, small businesses in particular should benefit from the explicit emphasis on the need to follow good practice and the [provision](#) of good practice advice. This new approach will contribute to HSE's aim to reduce the burden of ill health caused by exposure to chemicals at work."

Chair of the OEL Working Group of the Health and Safety Commission's Advisory Committee on Toxic Substances.

Occupational exposure limits (year). Each year the booklet has a new ISBN and for the year 2002, the ISBN is 0 7176 2083 2. EH40 was not issued in 2003 but there was a supplement (ISBN 0 7176 2172 3) which can be downloaded from the HSE website.

This booklet is, however, more commonly known by its code, EH40.

14.1 - Types of Harm.

There are various classifications of substances according to their harmful effects, for example the one used in the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002.

This has nine main categories which we will look at in turn.

Very Toxic, Toxic and Harmful. *The first three categories have definitions which differ in only a few key words. "Substances and preparations which:*

- In very low quantities **VERYTOXIC**.
- In low quantities **TOXIC**.
- May be **HARMFUL**.
- Cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin."

Note:

In medical terms, acute means having immediate effects, chronic means long term or delayed effects. The two terms do not relate to the [severity](#) of the effects.

In lay language, little distinction is made between types of harm and, for convenience, we will continue to refer to "harmful" substances where no more specific definition is required:

- **Corrosive.**
"Substances or preparations which may, on contact with living tissues, destroy them."
- **Irritant.**
"Non-corrosive substances and preparations which through immediate, prolonged, or repeated contact with the skin or mucous membrane, may cause inflammation."

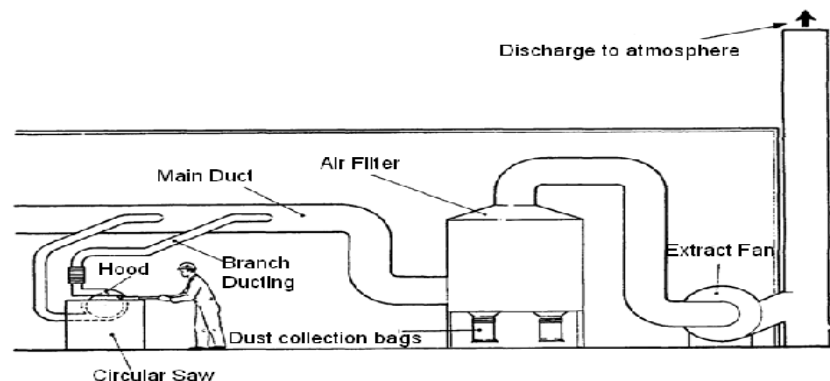
- **Sensitising.**
These are substances which may cause an allergic reaction.
- **Carcinogenic.**
"Substances or preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce cancer or increase its incidence."
- **Mutagenic.**
A mutation is a permanent change in the genetic material (DNA) of a living organism. Mutagenic substances are ones which "if they are inhaled or ingested or if they penetrate the skin, may induce heritable genetic defects or increase their incidence."
- **Toxic for Reproduction.**
These are substances which, if they are inhaled or ingested, or if they penetrate the skin, may produce or increase the incidence of non-heritable adverse effects in the progeny and/or of male or female reproductive functions or capacity.

15.0 - Controls for Substances.

Where your risk assessment identifies that risk control measures are necessary, you have to decide which risk control measures are appropriate. The procedure for selecting appropriate controls for the risks associated with substances follows the hierarchy we have already looked at in the risk control session. However, a particularly important risk control for substance risks is ventilation and we will look at two types of ventilation next. We will start with **Local Exhaust Ventilation (LEV)** and then look at dilution ventilation.

15.1 - Local Exhaust Ventilation.

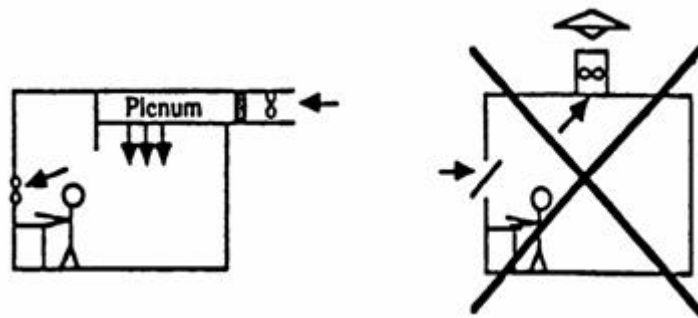
LEV is designed to remove air containing a contaminant (dust, vapour etc.) from the workplace. There will also be arrangements for the suitable disposal of the contaminant but we need not go into these here. If LEV is to be effective, it has to be well designed so that, for example, the equipment has sufficient power to remove the required quantity of air at a sufficiently high speed.



However, even well designed LEV systems will only continue to operate effectively if they are properly maintained and for this reason there should be [RCSs](#) which deal with the testing and maintenance of LEV.

15.2 - Dilution Ventilation.

Occasionally it is not possible to extract the contaminant close to the point of origin. In these circumstances, if the quantity of contaminant is small, if it is uniformly evolved, and if the toxicity is low, it may be possible to dilute the contaminant by inducing large volumes of air to flow through the contaminated region. This is known as dilution ventilation. The diagrams below illustrate "good" and "poor" arrangements for dilution ventilation.



16.0 - Legislation and Information.

The main legislation on chemicals is as follows.

- ***The Control of Substances Hazardous to Health (Amendment) Regulations, 2004 (COSHH).***
- ***The Chemicals (Hazard Information and Packaging for Supply) Regulations, 2002 (CHIP).***

However, you will only need to know the detailed requirements of these Regulations if your responsibilities cover the use, handling, storage or transport of chemicals.

Guidance on chemicals from the [HSE](#) includes the following:

- General COSHH [ACoP](#), Carcinogens ACoP and Biological Agents ACoP (L5), 2002, ISBN 0 7176 2534 6.
- CHIP for everyone, (HSG228), 2002 ISBN 07176 2370 X.
- COSHH essentials: Easy steps to control chemicals (HSG193), 1999, ISBN 0 7176 2421 8.
- Seven steps to successful substitution of hazardous substances (HSG110), 1994, ISBN 0 7176 0695 3.
- The selection, use and maintenance of respiratory protective equipment: A practical guide (HSG53), 1998, ISBN 0 7176 1537 5.
- An introduction to local exhaust ventilation (HSG37), 1993, ISBN 0 7176 1001 2.
- The maintenance, examination and testing of local exhaust ventilation (HSG54), 1998, ISBN 0 7176 1485 9.
- Preventing asthma at work: How to control respiratory sensitisers (L55), 1994, ISBN 0 7176 0661 9.
- Health surveillance at work (HSG61), 1999, ISBN 0 7176 1705 X.

17.0 - Stress.

17.1 - What is stress?

Stress is summed up by the health and safety executive as:

"There is a difference between stress and pressure. We all experience pressure on a daily basis, and need it to motivate us and enable us to perform at our best. It's when we experience too much pressure without the opportunity to recover that we start to experience stress. The [HSE](#) definition of stress is 'the adverse reaction a person has to excessive pressure or other types of demand placed upon them'."

17.2 - Why do we need to tackle stress?

The Health and Safety Executive explain:

The Health and Safety Executive ([HSE](#)) have published the results of its Labour Force Survey, which shows that, apparently, just over a fifth of British workers are concerned about work-related stress. *The survey report can be downloaded from: www.hse.gov.uk/statistics/books.htm#whass.*

Figures derived from the Survey indicate that in 2004/2005, around 13 million working days were lost due to work-related stress in the year. Stress, along with Musculoskeletal Disorders (MSDs), accounted for around 70% of all work-related working days lost in Great Britain.

When presenting these results, HSE's Chief Executive Geoffrey Podger said:

"Stress is a major problem in British workplaces and this survey underlines that. Stress can occur in any workplace and it is important that both employers and employees recognise the symptoms at an early stage. We have produced guidance for employers and the stress management standards can help employers tackle the issue."

Around 40% of employees thought that the risk of stress in the workplace could be realistically reduced and less than a third said that their employers had taken preventative action to reduce stress levels in the workplace.

The Workplace Health and Safety Survey (WHASS) was conducted between August and December 2005, and surveyed just over 10,000 workers. The survey concerned employee perceptions of workplace risk and covered a number of different risk categories.

In addition to the the guidance published by the HSE on behalf of the Government, skilled Occupational Health Service staff can help employers identify potentially stressful aspects of their operations, and offer practical help, both to improve the health of the organisation, and to assist employees who are struggling. There is enormous scope for improving the atmosphere in the workplace, and reducing the burdens of ill-health, declining efficiency, and sickness absence.

- HSE estimates that work-related stress costs society between £3.7 billion and £3.8 billion a year (1995/96 prices). Latest figures estimate 12.8 million working days were lost to stress, depression and anxiety in 2004/5.

17.3 - The causes of stress.

These can be grouped as:

Work Practices.

- People unable to exert any control or influence over the demands placed upon them.
- Lack of a clear job description or chain of command.
- A high degree of uncertainty about job security or career prospects.
- Temporary and fixed term contracts.
- Lack of any understanding leadership.
- Cuts in government and local government funding leading to increased hours.
- Long hours culture.
- No recognition or reward for good job performance
- No opportunity to voice complaints.
- Heavy responsibilities with no authority or decision making discretion.
- No opportunities to use personal talent or abilities
- Inadequate time to complete tasks to personal or company standards.
- Chances for small error or momentary lapse of attention to have serious or even disastrous consequences.

Pressure.

- Pressures piling one on top of the other.
- Pressures are unremitting or prolonged.
- There is confusion caused by conflicting demands.

Harassment or Bullying.

- Prolonged conflict between individuals.
- Exposure to prejudice regarding your age, gender, sexuality, race, ethnicity or religion.

Management Techniques.

- New management techniques.

**Environment
and Technology.**

- Unpleasant or hazardous working conditions.
- Technology controlling workers, for example power.

17.4 - What can I do about stress?

Again the Health and Safety Executive offer the following advice:

"Try to identify the causes and what you can do to make things better. Ideally tell your manager at an early stage. If your stress is work related, this will give them chance to help prevent the situation getting worse, while even if it isn't work related, they may be able to do something to reduce some of your pressure."

17.5 - Symptoms of work related stress.

Work-related stress can manifest itself under three main headings:

- Physiological.
- Emotional.
- Behavioural.

Physical symptoms.

- Increased susceptibility to colds and other infections.
- Headaches.
- Muscular tension.
- Backache and neck ache.
- Excessive tiredness.
- Difficulty sleeping.
- Digestive problems.
- Raised heart rate.
- Increased sweating.
- Lower sex drive.
- Skin rashes.
- Blurred vision.

Emotional and behavioural changes:

- Wanting to cry much of the time.
- Feeling that you can't cope.
- Short temperedness at work and at home.
- Feeling that you've achieved nothing at the end of the day.

- Eating when you're not hungry.
- Losing your appetite.
- Smoking and drinking to get you through the day.
- Inability to plan, concentrate and control work.
- Getting less work done.
- Poor relationships with colleagues or clients.
- Loss of motivation and commitment.

17.6 - How do I deal with it?

If you are suffering from work-related stress try some of the following ways to calm down and chill out:

- Try to make time for yourself away from work to wind down. For example relaxing in a warm bubble bath, listening to soothing music and shutting out the world for a while.
- Take time for your mind and body to relax. Methods can include reading, meditation and yoga.
- Take time to exercise. Regular and frequent exercise is a good stress reducer.
- Find time to pursue non-work activities such as hobbies and recreational activities.
- Eat well, skipping meals will deplete your energy and leave you drained.
- Talk to your family and friends. Make time to see your mates, it will help you unwind after work and let you unburden any problems.
- Learn to say no. If you are asked to take extra work on board, or to stay in the office after your colleagues have left, have the confidence to decline.
- Take breaks at work. Don't stay glued to the job - take a few minutes to sit back and relax, or take a brisk walk during your break.
- Plan your work. Sit down and establish what needs to be done. If you have an excessive workload, delegate if possible, and decide on when your work needs to be completed.
- If all else fails, have a serious talk with your line manager with you workload, or think about changing your job.

http://www.sheilds-elearning.co.uk/file.php/71/images/cary2_m.swf

18.0 - Violence.

Violence is defined by the Health and Safety Executive as 'any incident in which a person is abused, threatened or assaulted in circumstances relating to their work. Verbal abuse and threats are the most common types of incident, whilst physical attacks are comparatively rare.

Both employer and employees have an interest in reducing violence at work. For employers, violence can lead to poor morale and a poor image for the organisation, making it difficult to recruit and keep staff.

It can also mean extra cost, with absenteeism, higher insurance premiums and compensation payments. For employees, violence can cause pain, distress and even disability or death. Physical attacks are obviously

dangerous but serious or persistent verbal abuse or threats can also damage employees' health through anxiety or stress.

Violence can often manifest itself in a number of psychological symptoms including:

- Insomnia.
- Stress.
- Anxiety.
- Irritability.
- Loss of confidence.
- Agrophobia.
- Thoughts of self harm.
- Guilt.

18.1 - Effective management of violence.

The management process as suggested by the Health and Safety Executive is as follows:

- **STAGE 1** Finding out if you have a problem.
- **STAGE 2** Deciding what action to take.
- **STAGE 3** Take action.
- **STAGE 4** Check what you have done.

18.1.1 - STAGE 1 FINDING OUT IF YOU HAVE A PROBLEM.

The first step in risk assessment is to identify the hazard. You may think violence is not a problem at your workplace or that incidents are rare. However, your employees' view may be very different.

Ask your staff - do this informally through managers, supervisors and safety representatives or use a short questionnaire to find out whether your employees ever feel threatened. Tell them the results of your survey so they realise that you recognise the problem.

Keep detailed records - it is a good idea to record incidents, including verbal abuse and threats.

You may find it useful to record the following information:

- An account of what happened;
- Details of the victim(s), the assailant(s) and any witnesses;
- The outcome, including working time lost to both the individual(s) affected and to the organisation as a whole;
- Details of the location of the incident.

Classify all incidents: Use headings such as place, time, type of incident, potential [severity](#)/consequences, who was involved and possible causes. It is important that you examine each incident report to establish whether there could have been a more serious outcome. Here is an example of a simple classification to help you decide how serious incidents are:

- Fatal injury.
- Major injury.
- Injury or emotional shock requiring first aid, out-patient treatment, counselling, absence from work (record number of days).
- Feeling of being at risk or distressed.

Try to predict what might happen: Do not restrict your assessment to incidents which have already affected your own employees. There may be a known pattern of violence linked to certain work situations. Trade and professional organisations and trade unions may be able to provide useful information on this. Articles in the local, national and technical press might also alert you to relevant incidents and potential problem areas.

18.1.2 - STAGE 2 DECIDING WHAT ACTION TO TAKE.

Having found out that violence could be a problem for your employees you need to decide what needs to be done. Continue the risk assessment by taking the following steps to help you decide what action you need to take.

Decide who might be harmed, and how.

Identify which employees are at risk - those who have face-to-face contact with the public are normally the most vulnerable. Where appropriate, identify potentially violent people in advance so that the risks from them can be minimised.

Evaluate the risk.

Check existing arrangements are the precautions already in place adequate or should more be done? Remember it is usually a combination of factors that give rise to violence.

Factors which you can influence include:

- The level of training and information provided.
- The environment.
- The design of the job.

Training and information.

Train your employees so that they can spot the early signs of aggression and either avoid it or cope with it. Make sure they fully understand any system you have set up for their protection. Provide employees with any information they might need to identify clients with a history of violence or to anticipate factors which might make violence more likely.

The environment.

Provide better seating, decor, lighting in public waiting rooms and more regular information about delays.

Consider physical security measures such as:

- Video cameras or alarm systems.
- Coded security locks on doors to keep the public out of staff areas.

- Wider counters and raised floors on the staff side of the counter to give staff more protection.

The design of the job.

- Use cheques, credit cards or tokens instead of cash to make robbery less attractive.
- Bank money more frequently and vary the route taken to reduce the risk of robbery.
- Check the credentials of clients and the place and arrangements for any meetings away from the workplace.

Arrange for staff to be accompanied by a colleague if they have to meet a suspected aggressor at their home or at a remote location. Make arrangements for employees who work away from their base to keep in touch. Maintain numbers of staff at the workplace to avoid a lone worker situation developing.

The threat of violence does not stop when the work period has ended. It is good practice to make sure that employees can get home safely. For example where employees are required to work late, employers might help by arranging transport home or by ensuring a safe parking area is available.

Employees are likely to be more committed to the measures if they help to design them and put them into practice. A mix of measures often works best. Concentrating on just one aspect of the problem may make things worse in another. Try to take an overall view and balance the risks to your employees against any possible reaction of the public.

Record your findings.

Keep a record of the significant findings of your assessment. The record should provide a working document for both managers and employees.

Review and revise your assessment.

Regularly check that your assessment is a true reflection of your current work situation. Be prepared to add further measures or change existing measures where these are not working. This is particularly important where the job changes. If a violent incident occurs, look back at your assessment, evaluate it and make any necessary changes.

18.1.3 - STAGE 3 TAKE ACTION.

Your policy for dealing with violence may be written into your health and safety policy statement, so that all employees are aware of it. This will help your employees to [co-operate](#) with you, follow procedures properly and report any further incidents.

18.1.4 - STAGE 4 CHECK WHAT YOU HAVE DONE.

Check on a regular basis how well your arrangements are working, consulting employees or their representatives as you do so. Consider setting up joint management and safety representative committees to do this. Keep records of incidents and examine them regularly; they will show what progress you are making and if the problem is changing. If your measures are working well,

keep them up. If violence is still a problem, try something else. Go back to Stages 1 and 2 and identify other preventive measures that could work.

19.0 - Lone Working.

What is Lone Working?

The Health and Safety Executive define 'Lone Working' as:

"Lone workers are those who work by themselves without close or direct [supervision](#)."

Lone Workers are found in a variety of situations and workplaces and again the Health and Safety Executive give some useful examples:

People in fixed establishments where :

- Only one person works on the premises, e.g. in small workshops, petrol stations, kiosks, shops and also home workers;
- People work separately from others, e.g. in factories, warehouses, some research and training establishments, leisure centres or fairgrounds ;
- People work outside normal hours, e.g. cleaners, security, special production, maintenance or repair staff etc.

Mobile workers working away from their fixed base :

- On construction, plant installation, maintenance and cleaning work, electrical repairs, lift repairs, painting and decorating, vehicle recovery etc;
- Agricultural and forestry workers;
- Service workers, e.g. rent collectors, postal staff, social workers, home helps, district nurses, pest control workers, drivers, engineers, architects, estate agents, sales representatives and similar professionals visiting domestic and commercial premises.

What do you need to do?

Risk Assessment!! There is no one answer to this question and as such the answer will depend upon your organisations risk assessment. In many cases the risks will be low, however, in some organisations the risks may be significant and as such control measures must be devised and implemented.

19.1 - What the Law says.

Health and Safety at Work etc. Act 1974.

Employers must, as far as is reasonably [practicable](#), safeguard the health and safety of their employees.

In particular (and in regards to lone working) Section 2(d) states the employer must provide and maintain:

"A safe place of work, with safe access and egress"

Management of Health and Safety at Work Regulations 1999.

Regulation 3, requires every employer and self employed person to make a suitable and sufficient assessment of the health and safety risks to employees and others not in their employment. This being the case the hazard and associated risks of lone working and lone workers is required to be risk assessed.

19.2 - Risk Assessment and Control Measures.

The Health and Safety Executive also give good advice regarding what should be considered in relation to your lone working risk assessment:

Lone workers should not be at more risk than other employees. This may require extra risk control measures. Precautions should take account of normal work and foreseeable emergencies, e.g. fire, equipment failure, illness and accidents.

Employers should identify situations where people work alone and ask questions such as:

- Does the workplace present a special risk to the lone worker?
- Is there a safe way in and a way out for one person?
- Can any temporary access equipment which is necessary, such as portable ladders or trestles, be safely handled by one person?
- Can all the plant, substances and goods involved in the work be safely handled by one person?

Consider whether the work involves lifting objects too large for one person or whether more than one person is needed to operate essential controls for the safe running of equipment:

- Is there a risk of violence?
- Are women especially at risk if they work alone?
- Are young workers especially at risk if they work alone?

Is the person medically fit and suitable to work alone?

Check that lone workers have no medical conditions which make them unsuitable for working alone. Seek medical advice if necessary. Consider both routine work and foreseeable emergencies which may impose additional physical and mental burdens on the individual.

What training is required to ensure competency in safety matters?

Training is particularly important where there is limited [supervision](#) to control, guide and help in situations of uncertainty. Training may be critical to avoid panic reactions in unusual situations.

Lone workers need to be sufficiently experienced and to understand the risks and precautions fully. Employers should set the limits to what can and cannot be done while working alone. They should ensure employees are competent to deal with circumstances which are new, unusual or beyond the scope of training, e.g. when to stop work and seek advice from a supervisor and how to handle aggression.

How will the person be supervised?

Although lone workers cannot be subject to constant supervision, it is still an employer's [duty](#) to ensure their health and safety at work. Supervision can help to ensure that employees understand the risks associated with their work and that the necessary safety precautions are carried out. Supervisors can also provide guidance in situations of uncertainty. Supervision of health and safety can often be carried out when checking the progress and quality of the work; it may take the form of periodic site visits combined with discussions in which health and safety issues are raised.

The extent of supervision required depends on the risks involved and the ability of the lone worker to identify and handle health and safety issues. Employees new to a job, undergoing training, doing a job which presents special risks, or dealing with new situations may need to be accompanied at first. The level of supervision required is a management decision which should be based on the findings of risk assessment. The higher the risk, the greater the level of supervision required. It should not be left to individuals to decide whether they require assistance.

19.3 - Procedures.

Procedures will need to be put in place to monitor lone workers to see they remain safe.

These may include:

- Supervisors periodically visiting and observing people working alone;
- Regular contact between the lone worker and [supervision](#) using either a telephone or radio;
- Automatic warning devices which operate if specific signals are not received periodically from the lone worker, e.g. systems for security staff; or other devices designed to raise the alarm in the event of an emergency and which are operated manually or automatically by the absence of activity;
- Checks that a lone worker has returned to their base or home on completion of a task.

What happens if a person becomes ill, has an accident, or there is an emergency?

Lone workers should be capable of responding correctly to emergencies. Risk assessment should identify foreseeable events. Emergency procedures should be established and employees trained in them. Information about emergency procedures and danger areas should be given to lone workers who visit your premises. Lone workers should have access to adequate first-aid facilities and mobile workers should carry a first-aid kit suitable for treating minor injuries. Occasionally risk assessment may indicate that lone workers need training in first aid.

19.4 - Lone Worker Policy.

To view a sample Lone Worker Policy please follow the link below:

[HS2001_LONE_WORKERS_POLICY.doc](#)

Module 6 – Active Monitoring

1.0 - Introduction.

There are two types of active monitoring to deal with in this module:

1. Continuous active monitoring by everyone.

This type of monitoring is what everyone has to do all the time to check that workplace precautions continue to work effectively.

2. Periodic formal active monitoring by managers.

This active monitoring is carried out as a formal check that all aspects of safety performance are at an acceptable level.

The first type of active monitoring is dealt with on the Working Safely course, since everyone has this type of active monitoring responsibility.

Supervisors and managers should carry out formal active monitoring with, for example, safety inspections and safety tours. You may be involved in this active monitoring but, if you are not, you should take the initiative and raise safety issues which are of concern to you. However, you should carry out your own, less formal, active monitoring. Remember that active monitoring is checking that workplace precautions are being complied with. Think back to the Necker cube and how we could change what we saw. If you deliberately put yourself into "active monitoring mode" you will be surprised how many things you can find to correct. Anything which is corrected reduces the overall risk in your workplace and makes it safer for yourself and others.

2.0 - Key Management Activities.

The key activities, so far as formal active monitoring is concerned, are as follows:

- **Find out what has to be checked.**
You need to know what workplace precautions and [RCSs](#) should be in place so that you can check that they are.
- **Find out what standards have to be met.**
Each workplace precaution and RCS will have to meet certain standards, for example, machine guards should be firmly fixed in place and ear defenders should be clean and undamaged.
- **Find out how often things should be checked.**

Some aspects of safety performance need to be checked only infrequently, while others may have to be checked on a weekly or daily basis. You need to know the appropriate intervals for checks on your workplace precautions and RCSs. Finding out these things may produce a long list of items you have to remember so that people often use checklists for active monitoring. We will look at the use of checklists at various points in this module.

- **Make checks at appropriate intervals.**

These checks will include examination of documents and records, inspection of the workplace, and observation of the work being done.

- **Take corrective action when weaknesses are found.**

Unless any weaknesses found during active monitoring are corrected, there will be little point in carrying out the active monitoring.

- **Record results of checks and corrective actions.**

It is good practice to record the results of your active monitoring and we will look later at why this is so.

- **Analyse active monitoring records from time to time.**

Well completed active monitoring records give a "snap shot" of safety performance at a particular time. By comparing records from different times, it is possible to get a [measure](#) of whether safety performance is improving or getting worse.

3.0 - What to Check.

There are three main sources of information you can use to find out what might need to be checked.

- **Incident investigations.**

As we saw during the [reactive](#) monitoring module, incident investigations can identify the need for workplace precautions or [RCSs](#) which, when implemented, will then have to be monitored.

- **Risk assessments.**

These will also have identified the need for workplace precautions and RCSs which, when implemented, will then have to be monitored.

- **This course.**

This course will have made you aware of the need for such things as risk assessment and accident reporting. You will have to check that these management arrangements are operating as they should.

When you combine the information from all three sources, you usually end up with an extensive list of things to be monitored. For this reason, it is useful to have tools to help you remember what has to be monitored, which is why the use of checklists is suggested. **We will look now at the second thing you have to find out about, the standards to be met.**

4.0 - Standards to be met.

Performance standards are the basis for measuring achievement in safety and, as [HSG65](#) points out, "*what gets measured gets done*".

There are four important questions to be answered if performance standards are to be adequate:

- **Who is responsible?**
Responsibility should be clearly allocated, in writing if necessary, and those allocated responsibility should have, or should be provided with, the necessary resources and competence.
- **For what are they responsible?**
This may be a specific safety topic such as carrying out risk assessments or providing first aid, or it may be the safety elements of another task, for example, wearing [PPE](#) when using chemicals.
- **When should the work be done?**
This may be at set intervals such as daily or weekly checks on [LEV](#), or it may be on demand, as would be the case with first aid [provision](#), or it might be when a particular task is carried out, for example wearing goggles when using a grinding wheel.
- **What is the expected result, or output?**
There must be a clear description of what people are to achieve, especially if this is to be used to specify how individuals will be held accountable. This part of the performance standard is often referred to as the "output standard".

Ideally the questions should be answered at the planning stage of a job, but the need for standards is often identified during incident investigations, risk assessments, or even during active monitoring. Standards can be expressed in the form of checklist questions and we will now look at how this is done.

5.0 - Questions as Standards.

Well-designed checklist questions do two main things:

- **They remind you what has to be checked.**
- **They summarise the standards which have to be met.**

The first use is fairly obvious, but you may be less familiar with the idea that checklist items summarise standards.

The example below shows how this is done:

The checklist question: "*Have all risk assessments been reviewed by the relevant supervisor in the last year and revised where necessary?*"

The above statement summarises the following standards:

- There should be risk assessments.

- All risk assessments should be reviewed.
- Reviews should be carried out by supervisors.
- Reviews should be at least once per year.
- The review should result in revision where necessary (the output standard).

We will now practice creating checklist questions which summarise standards.

5.1 - Example Standards.

Two examples of performance standards in the form of active monitoring checklist questions are given below:

- Does everyone wear ear defenders properly all the time they are in the ear protection zone?
- Are all supervisors up to date with their tool box talks?

We will have more practice in creating these sorts of questions in the exercise which ends this module. However, we will continue with the key activity of finding out how often checks should be made.

6.0 - Interim Summary.

So far in this session we have looked at what you need to know before starting your active monitoring, that is:

- *What has to be checked.*
- *The standards which have to be met; and*
- *How often checks should be made.*

We will now turn to the active monitoring itself and deal with this under three main headings.

- **The methods to be used for active monitoring.**
The discussion of these methods will cover two key management activities, making checks at appropriate intervals and taking corrective action when weaknesses are found.
- **The analysis of active monitoring data.**
- **The use of checklists.**

This will cover the key management activity of recording the results of active monitoring.

7.0 - Active Monitoring Methods.

There are four general methods for active monitoring and we will look at them in turn.

The four methods are:

- **Document inspection**
- **Record inspection**
- **Location inspection, and**
- **Activity observation.**

Note that for the purposes of this session we will use the following terminology.

A document is primarily intended to be read as a source of information, for example, Health and Safety Manuals and safe systems of work. A record is primarily something, usually a form, which is filled in as a means of recording that something has been done, for example, ***maintenance, repair, accident or risk assessment records.***

8.0 - Documents and Records.

8.1 - Document Inspection.

The range of required documents will vary from area to area, but will include items such as the Health and Safety Policy, copies of written standards, safe systems of work and, more generally, the Health and Safety Manual. **Document inspection involves checking that all of the required documents for an area are available and up to date.**

8.2 - Record Inspection.

Many aspects of safety management should be recorded. Examples include records of planned maintenance, records of checks on raw materials and product specifications, air monitoring checks, and checks that required corrective actions have been carried out.

Record inspection involves checking required records to ensure that they have been completed adequately.

8.3 - Location Inspections.

The term "*location inspection*" is used to describe inspections of the physical location in which activities take place. These locations will range from small defined spaces such as drivers' cabs and computer workstations, to large geographical locations such as factories, yards and car parks. Irrespective of the type of location, the purposes of the location inspection are to check:

- **That all required workplace precautions and [RCSs](#) are in place; and**
- **That there are no redundant workplace precautions and RCSs.**

In order to do this effectively, three types of information will have to be checked.

- **What the location contains and its physical layout.**
- **The hazards and risks associated with the location's contents and physical layout.**
- **The required workplace precautions and RCSs.**

Where required workplace precautions or RCSs are absent, or are not being implemented effectively, corrective action will be required. Similarly, workplace precautions or RCSs which are in place, but are no longer required, should be dealt with in an appropriate manner.

8.4 - Activity Observation.

The term "activity observation" is used to describe observation of what people do.

Activity observation has similar purposes to location inspections, that is, to check that required workplace precautions and [RCSs](#) are in place and that there are no redundant workplace precautions or RCSs. In order to do this effectively, three types of information will be required.

- ***Details of the activities carried out.*** This should include activities which are carried out only infrequently, for example, maintenance.
- ***Details of the hazards and risks associated with each activity.***
- ***Details of the workplace precautions and RCSs required for each risk.***

In most organisations, the collection of this information is a large task because there is usually a large number of activities. The actual observations can also be difficult since all activities will have to be observed and, where a number of people carry out the same activity, each person's work will have to be observed. A particular problem is the possibility that people may behave differently, for example not take "short cuts", when they are being observed. It may only be possible to identify this by interviewing people and asking about "custom and practice". The usual solution to these problems is to make first line managers or supervisors responsible for this aspect of active monitoring, first ensuring that they have the relevant competences.

Where required workplace precautions and RCSs are absent, or are not being implemented effectively, corrective action will be required. Similarly, workplace precautions or RCSs which are in place, but are no longer required, should be dealt with in an appropriate manner. It is valuable to commend compliance with workplace precautions and RCSs since this is likely to improve people's motivation to continue to comply.

9.0 - Analysing Records.

We have already seen that the main use of active monitoring is to check that things are as they should be, and that corrective action is taken when they are not.

However, the information collected during active monitoring should be recorded and used in similar ways to [reactive](#) monitoring data, that is, for [trend](#) analysis and [epidemiological](#) analysis.

9.1 - Trend Analysis of Active Monitoring Data.

Data from successive active monitoring exercises should be used for [trend](#) analysis. The results of these analyses will identify whether performance of required safety activities is improving or deteriorating. For example, an active monitoring involves measuring compliance with requirements to wear [PPE](#), a trend analysis of the results from successive inspections can be used to check whether compliance is increasing or decreasing. By using active monitoring trend analysis in this way, it is possible to detect deterioration in safety performance at an early stage and take remedial action before the deterioration leads to an accident.

9.2 - Epidemiological Analysis of Active Monitoring Data.

Aggregated active monitoring data can be subjected to [epidemiological](#) analysis in the same way as [reactive](#) monitoring data. For example, the results from location checks can be analysed to identify hazards or failures in performance standards which are occurring in a number of locations. This sort of information allows a more cost effective approach to remedial action by, for example, preparing a single standard rather than each part of the organisation having to develop its own.

10.0 - Combining Data.

Combining [Reactive](#) and Active Monitoring Data.

	Loss is reducing.	Loss is increasing.
Workplace precaution is being implemented effectively.	Workplace precaution is working. Maintain workplace precaution. Maintain workplace precaution.	Workplace precaution is not working. Find alternative workplace precaution.
Workplace precaution is not being implemented effectively.	Workplace precaution is not relevant to this loss. Resources to be spent on workplace precaution may be wasted.	Effectiveness of workplace precaution cannot be assessed. Implement workplace precaution as planned and continue to monitor.

To establish what effect, if any, particular safety activities are having. This is illustrated in the above table for a single workplace precaution intended to improve performance on a particular loss. For example, the workplace precaution might be safety goggles, to be worn by machine operators in specified areas, intended to reduce the loss arising from eye injuries. The type of analysis illustrated in the table is important, not only because it enables you to identify whether a particular workplace precaution is effective, but also because it enables the identification of possible wasted resources.

However, the most important role of these combined analyses is to provide the feedback which closes the system loop. Any system which has no feedback loop will go out of control, and the safety system is no exception. Measuring what we are doing, and the effect it is having, enables us to take the corrective actions which keep the system under control.

11.0 - Checklists.

Checklists can be used very effectively as an aide memoir when carrying out active monitoring. Their main disadvantage is that there is a temptation to consider only what is on the checklist and ignore anything which is not. This can be overcome by having an effective procedure for keeping checklists up to date and this, in many circumstances can simply be an "other" item on the end of each checklist. If a word processor is used, newly identified "other" items can be incorporated in the body of the checklist before it is next printed.

Where checklists are used, they have two main advantages:

1. You do not have to remember what has to be checked and to what standard. As we have seen, there can be large numbers of things which have to be checked from time to time.
2. They provide numerical data (the number of items which have been marked "yes" and the number which have been marked "no") which can be used in [trend](#) and [epidemiological](#) analysis of active monitoring data. The techniques for these types of analysis are the same as for analysis of [reactive](#) monitoring data.

In the exercise which follows, you will have an opportunity to begin preparing checklists of relevance to your responsibilities.

11.1 - Proactive Measurement Indicators.

No matter which of the previously mentioned methods you use to monitor performance, the indicators that you use to show how well you are doing should be:

- Objective.
- Easy to [measure](#) and collect - if it is difficult people may not wish to do this and the exercise becomes pointless.
- Relevant to the organisation or group whose performance is being measured.
- Cost-effective in terms of effort required to gather the information; if staff are spending hours a day collecting and analysing data this may be preventing them from doing their other roles.
- Understood and owned by the organisation or group whose performance is being measured - there is no point putting together a report on the indicators of performance if no one but the report writer understands what it all means.

The information that the performance measurement indicators tells us includes:

- What is going on around us.
- What has happened so far.

- Potential problems or dangers that we may need to respond to.

11.2 - Performance Measurements.

Once you have decided on how you will [measure](#) the performance and you have collected all your data; what happens next?

There will be various people within the organisation or group who will be interested in what has been found.

Internally these interested parties could include:

- Senior management.
- Line managers.
- Employees.
- Safety/employee representatives.
- Shareholders.

They will want to see the results so that they can decide if any further action is required, are there areas where controls etc. are lacking? These types of proactive measurements can highlight these areas before an accident occurs.

External groups to the organisation who may be interested in a company's performance measurements include:

- The enforcement bodies.
- Insurers.
- Clients.
- The public.

12.0 - Exercise 2.

Time allowed 25 minutes.

Please download the necessary forms for this exercise [here](#)

This exercise is in two parts and you should divide your time equally between them.

In the first part, you should begin to prepare a checklist which would be appropriate for weekly active monitoring in the area for which you are responsible. Consider the four main active monitoring techniques separately and record your results in the tables on the next page. Note that the last two columns in these tables (comments and Yes/No) will be used only when you are carrying out your active monitoring and are there to remind you of how your tables will be used.

In the second part of the exercise, you should begin to prepare a checklist which would be appropriate for annual active monitoring in the area for which you are responsible. Again, consider the four main active monitoring techniques separately and record your results in the tables provided.

Active Monitoring Check list		
Documents	Comments	Yes/No
Records	Comments	Yes/No
Location(s)	Comments	Yes/No
Activity	Comments	Yes/No

Model answer

Active Monitoring Check list		
Documents	Comments	Yes/No
<ul style="list-style-type: none"> • Risk Assessments • Safe systems of work • Permit to work systems • Policy and procedures 		
Records	Comments	Yes/No
<ul style="list-style-type: none"> • PPE inspection records • Equipment maintenance records • Plant maintenance records • Training records 		
Location(s)	Comments	Yes/No
<ul style="list-style-type: none"> • Inspection of physical location • Inspection of computer workstations • Inspection of workers booths etc. • Inspection of working environment i.e. is there a risk of injury from moving vehicles etc. 		
Activity	Comments	Yes/No
<ul style="list-style-type: none"> • Actual observation of a task/job being carried out by a worker <ul style="list-style-type: none"> ▪ Is right method being used ▪ Is safe system of work being followed ▪ Is personal protective equipment being worn (if so is it being worn correctly) 		

Hazard spotting video.

Should you be unable to conduct exercise 2 in your workplace this video may prove useful. The below video should start automatically.

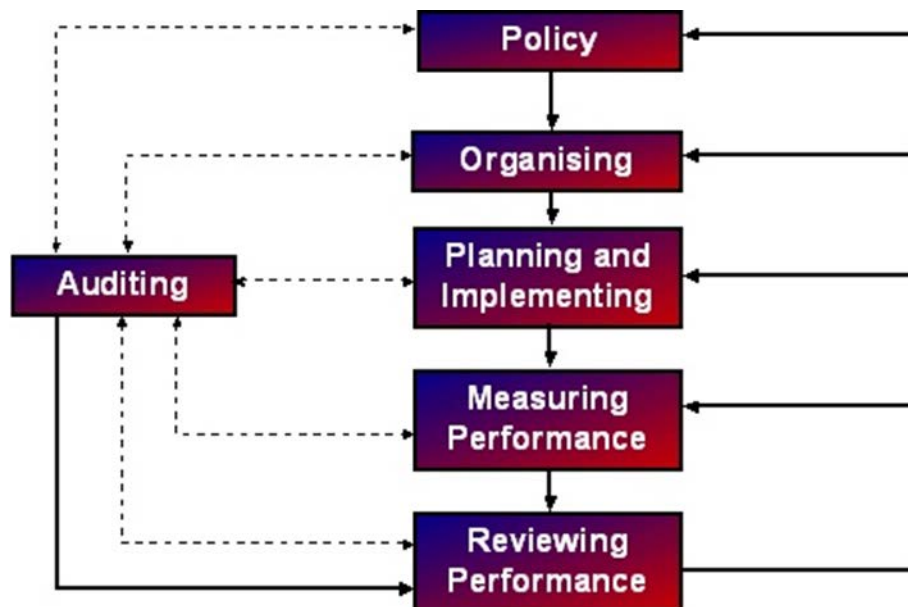
http://www.sheilds-elearning.co.uk/file.php/71/images/hazard-spotting_001.flv

Module 7 - Safety Management Systems.

1.0 - Introduction

Most organisations have management systems for one or more aspects of management. Probably the most common management system is the Quality Management System used for ISO 9000. However, you may also have heard of Environmental Management Systems such as ISO 14001. In this session we will be looking in more detail at the Safety Management System ([SMS](#)) which was introduced in the first module of the course, that is "Successful Health and Safety Management", more commonly known as [HSG65](#). We will begin with a reminder of the main elements in HSG65.

2.0 - The Main Elements in HSG65.



All of these elements have to be in place for the [SMS](#) to work effectively but different people in an organisation have different roles to play in each one. However, managers have a role to play in all of the SMS elements. We have already dealt with the measuring element since this consists of [reactive](#) and active monitoring but in the remainder of this module we will look at all of the other elements.

2.1 - Policy.

A written Safety Policy is a legal requirement for any organisation with five or more employees.

The Policy must cover:

- **what the organisation is trying to achieve in safety.**
- **who has general and specific safety responsibilities**
- **how they will carry out their safety responsibilities.**

A well written, up to date Safety Policy is the foundation of any [SMS](#) and unless you know what is in your organisation's Safety Policy you will not be in the best position to help in its successful implementation. You should read your organisation's Safety Policy at least once each year and, if there is anything you do not understand, or disagree with, you should bring it to the attention of your supervisor or manager.

Re-reading of the Policy is necessary for two reasons:

- **The Policy may have been revised.**
It is a legal requirement for employers to keep the Policy up to date, so it may be revised each year.
- **Things may have changed in your workplace.**
This may mean that the Policy is no longer appropriate for your circumstances.

The material we have just been through is from the Working Safely course and, as a "worker" it also applies to you. However, as a manager, you have an additional activity in that you will have to ensure that the people who report to you read and understand the policy.

2.2 - Organising.

Organising is split into four sections, the four C's:

- **Co-operation.**
- **Communication.**
- **Control.**
- **Competence.**

We will look at each of these in turn.

2.2.1 - Co-operation.

It has long been recognised that good safety performance depends on everyone co-operating, that is, "*Safety is everybody's business*".

This co-operation must extend to all aspects of safety but the following are particularly important:

- **Hazard identification and decisions on appropriate workplace precautions.**
- **Continued use of agreed workplace precautions.** This will include such things as following safe working procedures and wearing required [PPE](#).

- Unfortunately there are two versions of co-operation.
 - **"Do things the way I say".**
This is what co-operation means for some people.
 - **"Let's agree what each of us will do, and then we will both do what we said we would".**
This is what co-operation means for other people.

True co-operation is the second version. True co-operation means that you will be consulted on those things which may affect your health or safety. This is obviously good management practice but it is also a legal requirement for employers to [consult](#) their employees on health and safety matters. That is, it is a legal requirement that there is true co-operation. The *"Do things the way I say"* type of co-operation is not adequate. Where you have been consulted, and health and safety arrangements have been agreed, you should stick to your side of the agreement.

This is also good practice, but there is also a legal [duty](#) on you to [co-operate](#) with your employer. It also helps if you take the initiative on safety matters when you have knowledge your supervisor might not have. For example, you can raise safety issues with your supervisor, you do not have to wait to be consulted.

As a manager, you will have additional activities with respect to co-operation in that you will have to create the sort of environment in which co-operation is possible.

There are three important aspects to creating and maintaining this type of environment:

- **Consult and agree.**
For example, when risks are identified, consult with the people who are exposed to these risks about the workplace precautions and [RCSs](#) which should be used and try to agree on workplace precautions and RCSs which meet everyone's requirements.
- **Do what you said you would.**
Not fulfilling your side of an agreement not only has a detrimental effect on the agreement involved, it makes it harder to reach agreements in the future.
- **Respond positively.**
When you are approached on safety matters, respond positively and take action. If you do not, you will be demonstrating that safety has a low priority for you and people will soon stop raising safety matters in your presence.

The next of the 4 C's is communication and we will now look at the Working Safely material on communication.

2.2.2 - Communication.

It is obvious that there can be no true co-operation without effective communication.

Where true co-operation is in place and working, there will be ongoing informal communication on safety matters. For example, you will pass on information on any new hazards you identify

and discuss possible workplace precautions. However, there is also a need for formal communication via safety representatives and safety committees and we will look at these next.

2.3 - Safety Representatives.

Safety representatives are members of the workforce who voluntarily take on the task of representing the interests of their colleagues on health and safety matters.

Employees who act as representatives are normally chosen by their colleagues and where this is done within a trade union framework they are known as safety representatives. Where a trade union is not involved, they are known as representatives of employee safety. These two terms are used because trade union and non trade union representatives operate under two different sets of regulations. However, the regulations are similar and we will just refer to representatives from now on.

The regulations entitle representatives to have paid time off from work for safety training and to carry out their safety activities. These activities include safety inspections, investigating accidents and examining safety related documentation.

Representatives can also provide a good way of dealing with safety issues which you have not been able to resolve in discussions with your supervisor. You should find out who your representative is and talk to him or her about the work of a representative, and the help he or she can provide on safety matters. If you are interested in safety as a subject, becoming a representative can provide a good opportunity to learn more.

2.4 - Safety Committees.

Safety committees are the most formal means of communication on safety matters.

It is good practice to have a safety committee and the regulations which deal with representatives also allow for the setting up of safety committees.

The main purposes of a safety committee are to:

- Monitor safety performance.
- Suggest remedial action where necessary.
- Discuss ways of improving the organisation's safety management system.

You should find out about the work of your own safety committee:

- By reading the minutes from its meetings; or
- By talking to someone who is on the committee.

2.5 - Management Aspects.

As a manager it is important that you [demonstrate](#) your interest in, and concern for, safety by communicating with the people for whom you are responsible. There are two main ways of doing this:

- **Ask questions on safety matters.**

You no doubt ask questions of your staff on a whole range of issues and if you do not include questions on safety, they will assume that, for you, safety is not important. It is possible to ask questions to demonstrate your interest even if you know what the answer should be. However, sometimes you find that the answer you get is not the one you expected.

- **Pass on information on safety matters.**

This can be information on accidents in other parts of your organisation, or details of possible new workplace precautions, or recently identified hazards you have found out about from colleagues (or even safety courses!).

On a more formal level, you should also facilitate the work of the following:

- **Safety Representatives and Representatives of Employee Safety.**

You can do this by providing them with the time to do their work as representatives and with facilities for carrying out their work. You can also encourage your staff to become representatives.

- **Safety committees.**

You can do this by encouraging your staff to read the minutes of the safety committee meetings, or attend safety committee meetings, and by providing them with the time to do these things. You could also go to safety committee meetings yourself.

2.6 - Control.

The law requires that employers exercise control over all aspects of health and safety in their organisation, and this control is usually the responsibility of managers and supervisors. If you fail to comply with a safety rule, for example by not wearing the required [PPE](#) or defeating a machine guard, and your supervisor allows you to "*get away*" with this, then you are both breaking the law. You are breaking the law because you are not co-operating on a safety matter, and your supervisor is breaking the law by not exercising control. Where you think workplace precautions are inappropriate or impractical, you should discuss them with your supervisor and representative and find out whether they can be changed. What you must not do is ignore the safety arrangements. Not only will you not be working safely in these circumstances, you will also be breaking the law.

2.6.1 - Control by Management.

Control is an important management issue in that, without effective management control, no organisation can continue to operate effectively. It can be the case that control of safety matters is less effective than control in other management areas. For example, few managers would countenance poor time keeping by one of their staff, but some managers do allow their staff to "*get away with*" not wearing the required [PPE](#).

2.7 - Competence.

Competence, in safety terms, means having the knowledge and skills needed to work without risks to yourself or to others, that is, to work safely. The main problem with safety competence is that we do not always realise that we need special knowledge or skills. You cannot tell that a chemical is a carcinogen simply by looking at it, and in any case, you may not know what a carcinogen is. Even if you know it is a carcinogen, you may not have the knowledge and skills needed to work with it safely.

Because of this, the law places many requirements on employers to provide employees with information, instruction and training on safety matters and we will look at these next.

3.0 - Information and Instruction Signs

Various regulations impose requirements on employers to provide information, instruction or training. For example, these are included in the regulations on chemicals and noise. In addition to these specific requirements, there is a more general requirement for employers to provide relevant information, instruction and training where employees may be at risk. However, although it is an employer's [duty](#) to supply information, instruction and training there should be an element of communication from you. If you think that you require additional information, instruction or training in order to deal effectively with the risks to which you are exposed you should discuss this with your supervisor or manager. If you do not, he or she may assume that you have the necessary competence. Safety signs are a particular type of information and we will look at safety signs now. The examples below illustrate the four main types of safety sign. These signs are colour coded as follows:

Red Signs.



These are prohibition signs and include prohibitions on smoking (as illustrated). Other common prohibition signs are those showing that there is no access for pedestrians or no access for vehicles. Red signs are also used for fire fighting equipment.

Blue Signs.



These are referred to as mandatory signs and they indicate that a specific action is required, for example, wear a hard hat (as illustrated). Other common mandatory signs are hearing protection must be worn and face protection must be worn.

Yellow or Amber Signs.



These are warning signs and are used to warn against such things as electricity (as illustrated), radioactive material and biological risks.

Green Signs.



These signs are for emergency escape routes and first aid provisions, for example, first aid posts and emergency showers.

4.0 - Management Competence.

Management competence, in safety terms, means having the knowledge and skills needed to ensure that the people for whom you are responsible work without risks to themselves or to others, that is, to work safely.

5.0 - Planning and Implementation.

Planning is an important tool in many aspects of management and safety management is no exception. If we plan what it is we want to achieve, and how we are going to achieve it, we are much more likely to be successful. For most managers, safety planning need not be onerous since they do not have to make an extensive or detailed plan. All that is usually required is to make use of work you should already be doing to fulfil other safety management requirements.

Risk assessment.

This will have identified what workplace precautions and [RCSs](#) are required and what you have to do, or have done, in order to meet these requirements.

Active monitoring.

By recording the requirements identified during risk assessments in the form of active monitoring checklists, you will, effectively, have a plan of what has to be done in the future.

More elaborate planning techniques are available and if your responsibilities are such that extensive safety plans are required you should read the *Planning Annex* in **BS 8800** for further guidance (*BSI, Guide to occupational health and safety management systems, BS 8800, 1996, ISBN 0 580 25859 9*). So far as implementing is concerned, this varies with the risks you have to manage and the sorts of activities required for effective implementation are dealt with in the module on common hazards.

6.0 - Review and Audit.

6.1 - Reviewing Performance.

We saw in the opening session of the course that the primary purpose of performance review is to enable organisations to learn by experience and use the lessons learned to improve their health and safety performance.

You should conduct reviews regularly and cover all aspects of health and safety performance. Where you already carry out management reviews for other reasons it is preferable to include safety as part of these reviews. If you do not conduct general management reviews then you should arrange for safety reviews to take place, for example, on a quarterly basis.

6.2 - Auditing.

As we have seen, auditing is the process of obtaining a systematic and independent view of the health and safety performance of an organisation.

Since auditing has to be independent, you cannot audit your own performance. However, what you have learned during this course will enable you to prepare for any safety audit of your area of responsibility. In addition, your learning will make you a more valuable member of any internal audit team.

When you are auditing there are certain types of evidence that you can use to show the effectiveness of the management system.

These types of evidence include:

- Documentation.
- Interviews.
- Observations.

6.3 - Benefits of a Health and Safety Management System.

Having a health and safety management system in a company has many benefits, these include:

- Ensuring that you are complying with legislation and other requirements.
- Assisting the organisation in delivering their policy.
- Enabling [improvement](#) to be made to the managing of health and safety risks.
- Providing a competitive edge (if you are tendering for work and you have a health and safety management system and another company does not, this could result in your organisation being selected for the work).
- Providing protection of company assets (a managed system means less accidents and incidents which could result in claims or damage to property and/or equipment).

Module 8 - Protecting Our Environment

1.0 - Environmental Management.

Society has more influence in business today. Most organisations whose stakeholders are made up of an element of the public feel the need to ensure they comply with environmental issues as a matter of course.

Pollution, waste management and energy control have led to increased legislation in the area of environmental management.

In this course we will deal with a summary of the main pieces of environmental legislation.

1.1 - Impact of Industry on the Environment.

What do we mean by the environment? Well it is everything that surrounds us; air, land and water. Together, these provide the conditions for developing and sustaining all forms of life, including us. So, we need to treat this resource with the respect it deserves.

Unfortunately, we sometimes use our environment as a dustbin for everything we don't want. Protecting the environments is important for us all.

Businesses and organisations interact with the environment in different ways and have different effects on it. The nature of the work activities, their location, the products and services they lead to, and the supplies they use are just some of the factors that influence their effect on the environment.

Sometimes one event can have an immediate impact on the environment, such as a spillage from an oil tanker. Other impacts are gradual and have more than one cause, such as the build up of greenhouse gases. Sources of pollution can harm a wide range of living things. For example, contaminated land can affect the ecosystem by passing pollution into a watercourse.

1.2 - Did You Know?

Did you know that in 2008 there were:

- 442 water pollution incidents.
- 199 land pollution incidents.
- 126 air pollution incidents.

These all had a serious impact on the environment.

1.3 - Waste.

Waste is what businesses and organisations throw away because they no longer need it or want it. Waste can have harmful effects on the environment so it needs to be adequately controlled.

How a company deals with waste from their organisation will depend on a number of factors:

Below is a table of different industry types and the main waste streams that they produce.

Industry.	Main Waste Streams.
Car manufacturer.	Metals, plastics, oil, vehicles, paints and tyres.
Construction.	soils, demolition waste, asbestos, paints and solvents, plasterboard and wood.
Engineering.	Cutting oils, swarf, packaging, solvents and metals.
Food production/retail.	Organic waste, transit packaging, cardboard, refrigerants, animal tissue, waste water treatment sludge and preservatives.
Service sector/finance	paper, catering wastes, office furniture, computers, electronic equipment and fluorescent tubes.

1.4 - Pollution.

Pollution is the release of harmful substances or energy into the environment.

It can contaminate:

- The air.
- The land.
- The water.

1.5 - Air Pollution.

Air pollution can occur through the burning of coal, oil or natural gas, which give off gases such as carbon dioxide (known as greenhouse gases) and can produce smoke and dust.

Lets look about greenhouse gases.

1.6 - Greenhouse gases.

Greenhouse effect works in the following way:

1. Energy from sun beats down on to Earth.
2. Some energy is reflected back into space. The rest mainly in the form of light, enters the atmosphere & hits the Earth.
3. The incoming light energy warms the Earth, which then emits energy mainly in the form of infra-red or heat energy.
4. Some of this infra-red energy is reflected back towards earth by gases in the atmosphere called "Greenhouse Gases".
5. Greenhouse gases such as carbon-di-oxide are present naturally, but human activity is increasing concentrations.
6. Infra-red energy has a long wavelength. Greenhouse gases unlike other gases, have molecules which can absorb it.
7. Molecules absorb the infra-red energy, then re-emit it in many directions.
8. Some energy is emitted into space, but some energy is reflected back to Earth, warming it further.
9. The more greenhouse gases present, the more heat is absorbed & retained.

1.7 - Land Pollution.

Land pollution can occur through:

- Dumping hazardous waste.
- Leaks and spills of materials.
- Water run-off during fire-fighting.

1.8 - Water Pollution.

One of the main worries from an environmental point of view is the pollution of water, whether this is rivers, lakes, streams, seas and would also include ground waters.

Water pollution can occur via a number of ways including:

- Incorrect drainage connections, resulting in industrial waste entering surface water drains, which in turn flow into rivers.
- Chemicals being washed into or disposed of into surface water drains.
- Accidental spillage of oils and chemicals during delivery operations.
- Leakage of oils and chemicals from drums and tanks.
- Spillage of bulk foodstuffs such as milk, alcohol or cream.

Due to increased public awareness and concern over environmental matters it is important that companies do all they can to ensure that water pollution and any other form of pollution is prevented. The media has often focussed on companies who have caused pollution. The results to the company,

from such a public display, have led to numerous related issues such as loss of public image and a loss of business as no one wants to be associated with a company whose lack of pollution control has been televised on such a large scale.

1.9 - Controlling Pollution and Waste.

Having identified how your company affects the environment, you'll need to establish which issues are the most important to manage. One way to do this is through a risk assessment, but the same principle applies to environmental risks.

In risk assessments for the environment you are looking at the [likelihood](#) of something happening that could affect the environment and its consequences.

How you deal with pollutants and waste from your organisation's activities will depend on a number of factors:

- The potential impact of the pollutant.
- Any specific legal requirements.
- Developments in best practice.
- Your organisation's values and policy.
- Concerns of the stakeholders.
- Cost.

1.10 - Did You Know?

In 2008, the Environment Agency's prosecutions against companies resulted in £3 million in fines that averaged £12,000 per business (compared to a total of £2.95 million and an average of £11,800 in 2006).

1.11 - Waste Hierarchy.

The waste hierarchy will help company's identify the best waste control solution:

- **Prevent:** By changing the way you do things so that you eliminate certain kinds of waste.
- **Reduce:** By using less packaging or improving efficiency.
- **Reuse:** By putting materials back in to use instead of disposing of them.
- **Recover:** By reprocessing waste so that it can be used, recycling waste materials to produce usable goods, like repulping paper, composting organic waste, using combustible waste as a fuel or turning organic waste into fuel.
- **Responsibly release or dispose of:** Taking into account of any relevant standards. Sometimes waste may need to be made harmless before it can be released.

1.12 - Pollution Control.

If there is an incident that releases pollutants, your organisation needs to have processes in place to reduce the chance of the pollutant doing any damage (for example, reaching a watercourse) and to repair any damage that does occur. These processes should be part of your organisation's emergency procedures. You'll need to review them regularly and organise practice drills to test them. Some organisations have to have a tiered response for various scales of emergency.

Pollution can be prevented by setting limits for emissions to air, land and water. Depending on what it does, your organisation may have consent limits, which allow it to emit certain levels of pollutants. If you break these limits, you must tell the regulator; In *England* and *Wales* this is the **Environment Agency**, and in *Scotland* the **Scottish Environmental Protection Agency**.

1.13 - Did You Know?

British Industry spends £1,100 per worker on environmental protection measures (DEFRA, 2006).

1.14 - Environmental Management Systems.

With all the following legislation comes the requirement to have an environmental management system in place. This requirement is similar to the requirement to have a health and safety management system in place. It proves that you are aware of the environmental hazards and have operating procedures and controls in place to ensure that you are doing all that you can to reduce the environmental risk.

The best way to manage health and safety risks is to have a systematic approach based on the plan, do, check, act cycle. It is central to good business management, it works well in environmental management.

PLAN: Policy, planning and organising.

DO: Implementation and operation.

CHECK: Measuring performance.

ACT: Reviewing and continual [improvement](#).

Such systems do have their benefits, including:

- It can be a condition of getting a licence to operate.
- It enables effective cost control, as you can see where there may be problems/wastes etc. and you can put control in place to not only reduce the risks but save the company money.
- It gives better access to product and capital markets.
- It improves relations with the general public - who would want to do business with a company who damages the environment?

1.15 - Getting It Right.

Getting It Right.

- Environmental control leads to cost control - you need to check out efficiency, acceptability of products and services and the best use of materials and by-products.
- Planning to prevent and reduce pollution and waste is cheaper than cleaning up after the event.
- Good environmental performance has several advantages: increased profitability and competitiveness, enhanced investment profile, better industrial and public relations and reduced insurance premiums.
- Integrating environmental factors into your team's responsibilities is a key factor in achieving good environmental performance.

If you do not get it right however, there are various pieces of legislation that you could be in [breach](#) of and these will be discussed in the next sections.

1.16 - Legislation.

In the UK we are bound by European and international agreements and protocols. Many agreements are voluntary and some are now national laws.

The main legislation affecting organisations are outlined on the next few pages.

1.17 - The Environmental Protection Act 1990.

The Environmental Protection Act 1990 places certain obligations on businesses to ensure that their waste is suitably contained and disposed of in a proper manner.

The main duties under the Act are:

Section 34 (1)(b).

It shall be the [duty](#) of any person who produces, keeps or disposes of controlled waste: ***to prevent the escape of waste from his control.***

Controlled waste includes domestic, commercial and industrial waste. You must package the waste in suitable containers so that it cannot fall out, blow away or escape from the receptacle. You must secure the waste against unauthorised removal as far as is reasonably practical.

Security should be sufficient to prevent the breaking of containers and removal of waste by vandals, thieves, children, animals, accident or weather. Waste must not be placed outside for collection longer than necessary. It should only be placed on the footpath at, or near the scheduled collection time.

Section 34 (1)(c).

It shall be the duty of any person on the transfer of the waste, to ensure:

- (i) that the transfer is only to an authorised person.

You must ensure that the person removing your waste is either a local council, registered carrier or holds a licence to dispose of waste. You are responsible for ensuring that your waste is disposed of properly and must ask for proof from your waste contractor that he is an authorised person. You must not place your waste on the footpath unless you have made proper arrangements for its collection by either your local council or a properly authorised waste contractor. To do so is an offence under the Act.

It shall be the duty of any person to ensure:

- (ii) that there is transferred such a written description of the waste as will enable other persons to avoid a contravention and to comply with the duty as respects the escape of waste.

Each transfer of waste must be documented by means of a Duty Controlled Waste Transfer Note. This document must contain details of your organisation, the organisation to whom you are transferring the waste, the place of transfer and details of the nature and quantity of the waste being transferred.

Regular uplifts of waste from your premises by the council, or suitability licensed waste contractor, may be covered by an annual transfer note. A copy of each transfer note requires to be kept by both you and the organisation collecting your waste for a period of two years.

It is an offence under the Act to dispose of your waste without an appropriate transfer note.

1.18 - Environment Act 1995.

Apart from the requirement to produce a National Waste Strategy, this Act was largely concerned with changes to the legal and institutional arrangements for waste management.

Some important points include:

- The establishment and empowering of the Environment Agency to take on the role of **Competent Authority** under [EU Directive 91/156/EEC](#) on waste. The Environment Agency is a central authority replacing the National Rivers Authority, Her Majesty's Inspectorate of Pollution, Waste Regulation Authorities and sections of the Department of the Environment.
- The introduction of the principle of [BPEO](#) for each waste stream.
- The prioritisation of selected waste streams such as tyres and construction wastes.
- The introduction of the Producer Responsibility Obligations Section 93 (Packaging Waste) Regulations.
- The repealing of waste disposal plans set up by local waste authorities under the 1990 Environmental Protection Act.

1.19 - Waste Minimisation Act 1998.

This Act enabled waste collection authorities or waste disposal authorities to make arrangements to [minimise](#) the generation of controlled waste in their area (i.e. household, commercial or industrial waste). The Act also authorised the relevant authority to contribute towards the expense of making such arrangements for controlled waste generated in its area.

1.20 - The Hazardous Waste (England & Wales) Regulations 2005.

This supersedes the [Special Waste Regulations 1996](#) on defining hazardous wastes in order to conform to [EU](#) legislation on hazardous wastes.

The regulations also detail how hazardous waste should be disposed of and the requirements for hazardous waste segregation *unless* permits are applied.

Under these regulations premises where hazardous waste is produced at, or removed from, if not exempt, must be *notified* to the **Environment Agency**.

The regulations also put restrictions on the removal/transport of hazardous waste from premises unless the premises have been notified to the **Environment Agency** and a *consignment note* is produced.

>---END---<