

RRC Study Text

NEBOSH

International Diploma for Occupational
Health and Safety Management Professionals

Unit ID1 - Part 1

Know - Workplace Health and Safety Principles (INT)

June 2021



**LEARNING
PARTNER**

GOLD 335

NEBOSH INTERNATIONAL DIPLOMA FOR OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT PROFESSIONALS

UNIT ID1 - PART 1

ID1 Learning Outcome 1

ID1 Learning Outcome 2

ID1 Learning Outcome 3

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Course Structure

This study text has been designed to provide the learner with the core knowledge needed to successfully complete the NEBOSH International Diploma for Occupational Health and Safety Management Professionals, as well as providing a useful overview of health and safety management. It follows the structure and content of the NEBOSH syllabus and includes extra "Prior Learning" material to support your understanding of diploma-level content.

The NEBOSH International Diploma consists of three units of study. Learners must achieve a 'Pass' in all three units to achieve the qualification, and you need to pass the three units within a five-year period. For more detailed information about how the syllabus is structured, visit the NEBOSH website (www.nebosh.org.uk).

Unit 1 focuses on general workplace health and safety principles and covers eight Learning Outcomes.

Learning outcome		Taught hours	Recommended self-study hours	Assessment
1	You will be able to advise on the types of legislation likely to apply to your organisation and how enforcement actions could apply; the relevance of the International Labour Organization's conventions/recommendations to the organisation; how non-government bodies and standards could influence health and safety in the organisation.	16	58	Unit ID1 assignment
2	You will be able to promote a positive health and safety culture by: <ul style="list-style-type: none"> gaining commitment and participation; and engaging, supporting, and influencing leaders (and others) to change attitudes and behaviour and make health and safety a priority. 	19		
3	You will be able to assess, develop and maintain individual and organisational health and safety competence.	5		
4	You will be able to understand risk management including the techniques for identifying hazards, the different types of risk assessment, considerations when implementing sensible and proportionate additional control measures and developing a risk management strategy.	6		
5	You will be able to develop and implement proactive and reactive health and safety monitoring systems and carry out reviews and auditing of such systems.	12		
6	You will be able to continually develop your own professional skills and ethics to actively influence improvements in health and safety by providing persuasive arguments to workers at all levels.	5		
7	You will be able to develop a health and safety policy strategy within your organisation (including proactive safety, Corporate Social Responsibility and the change management process).	5		
8	You will be able to manage contractors and supply chains to ensure compliance with health and safety standards.	3		

NEBOSH stipulate 129 hours of study time prior to the assessment. We would suggest that you should allocate additional time for further revision and assessment preparation. Note there is an expectation that 60 hours will be spent completing the assessment - more information in the next section.

Unit	Notional learning hours				Credits
	Taught hours	Self-study hours	Assessment hours	Total hours	
ID1	71	58	60	189	19

Assessment Background

There are no in-person examinations for the International Diploma for Occupational Health and Safety Management Professionals. Instead, assessment will be via assignments and scenario-based case studies. Details of these together with sample assessments and assessment dates can be found on the NEBOSH website:

www.nebosh.org.uk/qualifications/international-diploma-for-health-and-safety-management-professionals/#assessments

A sample assessment for ID1 can be found at:

[/www.nebosh.org.uk/qualifications/international-diploma-for-health-and-safety-management-professionals/#resources](http://www.nebosh.org.uk/qualifications/international-diploma-for-health-and-safety-management-professionals/#resources)

NEBOSH state that the assessments are a substantial undertaking and should take around 60 hours for ID1, and 40 hours each for ID2 and ID3. It is important that you prepare well for the assessments and remember that whilst these may not be traditional exams, they are still intended to be challenging assessments of your capabilities and skills. You are therefore allowed a significant period of time to complete the assessment, so it is vital that you understand this and do not leave the assessment until the last minute.

Unit	Estimated time required to complete assessment	Time period given by NEBOSH to complete assessment
ID1	60 hours	6 weeks (30 working days)
ID2	40 hours	4 weeks (20 working days)
ID3	40 hours	4 weeks (20 working days)

During the assessments you will have access to books and the internet, however this must be your own work and there are stringent protocols in place to prevent plagiarism. All assessments will be checked via plagiarism software and each assessment also includes a closing interview. Guidance on digital assessments can be found on the NEBOSH website at:

www.nebosh.org.uk/digital-assessments/diploma/

Unit ID1 Assessment

The Unit ID1 assessment comprises of four parts:

- Part 1: Questions based on a fictitious but realistic scenario. The number of questions, the scenario and the tasks will change on each paper and will not cover the whole of the ID1 syllabus.
- Part 2: Tasks to be completed at a suitable workplace. There will be up to six activities and these will differ on each paper.
- Part 3: Reflection. This section focuses on transferable leadership and professional skills which you have or need to develop. The skills could come from work or from areas of your personal life.
- Part 4: Research. Each paper will ask the learner to carry out research into a topic and provide reasoned and informed arguments. The topics will, of course, change with each paper.

You will note that some of the Unit ID1 assessment is on workplace-based tasks – these don't have to be carried out at your own workplace but you must ensure that you have access to a suitable workplace or organisation for this part of the assessment.

Results

Results will be issued 50 working days after the submission date for the assessment. After successful completion of each unit a “unit certificate” will be awarded. After you have completed all 3 units the combined percentage mark will be used to determine your final grade:

- 226 or more: Distinction
- 196-225: Credit
- 150-195: Pass

More Information

As you work your way through this book, always remember to relate your own experiences in the workplace to the topics you study. An appreciation of the practical application and significance of health and safety will help you understand the topics.

Keeping Yourself Up-to-Date

The field of health and safety is constantly evolving and, as such, it will be necessary for you to keep up to date with changing legislation and best practice.

RRC International publishes updates to all its course materials via a quarterly e-newsletter (issued in February, May, August and November), which alerts students to key changes in legislation, best practice and other information pertinent to current courses.

Please visit <https://www.rrc.co.uk/news-resources/newsletters.aspx> to access these updates.

NEBOSH International Diploma for Occupational Health and Safety Management Professionals	
Unit ID1	Know – Workplace Health and Safety Principles (International)
Unit ID2	Do – Controlling Workplace Health Issues (International)
Unit ID3	Do – Controlling Workplace Safety Issues (International)

ID1 Learning Outcome 1

NEBOSH International Diploma for Occupational Health and Safety Management Professionals



Learning Outcome 1

Once you've read this Learning Outcome, you will be able to advise on:

- The types of legislation likely to apply to your organisation and how enforcement actions could apply.
 - The relevance of the International Labour Organization's conventions/recommendations to the organisation.
 - How non-government bodies and standards could influence health and safety in the organisation.
-

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Socio-Legal Models

IN THIS SECTION...

- Outline how legislation can promote positive health and safety outcomes, 'goal-setting' and 'prescriptive' legislation, and possible compensatory mechanisms for loss events where there is a failure of the duty of care.
-

Role, Function and Limitations of Legislation

It is not realistic to expect organisations to adopt good health and safety standards voluntarily, not least because the benefits of good (and costly) standards may not be immediately obvious to all employers. One way of making sure minimum standards are met, whether they relate to health and safety or other matters to do with the regulation of society, is for the government to introduce legislation.

Examples of legislation relating to occupational health and safety include:

- **Health and Safety at Work, etc. Act 1974 (HSWA) (UK).**
- **Occupational Safety and Health Act 1970 (USA).**
- **Work Environment Act 1977 (Sweden).**

By defining minimum acceptable standards, legislation at least partly forces organisations to adopt good practice, when otherwise they might be unlikely to do so voluntarily.

DEFINITION

LEGISLATION

The statutes and other legal instruments (documents) that have been enacted by the governing body.

Legislation may be introduced that leads to criminal and/or civil consequences. A **crime** is an offence against the state and the consequence of a criminal action is the prosecution of the offender, which may lead to punishment, perhaps a fine, or a prison sentence. What behaviour constitutes a criminal offence is largely dependent on the government and can therefore be influenced by political concerns. In contrast, a **civil action** is concerned with an individual who has suffered some loss, such as being injured following a workplace accident. The aim is for the claimant (the one who has suffered the loss) to seek (usually) financial compensation from the defendant as a result of the wrongdoing.

There are, however, limitations to the legislative approach. The first is that there is little incentive for organisations to go beyond the minimum legal requirements; they will comply with what the law says, but not with its spirit. In fact, since good standards often cost a lot of time and money, an organisation which embraces such high standards may be at a competitive disadvantage. If a government introduces legislation then there is a requirement for the legislation to be enforced. This requires a means of identifying those who do not comply with the law. Accordingly, enforcement officers who have defined powers of inspection and investigation (so that breaches of the law can be identified) must be employed and trained.

There must also be procedures for the prosecution and punishment of organisations and individuals who fail to meet the required standards, i.e. an effective court system. The governments of some countries do not appear to be able to enforce health and safety provisions. Even in wealthy countries with extensive resources, the enforcement of health and safety has to compete with other government priorities.

'Goal-Setting' and 'Prescriptive' Legal Models

Legislation is sometimes described as being 'goal-setting' or 'prescriptive'. **Goal-setting legislation** sets an objective but leaves it to the dutyholder to decide on the best way of achieving the defined goal. (Note that a dutyholder is the person on whom the legal duty is placed: the employer in the case of most health and safety duties.)

You can see a good example of goal-setting legislation in the UK. The principal Act of Parliament governing health and safety is the **HSWA (Section 2)**. The key duty imposed on employers is:

"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 [their] employees."

The goal to be achieved is to ensure (so far as is reasonably practicable) health and safety, but the Act does not define **how** this should be done. It is up to the employer to identify and evaluate different ways of meeting this requirement and then to choose what is appropriate in the given circumstances. Note that the phrase "*so far as is reasonably practicable*" is not only a feature of UK legislation, but also of other regions. It generally means that when deciding whether you need to take any action to control a risk, you must compare the risk against the effort, time and money that would be required to bring it under control. So, some judgment is needed.

In contrast, **prescriptive legislation**, as the name suggests, defines the standard to be achieved in far more explicit terms. One example, again from the UK, is in the **Provision and Use of Work Equipment Regulations 1998 (PUWER)**. **Regulation 26** is concerned with the provision of information and instruction to users of equipment for use at work preventing mobile work equipment (e.g. forklift trucks) from rolling over. This Regulation applies only to such equipment and makes explicit what a dutyholder should do to comply.

Regulation 26, Rolling over of mobile work equipment states:

- (1) *Every employer shall ensure that where there is a risk to an employee riding on mobile work equipment from its rolling over, it is minimised by:*
 - (a) *stabilising the work equipment;*
 - (b) *a structure which ensures that the work equipment does no more than fall on its side;*
 - (c) *a structure giving sufficient clearance to anyone being carried if it overturns further than that; or*
 - (d) *a device giving comparable protection.*

In practice, legislation should not be thought of as being entirely goal-setting or entirely prescriptive – it more often has the characteristics of both models. One example is **Regulation 8 of PUWER**.

This states:

- (1) *Every employer shall ensure that all persons who use work equipment have available to them adequate health and safety information and, where appropriate, written instructions pertaining to the use of the work equipment.*

This requires that employers provide adequate information for users of work equipment – it has an element of prescription in that there is a duty to provide information; however, what constitutes 'adequate' needs to be decided by the employer, which effectively sets a goal.



Common law is the body of rules based on the decisions of the courts over many years

Advantages and Limitations

TOPIC FOCUS

Prescriptive legislation has clearly defined requirements which are more easily understood by the dutyholder and enforced by the regulator. It does not need a higher level of expertise to understand what action is required, and provides a uniform standard to be met by all dutyholders.

The **limitations** are that it is inflexible and so, depending on the circumstances, may lead to an excessively high or low standard. Also prescriptive legislation does not take account of the circumstances of the dutyholder and may require frequent revision to allow for advances in knowledge and technology.

Goal-setting legislation allows more flexibility in compliance because it is related to the actual risk present in the individual workplace. It is less likely to need frequent revision and can apply to a much wider range of workplaces.

The **limitations** are that it is more difficult to enforce because what is 'adequate' or 'reasonably practicable' is much more subjective and so open to argument, possibly requiring the intervention of a court to provide a judicial interpretation. Dutyholders will also need a higher level of competence in order to interpret such requirements.

Legal Hierarchy of State and Federal Laws

DEFINITIONS

FEDERAL LAW

Law created by the federal government of a nation.

FEDERAL GOVERNMENT

Formed when a group of political units, such as states or provinces, merge together in a federation, surrendering their individual sovereignty and many powers to the central government while retaining or reserving other limited powers. Examples: USA, Canada, Australia and India.

One of the difficulties in federal systems is to ensure uniform standards and regulations throughout the country. If each state can set their own standards, there will inevitably be inconsistencies.

In the USA, the **Occupational Safety and Health Act 1970** was enacted at federal rather than state level, and so the USA does not have significant problems with harmonisation of standards. However, although the Act applies to all states, its enforcement is delegated to the individual states, which leads to inconsistencies in enforcement standards.

There have been many attempts to harmonise occupational health and safety standards in Australia. In 1990, the Ministers of Labour Advisory Committee, which comprises state, territory and Commonwealth labour ministers, agreed that:

"...as far as practicable, any standards endorsed by the [National Occupational Health and Safety Commission] NOHSC will be accepted as minimum standards and implemented in the State/Territory jurisdiction as soon as possible after endorsement".

Source: *Review of Occupational Health and Safety in Australia, Report by the Review Committee to the Minister for Industrial Relations, Department of Industrial Relations, Parliament of Australia, (1990) 25*

In 1991, the NOHSC set up a task force to develop a strategy for harmonisation and by 1996 a number of priority areas had been identified (e.g. hazardous substances) and adopted by the states and territories. More recently, states and territories agreed to work with the Commonwealth to implement a model **Occupational Health and Safety Act**.

Within Europe there have been moves to harmonise standards in different countries. This started with the creation of the European Economic Community (EEC), or the Common Market, which was established by the Treaty of Rome in 1957. This initially applied to six states: France, West Germany, Italy, Belgium, the Netherlands and Luxembourg. The Common Market then grew substantially and became the European Union (EU) in 1993. There are currently 27 member states. In terms of health and safety integration, the **Framework Directive of 1989 (89/391/EEC)** established measures to encourage improvements in the safety and health of workers at work. On joining the EU, member states become subject to EU law and, where applicable, European law supersedes any existing contrary domestic law.

However, it is recognised that there are a number of different legal systems within the EU. The EU issues directives which are:

“...binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods”.

Source: © European Union, <http://eur-lex.europa.eu> 1998-2017

This allows each member state to introduce its own legislation, providing it achieves the broad objectives contained within the directive.

Loss Events in Terms of Failures in the Duty of Care to Protect Individuals and Compensatory Mechanisms That May Be Available

If a worker has a work-related accident or contracts a disease as a result of their work, this may result in loss that may include pain and suffering, as well as loss of future income. The accident or ill health may lead to death, which may result in the worker's dependents suffering major financial loss. There are a number of mechanisms that have evolved to provide compensation to the injured worker, or to their dependants. Some require the person making the claim to prove that their accident or ill health was a result of the fault of another, such as their employer. This invariably means having to resort to litigation in the courts. Others do not require proof of fault (no-fault liability).

Compensatory Schemes

These can be conveniently divided into those schemes where it is **not necessary** to prove that the employer was at fault, and those in which the claimant (the injured person) **has to prove** that the defendant was at fault, e.g. negligence.

- **No-Fault Compensation Schemes**

Although there is no need to prove fault, it is necessary to establish that the harm was caused as a result of the person's employment.

Most No-Fault Workers' Compensation Schemes fall into one of two main categories:

- Employers provide the benefits; they pay premiums to insurance companies, who in turn pay compensation to the injured worker.
- The government or a government agency provides the benefits.
This system consists of social insurance operated by the government or an agency of the government.

Under both models the worker is required to report the injury or ill health to their respective employer. Most countries require the claim to be made within a specified time, although this is often extended in cases of occupational disease, when the time between exposure to the hazard and the onset of the disease may be considerable.



Monetary compensation

- **Employers' Schemes**

Here, the obligation to provide benefits is imposed on employers. The scheme is operated by insurance companies who are paid premiums by employers, and in many jurisdictions, this is compulsory. The insurance companies are subject to regulation, usually by an agency of the government. It is usual for all workers in that industry to be covered by the scheme and in some jurisdictions this includes the self-employed. When a claim has been made, by the worker or dependants, the initial response is usually made by the insurance company or sometimes by the employer. The decision may be to accept or to reject the worker's claim, although it is common for there to be some negotiation by the two parties concerned. Such schemes are found in the USA and Australia.

- **Social Insurance Schemes**

These schemes are administered by governments and funded by compulsory contributions made by employers, workers or both, with possible further contributions made from general taxation. These contributions may be at a fixed rate or may be earnings-related. The scheme invariably requires medical examinations to establish the nature of the loss and whether any recovery is likely. Following the decision by the administering government department, the claimant can accept the decision or challenge it. The employer usually has little interest, if any, in the process. If the disability is permanent (e.g. hearing loss), then a pension is usually paid, rather than a lump sum.

The UK operates an Industrial Injuries Disablement Benefit Scheme. This is funded by National Insurance contributions which are paid by employees and employers and from taxation. The benefit is paid to someone who has suffered a loss of faculty because of an accident at work, or has a prescribed industrial disease associated with the person's occupation. It is paid only to employees and not to the self-employed. An 'accident' is an incident or series of identifiable incidents which has resulted in personal injury; a 'prescribed disease' is one from a defined list of approximately 70 diseases.

The claimant completes a claim form that is evaluated to establish whether the injury was an accident, or in the case of an occupational disease, to check that the claimant has worked in the prescribed occupation. If this is established, a medical examination is required to identify the loss of faculty and the level of disablement. Normally a person's disablement has to be 14% or more to receive benefit, except for certain respiratory diseases, which require a 1% assessment and occupational deafness, which requires a 20% assessment.

- **Fault Compensation Scheme – Employers' Liability**

Most jurisdictions (including the USA, Australia and the UK) have legislation that makes an employer liable for injury or illness to a worker as a result of their occupation. This requires the injured worker (or dependants following a fatal outcome) to bring a civil action against the employer and the need to establish fault on the part of the employer, or one of their workers. The claimant usually has to prove that the harm or illness was caused by the negligence of the employer, or one of their employees, or that there has been a breach of health and safety legislation.

In the UK, the basis of the employer's duty towards the employees stems from the existence of a contract of employment. However, virtually all cases are brought under the law of torts (civil wrongs), in particular the tort of negligence and the tort of breach of statutory duty.

The liability of the employer may come about in two ways:

- The employer is responsible for their own acts of negligence – often called **primary liability**.
- The employer may be **vicariously liable** for the negligent acts of their workers that are committed in the course of their employment.

In an action for **breach of statutory duty**, the claimant has to prove:

- The statute places the obligation on the defendant.
- The statutory duty was owed to that claimant (i.e. the claimant must show they are within the class of persons whom the statute was intended to protect).
- The injury was of a type contemplated by the statute.
- The defendant was in breach of that duty.
- The breach of statutory duty caused the injury.

In an action for **negligence**, the claimant must prove:

- The defendant owed the claimant a duty of care; it is well established that an employer owes a duty of care to their workers, and so if the defendant is an employer, this element is unlikely to be contested.
- The defendant was in breach of that duty – most negligence cases hinge on this point. The important point to note is that the standard required of the defendant is an objective one, i.e. it depends on the standard of care which would have been adopted by a reasonable person in the circumstances.
- The claimant suffered damage as a result of the breach.
- The harm was foreseeable.

A claim will often be presented under both headings (negligence and breach of statutory duty) at the same time, although success under both results in only one award of compensation. One of the key features of employer's liability is the extent of the compensation (often called **damages**) awarded in a successful action. The compensation awarded is meant to put the person back into the same position they were in before they suffered the loss. This can amount to considerable sums of money.



An accident can result in a claim for considerable damages

Damages

Damages may be classified as **economic** or **non-economic**. Economic damages represent actual monetary loss, whereas non-economic damages are those which represent pain, suffering, and loss of companionship or amenity.

Damages may also be categorised as **compensatory** and **punitive**. As the name suggests, compensatory damages compensate the claimant, whereas punitive damages are meant to punish the wrongdoer.

TOPIC FOCUS

Compensatory Damages

The amount of compensatory damages is meant to reflect the losses the claimant has suffered. The level of award is determined by the court having received evidence as to the extent of the losses.

Such damages can be classified as **special damages** and **general damages**:

- **Special Damages**

The key feature of special damages is that they can be relatively easily quantified because they relate to known expenditure up until the trial, such as:

- Loss of earnings due to the accident or ill health before the trial.
- Legal costs.
- Medical costs to date.
- Building costs, if property has had to be adapted to meet the needs of the injured person.
- Necessary travel costs associated with the case.

The feature here is that invoices and receipts can be presented to the court.

- **General Damages**

These include future expenditure and issues which cannot be precisely quantified, such as:

- Loss of future earnings as a result of the incapacity.
- Future medical costs.
- Pain and suffering before and after the trial.
- Loss of quality of life (e.g. loss of mobility, inability to engage in sports which had been pursued before the loss).
- Loss of future opportunity (e.g. reduced likelihood of being able to secure suitable employment).

Punitive Damages

Punitive damages are awarded to punish, to signify disapproval, and to deter the defendant and others from carrying out similar conduct to that which harmed the claimant in the future. It is recognised that in certain circumstances, punitive damages (or 'exemplary damages' in the UK) may be awarded where the compensatory damages are considered to be inadequate and are awarded by reference to the defendant's behaviour. Since they normally compensate the claimant's losses beyond provable losses, they are usually only awarded when the conduct of the defendant was particularly oppressive, or where the defendant made a profit from the behaviour.

In the USA, punitive damages are a matter for state law and so there is no consistent application across the country. In some states they are based on statute and in others on case law.

MORE...

The ILO Encyclopedia is an additional resource highlighted by NEBOSH which covers many broader areas of international health and safety and is relevant throughout the ID1 unit.

For additional resources on workers compensation schemes, access *Part III: Workers Compensation* of the ILO Encyclopedia which provides a great deal of material on the topic:

<https://www.iloencyclopaedia.org/part-iii-48230/workers-compensation-systems>

STUDY QUESTIONS

1. What are the limitations of using legislation as a means of ensuring acceptable occupational health and safety standards?
2. Describe the advantages and limitations of prescriptive and goal-setting legislation.
3. Identify and outline the two main no-fault compensation schemes.
4. Describe the two categories of compensatory damages.
5. What is meant by "punitive damages"?

(Suggested Answers are at the end.)

Enforcement

IN THIS SECTION...

- Outline the purpose of enforcement (including the principles of the enforcement policy statement).
-

Purpose of Enforcement

The regulation of criminal law on health and safety at work requires an enforcement agency. Its broad role is likely to be to protect people against risks to health or safety arising out of work activities.

In order to achieve this, legal compliance must be enforced. The ultimate aim is always prevention, but action is needed where there is deliberate flouting of health and safety law.

Enforcement ensures that dutyholders:

- Deal immediately with serious risks.
- Comply with the law.
- Are held to account if they fail in their responsibilities.

To enforce compliance with legal requirements, there are several approaches that can be taken, ranging from:

- provision of advice on what changes need to be introduced and how these may be achieved; to,
- prosecution under relevant health and safety law that might be imposed on employers.

Following a successful prosecution, the penalty could be a fine or possibly imprisonment. The aim is some form of punishment with the purpose of deterring any future non-compliance.



Legal compliance must be enforced

Principles of Enforcement with Reference to the UK's HSE Enforcement Policy Statement (HSE41)

The UK's HSE aims for firm but fair enforcement of health and safety law and applies the following principles, which are described in its Enforcement Policy Statement (*HSE41*):

- **Proportionality of Enforcement**

Enforcement action should be in proportion to any risks to health and safety, or to the seriousness of any breach of law. Enforcing authorities should take into consideration how far the dutyholder has fallen short of what the law requires and the extent of the risks to people arising from the breach.

Some health and safety duties are absolute but others require action 'so far as is reasonably practicable' which involves judgment. This means taking into account the degree of risk on the one hand, and the sacrifice (money, time or trouble) involved in dealing with the risk on the other. Unless it can be shown that there is gross disproportion between these factors and that the risk is insignificant in relation to the cost, the dutyholder must take measures to reduce the risk.

The HSE expects relevant good practice to be followed, but in circumstances where such standards are not clearly established, UK law requires dutyholders to determine what action needs to be taken to adequately reduce the risks. However, what is reasonably practicable in particular cases is ultimately determined by the courts.

- **Consistency of Approach**

Dutyholders managing similar risks expect a consistent approach about advice given, the use of enforcement notices, decisions on whether to prosecute, and the response to incidents. Consequently a similar approach needs to be taken in similar circumstances to achieve similar ends.

The HSE recognises that, in practice, consistency is not a simple matter, due to a number of factors, including:

- The degree of risk.
- The attitude and competence of management.
- History of incidents.
- Previous enforcement action.

It is recognised that decisions on enforcement action involve judgment by the enforcer, but enforcing authorities should have arrangements in place to promote consistency.

- **Transparency**

Dutyholders need to understand what is expected of them and what they should expect from the enforcing authorities. They should also be clear about what they have to do and what they don't – this means being clear about statutory requirements that **legally apply**, and **advice or guidance** that is desirable but not compulsory. Transparency also involves ensuring that employees and their representatives are kept informed about any decisions made and actions taken.

Dutyholders, employees, their representatives and others also need to know what to expect when an inspector calls and what rights of complaint are open to them. In the UK, all enforcing authority inspectors are required to issue the HSE leaflet *What to expect when a health and safety inspector calls* to those they visit. When inspectors offer dutyholders information or advice, face to face or in writing, they will explain what has to be done to comply with the law and why. If asked, they will write to confirm any advice and to distinguish legal requirements from best practice. If a notice is served, the inspector will try to:

1. Resolve points of difference before serving it.
2. Make sure it is clear what needs to be done, why and by when.
3. Determine the breach of the law that has been committed, or why any prohibition is necessary.



Inspectors will offer dutyholders information or advice about legal compliance

STUDY QUESTIONS

6. Outline the purposes of enforcement.
7. What factors might affect consistency in the enforcement of health and safety legislation?

(Suggested Answers are at the end.)

The International Labour Organization and its Conventions and Recommendations

IN THIS SECTION...

- Explain the role of the International Labour Organization and the status of relevant conventions and recommendations in a global health and safety setting.

Role of the United Nations

International Labour Organization Role and International Labour Conference

The International Labour Organization (ILO) was created in 1919, as part of the Treaty of Versailles that ended World War I. Today it is an agency of the United Nations (UN), which was formed during World War II. Its main aims are to:

- Promote rights at work.
- Encourage decent employment opportunities.
- Enhance social protection.
- Strengthen dialogue in handling work-related issues.

The ILO is the only 'tripartite' UN agency, in that it brings together representatives of governments, employers and workers to jointly shape policies and programmes.

It is the global body responsible for drawing up and overseeing international labour standards. Working with over 180 member states, the ILO seeks to ensure that labour standards are respected in practice, as well as in principle. Since its early days, the ILO has:

- Sought to define and guarantee labour rights.
- Improve conditions for working people by building a system of international labour standards expressed in the form of conventions, recommendations and codes of practice.

The ILO has adopted more than 180 ILO conventions and 190 recommendations, covering all aspects of the world of work. Nearly half of all ILO standards are concerned with health and safety matters.

The member states of the ILO meet at the International Labour Conference, held every June in Geneva, Switzerland. Each member state is represented by a delegation consisting of two government delegates, an employer delegate, a worker delegate and their respective advisers. All delegates have the same rights, and can express themselves freely and vote as they wish; worker and employer delegates may vote against their government's representatives, or against each other. However, this diversity of viewpoints does not prevent decisions being adopted by very large majorities, or in some cases even unanimously.

Many of the government representatives are cabinet ministers responsible for labour affairs in their own countries. Heads of state and prime ministers also take the floor at the conference. International organisations, both governmental and others, attend as observers.



The ILO is responsible for drawing up and overseeing international labour standards

The conference allows for the creation of conventions and recommendations – a two-thirds majority is required before they can be adopted.

TOPIC FOCUS

ILO Conventions

The adoption of a convention by the International Labour Conference allows governments to ratify it, and, when a specified number of governments have done so, the convention becomes a treaty in international law. All adopted ILO conventions are considered international labour standards, irrespective of how many governments have ratified them.

Ratification of a convention imposes a legal obligation to apply its provisions. However, a country can ratify a convention voluntarily. If a convention has not been ratified by member states, it has the same legal force as recommendations. Each government is required to submit a report detailing their compliance with the obligations of the conventions they have ratified. Each year the International Labour Conference's Committee on the Application of Standards examines a number of alleged breaches of international labour standards.

An example of a convention is the **Occupational Safety and Health Convention (C155) 1981** and its Protocol of 2002. This provides for the adoption of a coherent national occupational safety and health policy as well as action to be taken by governments to improve working conditions.

International Labour Conference Provisional Record 20A

Convention Concerning the Promotional Framework for Occupational Safety and Health, ILO, Geneva, 2006

Article 4 sets out the following provisions in respect of a national system:

- (1) *"Each Member shall establish, maintain, progressively develop and periodically review a national system for occupational safety and health, in consultation with the most representative organizations of employers and workers.*
- (2) *The national system for occupational safety and health shall include among others:*
 - (a) *laws and regulations, collective agreements where appropriate, and any other relevant instruments on occupational safety and health;*
 - (b) *an authority or body, or authorities or bodies, responsible for occupational safety and health, designated in accordance with national law and practice;*
 - (c) *mechanisms for ensuring compliance with national laws and regulations, including systems of inspection; and*
 - (d) *arrangements to promote, at the level of the undertaking, co-operation between management, workers and their representatives as an essential element of workplace-related prevention measures.*
- (3) *The national system for occupational safety and health shall include, where appropriate:*
 - (a) *a national tripartite advisory body, or bodies, addressing occupational safety and health issues;*
 - (b) *information and advisory services on occupational safety and health;*
 - (c) *the provision of occupational safety and health training;*
 - (d) *occupational health services in accordance with national law and practice;*
 - (e) *research on occupational safety and health;*
 - (f) *a mechanism for the collection and analysis of data on occupational injuries and diseases, taking into account relevant ILO instruments;*

- (g) provisions for collaboration with relevant insurance or social security schemes covering occupational injuries and diseases; and
- (h) support mechanisms for a progressive improvement of occupational safety and health conditions in micro- enterprises, in small and medium-sized enterprises and in the informal economy.”

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Following the adoption of the above Convention in 2006, each member of the ILO is required to introduce measures to implement its requirements within their own legislative system.

TOPIC FOCUS

ILO Recommendations

Recommendations are non-binding guidelines so are not ratified by member countries and do not have the binding force of conventions. Along with conventions, recommendations are drawn up by representatives of governments, employers and workers, and are adopted at the ILO's annual International Labour Conference. An example is the **Occupational Safety and Health Recommendation (R164) 1981** which we look at below.

ILO Codes of Practice

ILO codes of practice contain practical recommendations intended for all those with a responsibility for occupational safety and health in both the public and private sectors. Codes of practice are not legally binding instruments and are not intended to replace the provisions of national laws or regulations, or accepted standards. They aim to serve as practical guides for public authorities and services, employers and workers concerned, specialised protection and prevention bodies, enterprises, and safety and health committees. Each code is first prepared by the Office (of the ILO) and finalised at a tripartite meeting composed of experts nominated by the Governing Body (of the ILO) in their personal capacity. Codes of practice are submitted to the Governing Body for approval of publication. An example is the **Code of Practice on Safety and Health in the Iron and Steel Industry (2005)**.

Roles and Responsibilities of 'Governments', 'Enterprises' and 'Workers': Occupational Safety and Health Recommendation (R164) 1981

ILO Convention C155 establishes broad principles that national governments should adopt in order to protect the health and safety of workers. These are established as 'Principles of National Policy', 'Action at National Level' (both governmental objectives), and 'Action at the Level of the Undertaking' (employer's actions). These are summarised in the following table.

TOPIC FOCUS

Principles of National Policy

Article 4

- *Each Member shall, ... formulate, implement and periodically review a coherent national policy on occupational safety, occupational health and the working environment.*
- *The aim of the policy shall be to prevent accidents and injury to health arising out of, linked with or occurring in the course of work, by minimising, so far as is reasonably practicable, the causes of hazards inherent in the working environment.*

Article 5

- This article has been summarised and outlines the main areas of focus for health and safety and the working environment, e.g. design and testing of workplace tools and equipment.

Article 6

- *The ... policy referred to in Article 4 of this Convention shall indicate the respective functions and responsibilities in respect of occupational safety and health and the working environment of public authorities, employers, workers and others...*

Article 7

- *The situation regarding occupational safety and health and the working environment shall be reviewed at appropriate intervals...*

Action at the National Level

Article 8

- *Each Member shall, by laws or regulations or any other method consistent with national conditions and practice and in consultation with the representative organisations of employers and workers concerned, take such steps as may be necessary to give effect to Article 4 of this Convention.*

Article 9

- *The enforcement of laws and regulations concerning occupational safety and health and the working environment shall be secured by an adequate and appropriate system of inspection.*
- *The enforcement system shall provide for adequate penalties for violations of the laws and regulations.*

Article 10

- *Measures shall be taken to provide guidance to employers and workers so as to help them to comply with legal obligations.*

Article 11

- This article has been summarised and contains details of actions that the competent authority should carry out, including the establishment of national procedures for the notification of accidents, and the determination of processes and substances that could result in harmful exposure.

(Continued)

TOPIC FOCUS

Article 12

- This article has been summarised and covers measures to ensure that those who design, manufacture, import, provide or transfer machinery, equipment or substances for occupational use do so safely.

Article 13

- *A worker who has removed himself from a work situation which he has reasonable justification to believe presents an imminent and serious danger to his life or health shall be protected from undue consequences in accordance with national conditions and practice.*

Article 14

- *Measures shall be taken with a view to promoting in a manner appropriate to national conditions and practice, the inclusion of questions of occupational safety and health and the working environment at all levels of education and training, including higher technical, medical and professional education, in a manner meeting the training needs of all workers.*

Article 15

- This article covers the co-ordination between different bodies.

Action at the Level of the Undertaking

Article 16

- *Employers shall be required to ensure that, so far as is reasonably practicable, the workplaces, machinery, equipment and processes under their control are safe and without risk to health.*
- *Employers shall be required to ensure that, so far as is reasonably practicable, the chemical, physical and biological substances and agents under their control are without risk to health when the appropriate measures of protection are taken.*
- *Employers shall be required to provide, where necessary, adequate protective clothing and protective equipment to prevent, so far as is reasonably practicable, risk of accidents or of adverse effects on health.*

Article 17

- *Whenever two or more undertakings engage in activities simultaneously at one workplace, they shall collaborate in applying the requirements of this Convention.*

Article 18

- *Employers shall be required to provide, where necessary, for measures to deal with emergencies and accidents, including adequate first-aid arrangements.*

(Continued)

TOPIC FOCUS**Article 19**

- *There shall be arrangements at the level of the undertaking under which--*
 - (a) *workers, in the course of performing their work, co-operate in the fulfilment by their employer of the obligations placed upon him;*
 - (b) *representatives of workers in the undertaking co-operate with the employer in the field of occupational safety and health;*
 - (c) *representatives of workers in an undertaking are given adequate information on measures taken by the employer to secure occupational safety and health ...*
 - (d) *workers and their representatives in the undertaking are given appropriate training in occupational safety and health;*
 - (e) *workers or their representatives ... are enabled to enquire into, and are consulted by the employer on, all aspects of occupational safety and health associated with their work...*
 - (f) *a worker reports forthwith to his immediate supervisor any situation which he has reasonable justification to believe presents an imminent and serious danger to his life or health; until the employer has taken remedial action, if necessary, the employer cannot require workers to return to a work situation where there is continuing imminent and serious danger to life or health.*

Article 20

- *Co-operation between management and workers and/or their representatives within the undertaking shall be an essential element of organisational and other measures taken in pursuance of Articles 16 to 19 of this Convention.*

Article 21

- *Occupational safety and health measures shall not involve any expenditure for the workers.*

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Occupational Safety and Health Recommendation (R164) 1981 then sets out the roles and responsibilities of governments, enterprises and workers. The key provisions are as follows.

International governments should:

- (a) *"issue or approve regulations, codes of practice ... on occupational safety and health and the working environment, account being taken of the links ... between safety and health, ... and hours of work and rest breaks ...;*
- (b) *... review legislative enactments concerning occupational safety and health and the working environment, ... in the light of experience and advances in science and technology;*
- (c) *undertake or promote studies and research to identify hazards and find means of overcoming them;*
- (d) *provide information and advice, in an appropriate manner, to employers and workers and promote or facilitate co-operation between them and their organisations, with a view to eliminating hazards or reducing them as far as practicable; where appropriate, a special training programme for migrant workers in their mother tongue should be provided;*
- (e) *provide specific measures to prevent catastrophes, and to co-ordinate and make coherent the actions to be taken at different levels, particularly in industrial zones where undertakings with high potential risks for workers and the surrounding population are situated;*

- (f) *secure good liaison with the International Labour Occupational Safety and Health Hazard Alert System set up within the framework of the International Labour Organization;*
- (g) *provide appropriate measures for handicapped workers.”*

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Enterprises:

- (a) *“to provide and maintain workplaces, machinery and equipment, and use work methods, which are as safe and without risk to health as is reasonably practicable;*
- (b) *to give necessary instructions and training, taking account of the functions and capacities of different categories of workers;*
- (c) *to provide adequate supervision of work, of work practices and of application and use of occupational safety and health measures;*
- (d) *to institute organisational arrangements regarding occupational safety and health and the working environment adapted to the size of the undertaking and the nature of its activities;*
- (e) *to provide, without any cost to the worker, adequate personal protective clothing and equipment which are reasonably necessary when hazards cannot be otherwise prevented or controlled;*
- (f) *to ensure that work organisation, particularly with respect to hours of work and rest breaks, does not adversely affect occupational safety and health;*
- (g) *to take all reasonably practicable measures with a view to eliminating excessive physical and mental fatigue;*
- (h) *to undertake studies and research or otherwise keep abreast of the scientific and technical knowledge necessary to comply with the foregoing clauses.”*

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Workers should:

- (a) *“take reasonable care for their own safety and that of other persons who may be affected by their acts or omissions at work;*
- (b) *comply with instructions given for their own safety and health and those of others and with safety and health procedures;*
- (c) *use safety devices and protective equipment correctly and do not render them inoperative;*
- (d) *report forthwith to their immediate supervisor any situation which they have reason to believe could present a hazard and which they cannot themselves correct;*
- (e) *report any accident or injury to health which arises in the course of or in connection with work.”*

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MORE...

Further information on the role of the United Nations can be found at:

www.un.org/en/about-us/

Use of International Conventions as a Basis for Setting National Systems of Health and Safety Legislation

ILO standards on occupational safety and health enable governments, employers, and workers to establish practices and procedures that aim for the highest level of health and safety performance. The ILO global strategy to improve occupational safety and health involves the promotion of:

- A preventive safety and health culture.
- The development of relevant instruments and technical assistance to establish occupational safety and health standards.

International labour standards are legal instruments drawn up by the ILO's constituents (governments, employers, and workers) that set out basic principles and rights at work.

As we have noted, they are either:

- **Conventions**
 - legally binding international treaties that may be ratified by member states; and,
 - lay down the basic principles to be implemented by ratifying countries; OR,
- **Recommendations**
 - serve as non-binding guidelines;
 - supplement the convention by providing more detailed guidelines on how it could be applied; and,
 - can also be autonomous, i.e. not linked to any convention.

Conventions and recommendations are drawn up by representatives of governments, employers and workers and are adopted at the ILO's annual International Labour Conference. Once a standard is adopted, member states are required under the ILO Constitution to submit them for consideration to their competent authority (normally parliament). For conventions this means consideration for ratification, and they generally come into force one year after the date of ratification. Ratifying countries commit themselves to applying the convention in national law and practice and reporting on its application at regular intervals. The ILO provides technical assistance if necessary.

The following are important examples of conventions and associated recommendations.

Occupational Safety and Health Convention (C155) 1981

The purpose of this Convention is to ensure that those member states who ratify it formulate, implement and periodically review a coherent national policy on occupational safety and health in the work environment. This should involve consultation with the most representative organisations of employers and workers. The aim of the policy is to prevent workplace accidents and injury to health by minimising, as far as possible, the causes of hazards inherent in the work environment.

We looked at the associated **Occupational Safety and Health Recommendation (R164) 1981** earlier.

Promotional Framework for Occupational Safety and Health Convention (C187) 2006

This Convention promotes a preventative safety and health culture to progressively achieve a safe and healthy working environment. In consultation with the most representative organisations of employers and workers, it requires ratifying states to develop a national policy, national system and national programme on occupational safety and health.

National policies should be developed in accordance with **Article 4** of the **Occupational Safety and Health Convention (C155) 1981**: aim to prevent accidents and injury to health at work by minimising the causes of hazards inherent in the working environment.

National systems should provide the infrastructure for implementing national policy and programmes on occupational safety and health, such as:

- Laws and regulations.
- Authorities or bodies.
- Compliance mechanisms, including systems of inspection.
- Arrangements at the level of the undertaking.

National programmes should also include time-bound measures to promote occupational safety and health, enabling a measuring of progress.

The associated **Promotional Framework for Occupational Safety and Health Recommendation (R197) 2006** supplements the Convention by providing more detailed guidelines on how it could be applied:

- Provide appropriate measures for the protection of all workers, in particular workers in high-risk sectors, and vulnerable workers, such as those in the informal economy and migrant and young workers.
- Take measures to protect the safety and health of workers of all genders, including the protection of their reproductive health.
- Seek to raise workplace and public awareness on occupational safety and health through national campaigns linked with, where appropriate, workplace and international initiatives.
- Promote mechanisms for delivery of occupational safety and health education and training, in particular for management, supervisors, workers and their representatives and government officials responsible for safety and health.
- Introduce occupational safety and health concepts and, where appropriate, competencies, in educational and vocational training programmes.
- Facilitate the exchange of occupational safety and health statistics and data among relevant authorities, employers, workers and their representatives.
- Provide information and advice to employers and workers and their respective organisations, and promote or facilitate co-operation among them with a view to eliminating or minimising, so far as is reasonably practicable, work-related hazards and risks.
- Promote, at the level of the workplace, the establishment of safety and health policies and joint safety and health committees, and the designation of workers' occupational safety and health representatives, in accordance with national law and practice.
- Address the constraints of micro-enterprises and small- and medium-sized enterprises and contractors in the implementation of occupational safety and health policies and regulations, in accordance with national law and practice.
- Promote a 'management systems' approach to occupational safety and health, such as the approach set out in guidelines on occupational safety and health management systems.



Young workers must be protected by appropriate measures

MORE...

You can read more about the **Occupational Safety and Health Convention, 1981** (No. 155), its **2002 Protocol**, and the **Promotional Framework for Occupational Safety and Health Convention, 2006** (No. 187) at:

www.ilo.org/wcmsp5/groups/public/---ed_norm/---normes/documents/publication/wcms_233211.pdf

There is also further information on the **Convention C187** available at:

www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C187

Additional information on **Recommendation R197** can be found at:

www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_INSTRUMENT_ID:312534

Finally, further information on **Recommendation R164** can be accessed through:

www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_INSTRUMENT_ID:312502

STUDY QUESTIONS

8. Explain the role of the ILO in health and safety at work.
9. Explain the difference between an ILO convention and a recommendation.
10. What is an ILO code of practice?
11. What duties are imposed on national governments by **Occupational Safety and Health Recommendation (R164) 1981**?
12. What duties are imposed on enterprises by **Occupational Safety and Health Recommendation (R164) 1981**?
13. What duties are imposed on workers by **Occupational Safety and Health Recommendation (R164) 1981**?

(Suggested Answers are at the end.)

Non-Governmental Bodies and Health and Safety Standards

IN THIS SECTION...

- Summarise the role of non-governmental bodies and self-regulation in securing common health and safety standards in a global economy.

Relevant Influential Parties

• Employer Bodies

These represent the interests of employers. In the UK, the main body is the Confederation of British Industry (CBI). The CBI helps create and sustain the conditions in which businesses in the UK can compete and prosper for the benefit of all.

The CBI is the main lobbying organisation for UK business on national and international issues. It works with the UK government, international legislators and policymakers to help UK businesses compete more effectively.



Another well-known active employer organisation is the Chamber of Commerce. You will find branches operating in many countries throughout the world.

• Trade Associations

Trade associations are formed from a membership of companies who operate in a particular area of commerce and exist for their benefit. They can promote common interests and improvements in quality, health, safety, environmental and technical standards through various appropriate means, e.g. the publication of guidelines, information notes, codes of practice, and regular briefing notes on technical issues and regulatory developments. Sharing of good practice can be facilitated together with provision of news and events appropriate to their members' areas of activity.

Meetings, workshops and seminars can be arranged depending on an association's membership, both internationally and at a national/regional level, to enable networking and the exchange of information and ideas, such as on technical and safety issues.

Safety is of prime importance in any industry and there is usually a system for publicising and circulating safety messages to members on a regular basis.

Membership of a trade association is generally available to companies and organisations active in the relevant industry.

• Trade Unions

A trade union is an organisation of workers who have formed together to achieve common goals in key areas, such as wages, hours and working conditions. The trade union negotiates with the employer on behalf of its members. This may include:

- The negotiation of wages.
- Work rules.

- Complaint procedures.
- Rules governing hiring, firing and promotion of workers.
- Benefits.
- Workplace safety.
- Policies.

The agreements negotiated by the union leaders are binding on the rank and file members and the employer, and in some cases on other non-member workers. In the UK, unions may appoint safety representatives from among the workers who may investigate accidents, conduct inspections and sit on a safety committee.

- **Professional Groups**

A professional group is an organisation of individuals who work in a particular profession and have achieved a defined level of competence. Members typically pay a subscription to join the group and receive a range of benefits. Professional groups may also exist with the sole purpose of certifying practitioners in the safety profession in order to establish and validate technical competency criteria:

- The **Institution of Occupational Safety and Health (IOSH)**, based in the UK, has over 47,000 members worldwide, including more than 10,000 Chartered Safety and Health Practitioners. It is an independent, not-for-profit organisation that sets professional standards, supports and develops members, and provides authoritative advice and guidance on health and safety issues. IOSH has increased its international presence in recent years. It has local branches not only in the UK, but also in the Middle East, Hong Kong and the Caribbean. IOSH is formally recognised by the ILO as an international non-governmental organisation.
- The **American Society of Safety Professionals (ASSP)** is a professional safety society that aims to promote the expertise of its members and provide them with professional development and support. It also sets occupational safety, health and environmental standards for excellence and ethics. It is a global association representing more than 39,000 occupational safety professionals worldwide.
- The **Board of Certified Safety Professionals (BCSP)** is a peer certification board. It is not a member organisation and does not provide services usually offered by member organisations but its sole purpose is to certify practitioners in the safety profession. There is a recognised need for safety certification, and in the USA in particular, there are numerous laws, regulations and standards that cite the requirement for it.

- **Pressure Groups**

A pressure group can be described as an organised group of people who have a common interest but, unlike a political party, do not put up candidates for election. However, they seek to influence government policy or legislation. They can also be described as 'interest groups', 'lobby groups' or 'protest groups'. They carry out research, lobby politicians, and aim to influence public and, ultimately, government opinion.



One example in the UK is the Centre for Corporate Accountability.

This was concerned with the promotion of worker and public safety.

Its focus was on the role of state bodies in enforcing health and safety law and investigating work-related deaths and injuries. It was formed following a number of high profile work-related accidents that led to a large number of deaths, and the perception that the companies concerned were not taking safety seriously, and that the penalties imposed by the courts were inadequate.

- **General Public**

Individual members of the public can have little influence on the regulation of health and safety unless they can influence others and so form a body of opinion (e.g. a pressure group) that cannot be ignored.

Importance of Print, Broadcast and Social Media in a Global Economy

The media plays an important role in communicating health and safety issues and can influence changes in attitudes to health and safety. It includes print (e.g. newspapers, books and journals), broadcast (e.g. radio and television), and of increasing importance, internet-based media, such as social media.

No country can successfully compete in a global economy without the use of media as a communication tool. In terms of occupational health and safety, the following points indicate some of the ways the media is used:

- Making health and safety guidance easily accessible with minimal cost. Agencies such as the Occupational Safety and Health Administration (OSHA) (USA) and the HSE (UK) produce guidance for all categories of dutyholders in all types of employment. These are available as hard copies and more commonly downloadable electronic formats. This allows dutyholders who have limited expertise to access relevant information and so comply with legal requirements.
- Publicising good and bad health and safety performances (e.g. TV and radio) such as major accidents, prosecutions and public inquiries. Major disasters may be publicly discussed not only in the country in which they occurred, but internationally. Incidents with lesser consequences may be publicised within the area in which they occurred. Such publicity increases the awareness of occupational health and safety issues and reminds dutyholders of the possible consequences of failing to pay attention to these issues.
- Assisting in educating members of the professional body and promoting good health and safety standards by publishing professional journals (e.g. IOSH (UK)).
- Enabling anyone with an internet connection access to a huge range of information (good and bad) which would otherwise be much less accessible.

The media can be used to help change attitudes to occupational health and safety; examples of this include:

- Newspapers, TV, radio, and the internet making the public, and in particular dutyholders, aware of enforcement actions, such as prosecutions, convictions and civil actions.
- Enforcement bodies making information on good health and safety practice easily accessible to dutyholders.
- Companies publicising good health and safety performance to promote their services and to secure a competitive advantage by being seen as good employers.
- Courts sanctioning adverse publicity orders against organisations that fail to comply with legal requirements. They will have an adverse effect on the perceived reputation of the organisation.



Benefits of Schemes which Promote Co-Operation on Health and Safety Between Different Companies

Explicit co-operation between companies is not usual because in a free market, companies compete with each other for customers, and so may be reluctant to share good practices for fear of giving their competitors an advantage. However, there are many schemes that have been established that promote co-operation between different companies. Depending on the benefits received by the participants, these may last for a short period or carry on indefinitely.

The establishment of such schemes may be facilitated and encouraged by government bodies, or they may be set up informally. An example is the so-called **good neighbour scheme**.

In the UK, a number of these schemes have been established to encourage larger organisations to help smaller businesses and contractors with health and safety expertise. Small businesses do not have access to the same health and safety expertise, so if a large organisation can provide advice to a smaller one, then the smaller business will benefit and the larger organisation will be able to demonstrate its public responsibility.

Schemes have also been established between organisations of a similar size. They might involve sharing expertise and equipment such as a noise meter. It is much less costly to share such resources and all members of the scheme will benefit.

Supplier auditing is where an organisation establishes that its existing and new suppliers meet their requirements. In the context of health and safety, this includes ensuring that the quality of the products and services it supplies meets legal requirements and other standards. For example, the company may send an auditor to a machine manufacturer to check that it has adopted safe working practices, that the machines are constructed from suitable materials, and meet designated safety standards.

Adverse Effects on Business Reputation

An adverse health and safety incident, such as an accident or a case of occupational ill health, will result in financial implications for the organisation involved. Even a small incident, in which a worker has to receive first-aid, will invariably cost money, including lost production from the injured person and from those who gave first-aid and managed the incident. Personal injury cases may involve a claim for damages by the injured person, which will also have a financial impact on the organisation. There may be a loss of morale among workers in the belief that the organisation does not care about their health and safety. This may then lead to key personnel seeking employment elsewhere, even though they may have not suffered any direct loss. Some of the losses already mentioned, such as loss of production, can be relatively easily quantified, but there will be a range of indirect costs whose effect cannot easily be determined. One such effect is on the stakeholders of an organisation. These are individuals who have an interest in the organisation, and include:



Loss of morale among workers is an adverse effect of incidents

- Workers who rely on the organisation for employment.
- Other businesses, including suppliers and contractors who trade with the organisation.
- Businesses that benefit indirectly from the presence of an organisation, such as local shops.
- Shareholders who own the organisation and wish to see their investment yield a satisfactory financial return.

An Organisation's Moral Obligations to Raise Standards Within their Supply Chains

Brands should take some responsibility for standards at their suppliers. This is based on the principle that global brands are in a superior position (financially, legally and morally) to make a positive impact on health and safety standards, both within their organisations and throughout their supply chain. Part of this moral argument stems from the fact that competition between potential suppliers to deliver products at the lowest price impacts on the resourcing of health and safety in supply organisations. Global organisations should therefore take some responsibility to ensure that fierce financial competition between suppliers does not result in severe erosion of health and safety standards.

In cases where workers have been injured in serious incidents at suppliers' premises, the moral view has been that the brands involved should take swift action to commit to providing compensation. This should be negotiated with the trade unions representing the workers, and be based on international standards. The international buyers also bear some responsibility for compensating the victims, which should include:

- Loss of income and damages for the injured, and families of the dead.
- Medical costs.
- Educational fees for the children of the deceased.

The distribution of payments should be done in an open way in conjunction with trade unions. It might even be expected that the brands support an independent inquiry into any such incident and be involved in preventing future similar occurrences.

Meaning of 'Self-Regulation'

DEFINITION

SELF-REGULATION

The process whereby an organisation monitors its own adherence to health and safety standards, rather than having an outside agency, such as a governmental body, monitoring and enforcing standards.

The benefit of self-regulation to the organisation is that it can set and maintain its own standards without external interference. If problems arise, the organisation can more easily keep its internal affairs private. It also avoids the significant national expense of establishing an enforcement agency.

In contrast, attempts to self-regulate may fail because individual organisations may believe there is little advantage in establishing good standards if similar organisations choose to ignore them. Workers in a self-regulated organisation may experience poor standards with an increased frequency of accidents and ill health.

Self-regulation of health and safety within a legal framework was one of the recommendations of the Robens Committee, which was established in 1970 in the UK to "review the provision made for the safety and health of persons in the course of their employment ...and to consider whether any changes are needed...".

Source: Safety and Health at Work, *Report of the Committee 1970-72*, Copyright © 2006 ProQuest Information and Learning Company (www.mineaccidents.com.au/uploads/robens-report-original.pdf)

The Robens Report identified that the existing system relied too much on regulation by external government bodies with too little reliance on organisations establishing their own standards. A key recommendation in the Report was that those who create the risks of occupational accidents and ill health should be responsible for regulating them. Future legislation should establish conditions for creating more effective self-regulation, rather than relying on more negative regulation by enforcement bodies.

The UK agency (HSE) defined self-regulation as "the purposeful creation and maintenance of standards of health and safety and the accordance of priorities commensurate with the risks generated by the activities of the organisation".

We mentioned the UK's **HSWA** earlier in this Learning Outcome as an example of goal-setting legislation. The Act encourages self-regulation. **Section 2** of the Act states: "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 [their] employees". The Act sets out a broad objective, but does not prescribe how it will be achieved. It is for the dutyholder (in this case the employer) to decide what is reasonably practicable. This requires an assessment of the magnitude of the risk associated with the hazard in question and the cost of either eliminating or reducing the risk to a level that is at least 'tolerable' (but preferably 'acceptable'). Accordingly, the onus is shifted towards the employer to assess risks and to identify and implement appropriate control measures.

To achieve self-regulation, the Robens Committee recognised the importance of securing worker participation in the implementation and monitoring of health and safety arrangements. In many countries, including the UK, this is achieved through representatives of workplace safety (trade unionised or otherwise) and/or safety committees (which include worker representation).

Role and Function of Corporate Governance in a System of Self-Regulation

DEFINITION

CORPORATE GOVERNANCE

The system by which organisations are directed and controlled by their board of directors and includes the making of broad strategic decisions that affect the direction of the organisation. It is on a higher level than management, which relates to the regular decisions and subsequent actions needed to effectively run the business.

Aside from external legislation which may dictate the conduct of the company, an organisation is to a certain extent self-regulating; it sets many of its own objectives and standards and determines how it will achieve them.

The board of an organisation, that comprises its directors, provides this corporate governance which aims to create a successful organisation. Their area of control includes occupational health and safety as well as other corporate objectives, such as being competitive and making a profit.

To ensure good health and safety performance, the board generally has to be satisfied that the following matters are demonstrated throughout the organisation:

- Senior management is committed to demonstrate occupational health and safety, and shows an appreciation that this is as important as other business objectives.
- Health and safety is reviewed at board level.
- Those in the organisation at all levels have access to, and receive, competent advice.
- All staff, including board members, are trained and competent in their health and safety responsibilities.
- The workforce, in particular health and safety representatives, are adequately consulted and that their concerns reach the right level within the organisation including, where necessary, the board.
- Systems are in place to make sure that health and safety risks are assessed and suitable control measures introduced and maintained.
- There is an awareness of what activities take place in the organisation, including those of contractors.
- Regular information is received regarding matters such as accident reports and cases of work-related ill health.
- Targets are set which allow the organisation to improve standards and to benchmark its performance against others within the same business sector.
- Changes in working arrangements that have significant implications are brought to the attention of the board.



Senior management's commitment to health and safety must be demonstrated

A report from EU-OSHA, *Leadership and occupational safety and health (OSH): An expert analysis*, looks at which corporate leadership factors determine success and identifies the following five broad guiding principles:

1. Leaders must take their responsibility for the establishment of a **positive prevention culture** seriously and employ leadership styles which take account of the cultural context in different groups or nations.
2. Leaders should be seen to **prioritise OSH policies above other corporate objectives**, and apply them consistently across the organisation and over time.
3. High-level management must be directly involved in implementing OSH policies which have the **unequivocal commitment of an organisation's board and senior management**.
4. Leaders should set out to cultivate an **open atmosphere** in which all can express their experience, views and ideas about OSH and which encourages collaboration between stakeholders, both internal and external, around delivery of a shared OSH vision.
5. Leaders should show that they value their employees, and **promote active worker participation** in the development and implementation of OSH measures.

How Internal Rules and Procedures Regulate Health and Safety Performance

MORE...

The EU-OSHA report, *Leadership and occupational safety and health (OSH): An expert analysis*, looks at corporate leadership factors and analyses the results of 16 case studies from companies across the EU, identifying success factors and examples of good OSH leadership. The report is available at:

<https://osha.europa.eu/en/publications/leadership-and-occupational-safety-and-health-osh-expert-analysis/view>

For an organisation to effectively manage occupational health and safety, it must devise and implement procedures that enable workers to adhere to safe working practices. This will inevitably include defining rules and procedures that must be reasonably complied with. Merely stipulating rules is not enough. The worker must clearly understand and appreciate the need for the rules as well as have the competence to comply with them. The working conditions must encourage compliance.

For example, a worker who is required to use a machinery guard in a manufacturing process is less likely to adhere to the rule if the rate at which they can do the work is significantly impaired when the guard is used. Also, of course, if there is a poor safety culture in the workplace and few existing workers comply with the rules, then it cannot be reasonable to expect a new worker to comply either.

For a rule to be effective, it has to be enforced by the organisation. This requires monitoring by supervisors and managers who must have the necessary authority to enforce the rules. This may include routine day-to-day monitoring, formal inspections and random spot checks. Failure to comply with internal rules may lead to sanctions imposed by the employer, which may include:

- Informal verbal warnings.
- Formal verbal and written warnings.
- Temporary suspension from work.
- Demotion.
- Dismissal.

Such sanctions have to be imposed fairly and must not constitute bullying. They must also comply with the national employment law. Suitable and fairly enforced safety rules will reduce the likelihood of workers violating them, and will create an environment in which safe working becomes the norm. This will accordingly reduce the likelihood of accidents and ill health.

STUDY QUESTIONS

14. How do employers' bodies influence health and safety practices and standards?
15. How do trade unions influence health and safety practices and standards?
16. Explain the ways in which the media (e.g. TV, internet, etc.) can influence health and safety.
17. What is meant by a 'good neighbour scheme'?
18. Explain the meaning of the term 'self-regulation'.
19. List the functions of the board of an organisation for the effective governance of health and safety.

(Suggested Answers are at the end.)

Third Parties

IN THIS SECTION...

- Outline how and why third parties must be managed within the workplace.

Identifying Third Parties

The term 'third party' is used to describe any person or company not directly employed by the host organisation. A manufacturing organisation may have third parties to the site, such as visitors (delivery drivers, sales representatives, postal service, members of the public), contractors (engineers and builders), agency workers who are providing labour through another employer, and other workers who are sharing the premises, such as a catering team or a facilities management team.



Delivery drivers, members of the public and agency workers are all third parties

Reasons for Ensuring Third Parties Are Covered by Health and Safety Management Systems

In terms of potential **legal requirements**, the International Labour Organization's (ILO's) **Occupational Safety and Health Convention (C155) 1981 (Article 17)** states:

"Whenever two or more undertakings engage in activities simultaneously at one workplace, they shall collaborate in applying the requirements of this Convention."

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The accompanying **Occupational Safety and Health Recommendation (R164) 1981 (Article 11)** states:

"Whenever two or more undertakings engage in activities simultaneously at one workplace, they should collaborate in applying the provisions regarding occupational safety and health and the working environment, without prejudice to the responsibility of each undertaking for the health and safety of its employees. In appropriate cases, the competent authority or authorities should prescribe general procedures for this collaboration."

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Both Articles imply that account is taken of third parties who happen to be working on the same premises. This invariably will involve the exchange of information (on hazards, etc.), as well as the co-ordination of emergency arrangements and sharing of procedures.

This collaboration requirement is repeated in some of the sector-specific conventions, such as the **Safety and Health in Construction Convention (C167) 1988 (Article 8)**, together with its **Safety and Health in Construction Recommendation (R175) 1988 (Article 5)**.

Even if your country has not ratified the above ILO convention, you may have equivalent requirements.

It is quite clear that there is a **moral imperative** which 'obliges' us to look after other people, but because of the complexities of modern society, we often now have legislation that provides standards about how we look after the physical and mental well-being of our neighbours (the young, the elderly, the disadvantaged), and the visitors who enter our premises and workplaces, who may be completely oblivious to the hazards which may lurk there.

Apart from moral and legal obligations to third parties, there is another consideration, and that is the **economic factor**.

What are the economic implications of neglect of OHS? We have already looked briefly at the hidden costs of accidents.

Economic considerations are twofold. Accidents resulting from poor OHS management result in huge financial losses to everyone concerned. Poor OHS management is often itself caused by the serious lack of economic resources available for OHS purposes both at national and workplace levels.

It is not a difficult management exercise to compare the costs of preventing accidents with the costs arising from them (compensation, lost production, increased insurance premiums, overtime, legal fees, fines, etc.) but the simple logic appears to escape many boardrooms. Prevention of accidents and ill health is a worthwhile investment which attracts enormous dividends, both for the individual employer and the national economy as a whole.

Basic Duties Owed to and by Third Parties

You may be familiar with the concept of 'duty of care to your neighbour'. This is quite a common principle in civil law, even without a specific contract between parties. It arises from the moral/ethical duty not to cause injury/damage through negligent (i.e. careless) acts/omissions. The type of civil action that might arise is called 'the tort of negligence' (a 'tort' is a civil wrong).

Earlier, we looked at **Article 17** of **C155** and also **Article 11** of the associated **R164**. These contained a general duty to collaborate where two or more employers engage simultaneously in activities at the same workplace. If your country has ratified the Convention, these requirements will be enshrined in law.

We will now consider some specific examples of relationships which illustrate typical duties owed to and by third parties.

Occupiers of Premises/Land to Visitors

Many countries have established a common duty of care of an occupier to all lawful visitors (visitors are third parties who visit premises or land – many will either be explicitly invited or have an implicit right to be there). The duty is essentially to take reasonable care to see that the visitor will be **reasonably safe** in using the premises for the purposes for which they are **invited** or **permitted** by the occupier to be there. The duty is usually in respect of dangers due to both the state of the premises, as well as any acts or omissions. It is also common for this duty (albeit in a qualified, lesser form) to be extended to trespassers (i.e. those who have no invitation or permission to be there).



Occupiers must be especially aware of risks to children

Generally, the occupier must be prepared for children to be less careful than adults. If the occupier allows a child to enter premises, then the premises must be reasonably safe for a child of that age. The occupier must be aware of any lure or attraction to children, such as a pond, that could constitute a trap.

It is generally accepted that there may be special risks associated with certain types of work undertaken by the visitor. In such cases, an occupier may expect that a person, in doing their job, will appreciate and guard against any special risks related to it; for example, if the occupier invites a competent electrician to do some work, and due to the carelessness of the contractor they are electrocuted, then the occupier would not generally be liable.

It is common that an occupier can try to discharge at least some of their duty of care by displaying a warning notice, but it is not usually enough on its own. Indeed, signs may be of little use to protect children or the visually impaired.

Agency Workers

DEFINITION

AGENCY WORKER

An individual who has a contract with a temporary work agency and who is supplied by that agency to work temporarily under the supervision and direction of the hirer.

There is increasing use of agency workers, employed on a temporary basis, to supplement the labour force. Businesses and self-employed people using temporary workers must provide the same level of OHS protection for them as they do for employees. Providers of temporary workers, and employers using them, need to co-operate and communicate clearly with each other to ensure risks to those workers are managed effectively. Again, it needs to be agreed who does what in this respect. If it is assumed that the 'other party' will take responsibility then workers may be left without any OHS consideration or protection at all.

Before temporary workers start, they need to be covered by risk assessments and to know what measures have been taken to protect them. They also need to understand the information and instructions required for them to work safely and be provided with the necessary training. There may also be issues regarding language needs of temporary workers who do not speak the local language well, or even at all.

Other relevant issues include:

- The need to check on occupational qualifications or skills needed for the job.
- Agreement on arrangements for providing and maintaining any PPE.
- Agreement on arrangements for reporting accidents to the enforcing authority.

Contractors to Clients (and Vice Versa)

It has long been held that professional people owe a duty of care to their clients, but under the 'neighbour' concept, the reverse is also true. This implies co-ordination/collaboration of activities and exchange of essential information that might affect the OHS of respective workers (which we have already mentioned in relation to **Article 17 of C155**). This is especially true for the client to provide information on any special site hazards.



The ILO code of practice, **Safety and Health in Construction**, also identifies the responsibility of the client to ensure that contractors consider the cost of adequate OHS provision for the construction project when tendering for the job: there is a responsibility not to just choose contractors based on 'lowest bid', and there is again an implication that information on specific site hazards is communicated to the contractor so that they are able to take account of them when counting the cost of safety at the tender stage.

The client should also ensure that the contractor is allowed sufficient time for the job, in consideration of OHS (i.e. don't set unrealistic deadlines which would compromise safety). There is also an implied duty (frequently enshrined in law) for clients to make reasonable 'due diligence' efforts to ensure that the contractor that they engage is actually competent to do the job, and a reciprocal duty on the contractor (as on any employer/self-employed person) to ensure that their workers are competent to do the job.

Other Employers (Shared Premises)

Where employers share workplaces, they need to co-operate with each other and tell other employers about any risks their work activities could present to their workers, both on- and off-site. However, it can be difficult to establish exactly who is responsible for what, which is why communication and co-ordination is required and the respective employers must decide this for themselves.

The main principle that applies is that employers will be responsible for those activities and issues that are under their control, but co-operation and communication with others will still be required. As might be expected, the starting point for all parties is risk assessment, which needs to consider the risks to others sharing the building or site.

Responsibilities for Control of Risk Associated with Third Parties

It is clear that there is a general duty to ensure that all reasonably practicable measures are taken by clients (i.e. those who engage third parties) and people in charge of premises to reduce the risk to contractors and vice versa.

It is probably fair to say that the responsibility for risk control is shared – the client being responsible for the workplace, environment and their workers; the third party being responsible for the job and their workers. **But** there will be many areas of overlap; indeed, the terms of the engagement contract should help clarify major responsibilities. Tight procedures are required to ensure all possibilities are addressed.

This type of shared responsibility is exemplified by the provision of site welfare facilities. The client is often responsible for ensuring that adequate management arrangements are in place for the provision of site welfare facilities. Third parties are responsible for ensuring that welfare facilities are provided and that adequate site induction is given.

Provision of Information Relating to Hazards/Risks to Third Parties

The provision of information to third parties relating to hazards and risks is important.

- **Contractors**

We have already looked at the duty to collaborate on OHS matters contained within **C155**. This will necessarily involve exchange of relevant information (on hazards, risk assessments, method statements, procedures, etc.). Many items may be specifically identified in the contract between the two parties.

- **Visitors**

It is usual to give visitors to the workplace written information on emergency procedures, often in the form of a small card or on a visitors' slip. Think about where the visitor is going and what the purpose of their visit is. It may be necessary to supplement the general information with other, more specific, information relating to their particular situation.

- **General Public**

Information to the general public will include such things as notices and warnings on perimeter fences, gates, etc. Roadworks and other activities that impact on the general public, as well as requiring prominent signage, may be published in local newspapers and pre-work notices erected at the site.

STUDY QUESTIONS

20. Outline the legal reasons for ensuring that third parties are covered by HSMSs.
 21. What are the economic implications of neglect of OHS in the workplace?
- (Suggested Answers are at the end.)

Insurers

IN THIS SECTION...

- Outline the role of insurers in health and safety.

How Insurers can Influence Organisational Health and Safety

Insurance organisations can be a great source of information to employers. Some insurance is legally required (such as Employers Liability Insurance under the UK's **Employers Liability Compulsory Insurance Act 1969**, and workers compensation insurance required in Australia), whilst some such as Public Liability or buildings insurance is often voluntary (yet advisable) – the requirements will differ between countries.

Frequently, different insurers cover different business risks, some may insure the 'people', others may insure the 'fire-risk', but ultimately it is in the insurer's best interests to support the organisation to reduce its risk through improved standards, as this will reduce the losses that it may face. Insurers are concerned only with civil liability, however, as they cannot cover losses which arise from fines in the criminal courts.

Insurers can influence safety through the provision of inspections, advice and guidance, and through the establishment of standards that the organisation must adhere to. For example, it may not be a legal requirement to store wooden pallets away from the building, but an insurance company may advise a client to do so to mitigate losses which could arise from arson. Insurers also sometimes provide policies and standards for hot-works and work on fire systems. Failure to follow the recommendations of the insurer is not a criminal offence, they are advising rather than regulating, but it may impact the premium that the company faces as a result, or insurance may be cancelled. Equally, organisations facing multiple claims for personal injuries may find premiums are increased.



Roles of Loss Adjusters and Claims Handlers

In the event of a claim (such as a personal injury claim for compensation), the insurer will engage loss adjusters and claims handlers to support the process. A loss adjuster will initially ensure that the policy does cover the loss or damage, and confirm the amount that should be paid by the insurance company. The loss adjuster may be advising the insurer, or may have the authority to settle the claim on their behalf.

A claims handler will manage the claim through the process, ensuring that the policy holder receives the support and services that they need. The claims handler will provide advice and guidance throughout the process to ensure that the policy holder knows how to make a claim, that the claim is made correctly, that the claim is progressing, and that appropriate trades are contacted as required. For example, following a flood there may be contractors appointed to clean the premises, others to carry out repairs, property and equipment that needs to be replaced. They will also liaise with solicitors if required, and may even investigate fraudulent claims.

STUDY QUESTION

22. What is the role of a loss adjuster in the claims process?

(Suggested Answer is at the end.)



Summary

1.1: Socio-Legal Models

This section has:

- Explained the role of legislation as a means of promoting positive health and safety outcomes.
- Examined the differences between 'goal-setting' and 'prescriptive' legal models.
- Considered loss events as failures in the duty of care to protect individuals, and examined the compensatory mechanisms that may be available to them, including no fault liability and fault liability claims.

1.2: Enforcement

In this section, we have considered:

- The broad role of a health and safety enforcement agency is likely to be to protect people against risk to health and safety arising out of work activities.
- The UK HSE's Enforcement Policy Statement (*HSE41*) which describes the following principles in attempting to ensure firm but fair enforcement of health and safety law:
 - Proportionality of enforcement.
 - Consistency of approach.
 - Transparency.
 - Targeting.
 - Accountability.

1.3: The International Labour Organization and its Conventions and Recommendations

In this section, we have looked at:

- The role and status of ILO conventions, recommendations and codes of practice in relation to health and safety.
- **Occupational Safety and Health Recommendation (R164) 1981** which sets out the roles and responsibilities of governments, enterprises and workers.
- How international conventions can be used as a basis for setting national systems of health and safety legislation.

1.4: Non-Governmental Bodies and Health and Safety Standards

This section has:

- Considered influential parties, such as employer bodies, trade associations, trade unions, professional groups, pressure groups and the public who have a role in regulating health and safety performance.
- Noted how the media can play an important role in communicating health and safety issues and can influence changes in attitudes to health and safety.
- Considered the benefits of schemes which promote co-operation on health and safety between different companies.
- Explained the possible effects on business of stakeholder reaction to health or safety concerns.



- Noted an organisation's moral obligations to raise standards of health and safety within their supply chains.
- Examined the origins and meaning of 'self-regulation'.
- Described the role and function of corporate governance in a system of self-regulation.
- Considered how internal rules and procedures regulate health and safety performance.

1.5: Third Parties

In this section, we have outlined that:

- There are legal, moral and economic reasons for ensuring that third parties are covered by health and safety management systems.
- Basic duties owed to and by third parties include those of:
 - Occupiers of premises/land to visitors.
 - Agency workers.
 - Contractors to clients and vice versa.

1.6: Insurers

In this section, we have:

- Explored the different ways in which insurers can influence health and safety.
- We also considered the roles of loss adjusters and claims handlers in the event of a civil claim for compensation.

ID1 Learning Outcome 2

NEBOSH International Diploma for Occupational Health and Safety Management Professionals



Learning Outcome 2

Once you've read this learning outcome, you will be able to promote a positive health and safety culture by:

- Gaining commitment and participation.
- Engaging, supporting, and influencing leaders (and others) to change attitudes and behaviour and make health and safety a priority.

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Organisational Structures

IN THIS SECTION...

- Recognise different organisational structures and where conflicts in goals could lie, and how these conflicts can be resolved.

The Concept of the Organisation as a System

DEFINITION

SYSTEM

A regularly interacting or interdependent group of items forming a united whole.

(Note: This is one of several definitions which can be applied to systems.)

The systems approach to management is a way of thinking in which the organisation is viewed as an integrated complex of interdependent parts which are capable of sensitive and accurate interaction among themselves and within their environment.

Common characteristics of systems are that:

- Every system is part of a still larger system and, itself, encompasses many subsystems ('circles within circles').
- Every system has a specific purpose to which all its parts are designed to contribute.
- A system is complex – any change in one variable will effect change in others.
- Equilibrium: a system strives to maintain balance between the various pressures affecting it, internally and externally. Some systems experience more pressures to change than others, giving rise to stable and unstable systems.



Initial reaction to pressure is often what is called dynamic conservatism – the organisation fights like mad to stay just as it is! However, sooner or later, homeostasis takes place (activities that serve to stabilise and vitalise the organisation as a whole in an evolving state of dynamic equilibrium).

Organisational Structures and Functions

General Perspective

An organisation is a group of persons who interact with each other in an effort to achieve certain goals or objectives. At a very basic level, the shop-floor employee goes to work to earn money – as does their union representative, supervisor, manager and managing director. The earning of money, then, is a specific goal common to everyone in that particular enterprise. There will be many other shared goals and objectives as well as many goals that are not shared, which lead to conflict, and that may eventually have a bearing on the success or failure of the organisation. A work organisation, then, is an organisation which has been established for a specific purpose and within which work is carried out on a regular basis by paid employees. Examples of such are: businesses, hospitals, educational institutions, government departments, etc.

Formal and Informal Structures

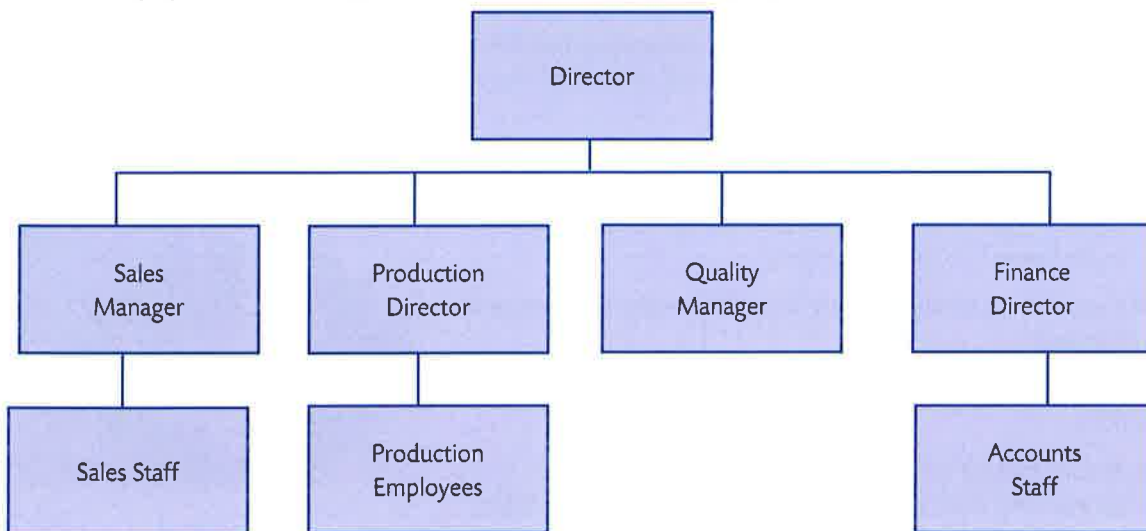
All organisations have a formal and informal structure. Within each organisation, there is a formal allocation of work roles and the administrative procedures necessary to control and integrate work activities.

However, organisations also have an informal arrangement or power structure based on the behaviour of workers – how they behave toward each other and how they react to management instructions. The supervisor will have specific instructions from management aimed at achieving certain goals or production targets. In many cases, they 'adjust' those instructions in accordance with their personal relationships with individual (or groups of) workers. This takes us some way toward being able to make a distinction between formal and informal organisations. There is a blurring at the edges between the two – a crossover point where the distinction between the formal and informal at the actual point of action becomes obscured and is the subject of a great deal of sociological argument and discussion. For our purposes, we can describe or explain them in the following way:

Formal Organisational Structure

Most organisations describe their structure in the form of an organogram. This shows the reporting relationships, from the chief executive of the company down to the staff carrying out the most basic tasks.

The following figure illustrates a typical formal structure for a small company.



Formal structure

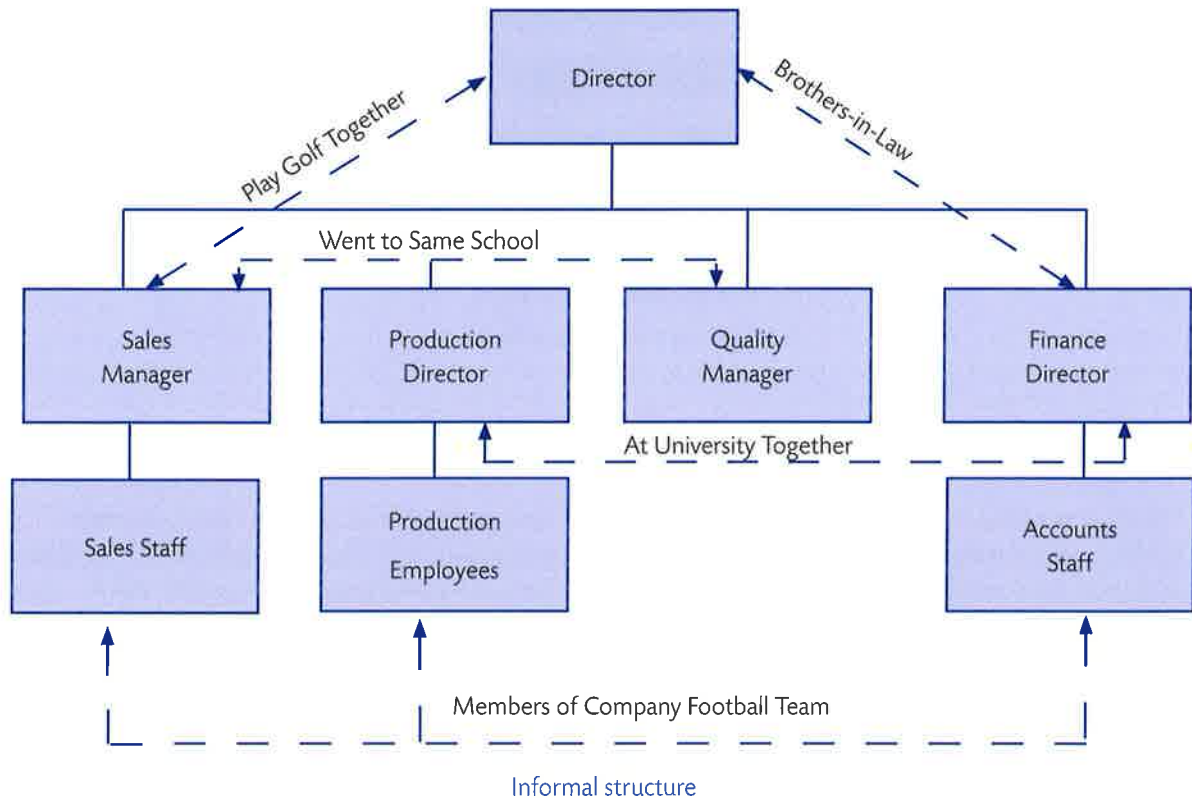
In theory, every person within the structure has a well-defined role with clear lines of reporting and clear instructions about the standards of performance. These roles are clearly understood by others in the organisation so that everyone acts together to achieve the organisational objectives.

Informal Organisational Structure

An organisational chart cannot identify all the interactions that occur between staff. Invariably, it will be the quality of personal relationships which determines how communications flow within a company and 'how things get done'.

In most organisations, the formal structure represents the model for interaction, but, in reality, the informal relationship is significant in understanding how organisations work. The informal structure cannot replace the formal structure, but works within it. It can influence relationships and effectiveness in both positive and negative ways. An understanding of it is an invaluable aid to good management. Take another look at the formal structure figure and then compare it with the informal structure figure that follows. Look at the superimposed informal structure shown by the dotted lines.

An awareness of these informal relationships would obviously influence how communications are made. The effective manager will use such knowledge to break down resistance to new measures (including health and safety).



A simple way of making a distinction between a formal and informal organisation structure is:

- Formal: represented by the company organisation chart, the distribution of legitimate authority, written management rules and procedures, job descriptions, etc.
- Informal: represented by individual and group behaviour.

Hierarchical Line Management Structures

DEFINITIONS

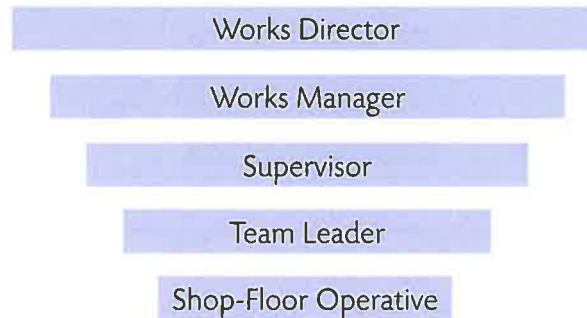
MANAGER

A manager organises, regulates and is in charge of a business.

MANAGEMENT

The management are those people engaged in these functions.

Look at the following figure:



A typical line management function

Here you can see a direct line of authority from the works director to the shop-floor operative.

- **Staff Relationship**

The Managing Director's (MD's) secretary reports to the MD and carries out instructions by passing the MD's wishes to other directors and senior heads of department, but there is no 'line' relationship between the secretary and those departments. There is no instruction from the secretary, as their authority stems from the MD. A health and safety consultant reporting directly to an MD is not in a position to 'instruct' heads of departments to carry out health and safety policies or instructions. Again, their authority stems from the MD and, in practice, they would advise heads of department of any changes in policy agreed with and authorised by the MD.

- **Functional Relationship**

In many larger organisations, certain members of staff have a company-wide remit to carry out activities 'across the board'. Human resources departments often implement company appraisal plans which affect every department, internal auditors visit all departments to carry out their work, and quality control inspectors and health and safety managers have a company-wide role in order to inspect and check procedures. In such circumstances, any defects discovered would normally be dealt with by reporting them to the departmental head rather than dealing directly with any individual within the department.

The various hierarchies and line, staff, and functional relationships can create huge problems for any organisation. Office 'politics' and protocols often obstruct communication, which is one of the keys to efficient management.

- **Flat Management Structures**

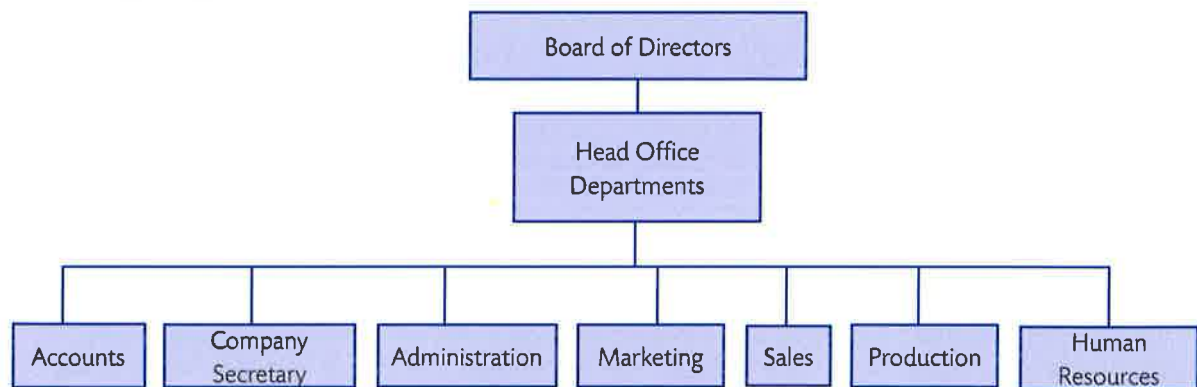
Flat management structures are often (but not exclusively) found in smaller organisations. A feature of such organisations is the necessity (certainly in those with few employees) for the employees to adopt several roles. Much of the work is done in teams where a team leader will facilitate the work of the team, operating in a collaborative style rather than through a hierarchical structure. This is a much flatter structure than the linear one and relies on co-operation and joint decisions rather than instruction being passed down through a management chain.

Small businesses are far less likely to have a dedicated health and safety professional than a large organisation; the role is often taken on by an employee who combines the responsibility with other tasks.

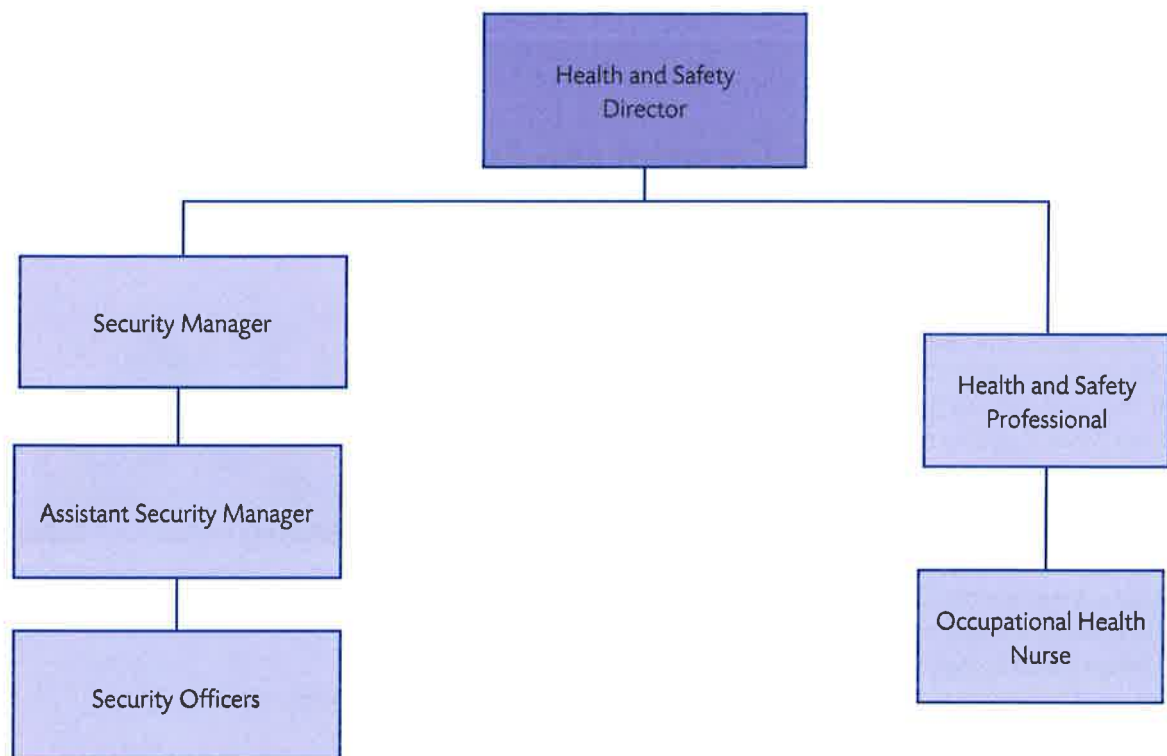
Organisation Charts

The structure of an organisation is determined by its general activities – its size, location, business interests, customer base, etc., and by the way in which its employees are organised.

The organisational pyramid (formal structure) illustrated earlier is probably the principle model for most organisations, with management at its apex and the workforce at its base. Within this model, each separate department has its own pyramid with its own power structure and departmental goals. If the organisation is very large then considerable problems involving communication, efficiency, and effectiveness may occur. The following figures show two typical pyramids:



Typical company pyramid



Typical departmental pyramid

By looking at these structures, you can see the formal levels of authority and responsibility within the organisation or department. In simple terms, authority or control runs from top to bottom. However, there are other important management/employee relationships, such as line management, staff, and functional relationships.

Role of Management

Management will lead through issued instructions, policies and procedures, and supervision to ensure that these are being adhered to.

There is normally a line of responsibility with different functions at each level.

Potential Conflict Between Organisational Goals and the Goals of the Individual

DEFINITION

GOAL

An object of effort or ambition.

To be successful and progress, both an organisation and individuals have to have goals. For the organisation, the goal may be an objective to be the 'best in their field' or to be the 'largest' or to be renowned for 'outstanding quality'. For the organisation to achieve these goals, the employees need to have their own goals and objectives to work toward the organisational goal. However, the individual may have other goals which may or may not impact on the organisation. For example, an individual may hope to be promoted, which would probably mean that they will work very hard to achieve their goals/objectives within the organisation, as this should help them to achieve their own personal goal of promotion. Another individual, however, may want to work fewer hours or have more time with their family, and this may impact negatively on their willingness to put in extra hours which may be required for the organisation to achieve its goal.

The Integration of the Goals of the Organisation with the Needs of the Individual

In setting and achieving health and safety targets, the organisation should consider the needs of the individual. Where health and safety tasks are delegated at all levels from senior managers to shop-floor workers, the responsible individual(s) should be clearly identified and stated. This gives ownership to the individual concerned, and is an important factor in getting the individual to 'buy in' to the organisation's goals.

Many organisations give responsibility without the relevant authority to carry out the tasks. This can be a mistake as, without authority, the individual can feel frustrated at being unable to carry out the tasks. This leads to a feeling of futility and results in tasks being done poorly or not at all. Where authority is given to enable the individual to carry out tasks, this can result in an increase in self-esteem and a greater chance that the tasks will be performed well.

The limits of responsibility and authority should be clearly defined so that individuals know the extent of what they can and cannot do.

With responsibility comes accountability, and this must be made clear to all individuals given health and safety responsibilities. One important issue when giving responsibility is to ensure that the individual is capable of accepting it.



Individuals should be given ownership of health and safety tasks

Internal Influences on Health and Safety Within an Organisation

Finance

Setting up and running a company requires considerable financial investment. Once established, the company needs to generate more income than it spends on running costs, i.e. cost of premises, plant, wages, insurance, etc. To do this, the company will set annual budgets specifying the amount of money available to each department to support its running costs and setting production targets to be achieved. When budgets are being reduced to economise, some health and safety requirements will often be 'short circuited'. The person responsible for health and safety must argue for sufficient funds to support health and safety requirements. Lack of funding will inevitably lead to a reduction in the resources necessary to effectively administer health and safety. Health and safety costs might seem to be minimal and easily absorbed in departmental administration costs. Such an arrangement could lead to financial disaster and costly prosecutions for non-compliance.



Internal influences include finance and production targets

Production Targets

Achieving production goals can put intense pressures on workers leading to stress and an increase in incidents and accidents in the workplace. It is recognised that increased competition, longer hours, increased workloads, new technology and new work patterns are significant occupational stressors. Industrial psychology also requires that in a 'conveyor-type' operation, the speed of the belt should be geared to the capacity of the slowest operator. The pressures on management to achieve production targets/increase production can be translated into action on the shop floor in a number of ways:

- Make the workforce work longer hours.
- Increase the size of the existing workforce.
- Pay incentive bonuses to increase the daily rate of production.
- Reduce the quality of the goods by using inferior materials.

Apart from increasing the size of the workforce, these measures encourage workers to 'cut corners'. For example:

- Longer hours can lead to tiredness and less attention to safety factors.
- Bonuses for increased production can lead to disregard for any safe systems of work which slows down the speed at which the worker can operate.
- Increased production targets may create anxiety in the slower worker, especially if part of a team, and can lead to shortcuts being taken in an effort to keep up with colleagues.
- Reducing quality may require new systems of work, leading to stress.

All of these can lead to unsafe acts that may have a considerable effect on the company's health, safety and accident record.

Trade Unions

Trade union safety representatives are involved as members of safety committees and, as such, are actively involved in improving health and safety in the workplace. They have a dual role in that they can be involved in the formulation of policy in certain companies, but they also have a policing role in that they can monitor management's performance. They carry out the following functions:

- Investigating potential hazards and dangerous occurrences.
- Examining the cause of accidents.
- Investigating health and safety complaints from employees they represent.
- Making representations to the employer on complaints, hazards and accidents.
- Carrying out inspections of the workplace.
- Consulting with HSE inspectors on behalf of the employees they represent.
- Receiving certain information from the HSE inspector.

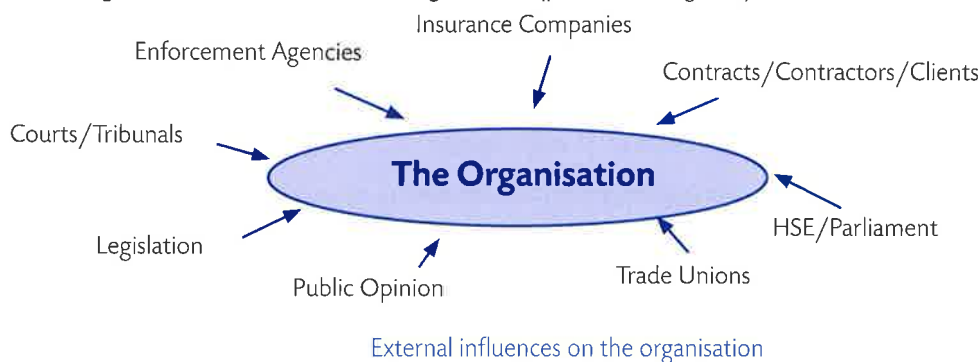
Employee representation has been widened to include employees who are not members of a trade union. These employees will be represented by 'elected representatives of safety'. Safety representatives are protected by legislation from victimisation by employers.

Organisational Goals and Culture

The goals and culture of the organisation strongly characterise the company. Some organisations rate safety highly and treat it seriously, not only in what they claim to do (their safety policy), but also in what actually happens in practice. Safety culture can be simply described as 'the way we do things'. If you have worked for several different organisations you will probably recognise different cultures in terms of what they accept and tolerate. We will look at this topic in more detail later in this Learning Outcome.

External Influences on Health and Safety Within an Organisation

The following all exert an influence on the organisation (positive or negative):



Legislation

Any company ignores legislation at its peril. Changes in legislation are well-publicised in the appropriate publications, and any health and safety adviser should ensure that they are aware of any pending changes and their effect on the company.

Parliament/HSE/Government and Regulatory Bodies

Of all the influences on a company, probably the most important is that of legislation. The laws passed by governments will have a direct effect on any company, and changes in procedures to accommodate legislative changes may be necessary.

Nationally appointed regulatory bodies, such as the HSE in the UK and OSHA in the US can establish standards which can be legally binding or advisory in nature.

Enforcement Agencies

The enforcement agencies can influence health and safety within companies by:

- Providing advice.
- Enforcement notices.
- Prosecution.

Tribunals/Courts

Employment tribunals may have a direct effect on health and safety through their decisions, such as dismissing an appeal against an Improvement Notice in the UK.

In a criminal prosecution, the court establishes whether the defendant is guilty or not guilty. The defendant may be an individual or the company itself. If the prosecution is successful, the organisation will in most cases be fined.

In civil cases for personal injury, the organisation may be sued, which may result in compensation being paid to the injured party.

Contracts/Contractors/Clients

The nature of contracts and relationships with contractors may have profound effects on the health and safety of a particular contract. Where a contractor feels that they are making a loss on a particular project, there may be a strong temptation to cut corners and perhaps compromise on health and safety. Where a client takes a direct interest in the progress of a contract and in achieving good standards of health and safety, the standards on site are positively improved. There is a need for effective vetting of contractors' own company health and safety competence before hiring their services.

Trade Unions

Trade unions are active nationally in promoting standards of health and safety in many ways:

- Supporting their members' legal actions and setting precedents and standards.
- Acting through lobby and pressure groups to influence legislation.
- Carrying out and sponsoring research.
- Publicising health and safety matters and court decisions.
- Providing courses on health and safety subjects.

Insurance Companies

Insurance companies directly influence other companies by means of the requirement for employers' liability insurance. Should a company suffer an unusually high accident rate, then the insurance company can either increase their insurance premiums or insist that the company adopt risk-reduction measures. Insurance companies now often carry out their own inspections of workplace risks and so are able to set certain minimum standards.

Insurance companies may also affect companies by means of their policy toward claims, i.e. because of the high cost of litigation, cases tend to be settled out of court, rather than pursued in court.

Public Opinion

Ultimately, public opinion can have a powerful effect on legislators, which may result in legislation being passed or prosecution taking place. Pressure groups may lobby Parliament and influence the government to change the law. Following a series of major rail crashes in the late 1990s, survivors and relatives formed a group to try to force the government to improve safety standards on the railways and to hold the railway companies more accountable.

STUDY QUESTIONS

1. What is the difference between a formal and informal organisational structure?
2. List some of the internal influences on an organisation in respect of health and safety at work.
3. List some external bodies that can influence health and safety standards of organisations, identifying the means by which each body exerts its influence.

(Suggested Answers are at the end.)

Leadership

IN THIS SECTION...

- Recognise the different types of safety leadership and the behavioural attributes of an effective leader.

The Meaning of Safety Leadership

Hersey and Blanchard define leadership as:

"the process of influencing the activities of an individual or a group in efforts toward goal achievement in a given situation".

Source: *Management of organizational behavior*, Prentice Hall.

Risk management is concerned with protecting the health and safety of employees or members of the public who may be affected by work activities. Since these activities are controlled and directed at board level, their health and safety implications must be a board level issue as well.

Failure to include health and safety as a key business risk in board decisions can have catastrophic results. This is illustrated by many high-profile safety incidents that have occurred over the years, and in almost all cases, the root cause is failure of leadership.

The legal framework places health and safety duties on organisations and employers. Members of the board therefore have both collective and individual responsibilities for health and safety.

Successful safety leadership is based on visible, active commitment at board level, with effective downward communication systems through the management structure. The aim is to integrate good health and safety management with business decisions.

Effective leadership should involve the workforce in the promotion and achievement of safe and healthy conditions, and encourage upward communication to engage the workforce. Without the active involvement of directors, organisations will never achieve the highest standards of health and safety management.

Types of Safety Leadership

There are a number of recognised theories relating to leadership style which can be associated with safety leadership.

Transformational Leadership

Transformational leadership is based on the assumption that people will follow a person who inspires them, and that the way to get things done is by generating enthusiasm and energy; consequently, the aim is to engage and convert the workforce to the vision of the leader. Since people will not immediately buy into radical ideas, the transformational leader must continually sell the vision and, as part of this, sell themselves. For this to work, transformational leaders need to have a clear idea of the way forward, and always need to be visible. This style is therefore a continuing effort to motivate the workforce.



Leadership is critical to achieving highest health and safety standard



Transformational leaders are people-oriented and believe that success is achieved through commitment, so the focus is on motivation and the involvement of individuals in the health and safety programme. However, the disadvantage of this approach is that passion and enthusiasm may not align with reality. The transformational leader may believe they are right, but this is only their belief. Transformational leaders are good at seeing the big picture – their vision – but sometimes not the detail where the problems often arise. They therefore need people to take care of things at this level.

Within the health and safety programme, transformational leaders focus on supervisor support, training and communication.

Transactional Leadership

Transactional leadership is based on the assumption that people are motivated by reward and punishment and social systems work best with a clear chain of command. The prime purpose of a subordinate is to do what their manager tells them to do, so the transactional leader creates clear structures setting out what is required and the associated rewards or punishments. The organisation, and therefore the subordinate's manager, has authority over the subordinate, and the transactional leader allocates work. The subordinate is fully responsible for it, whether or not they have the resources or ability to carry it out. When things go wrong, the subordinate is personally at fault, and is punished for failure. The assumption is that if something is operating to a defined performance, it does not need attention. Success requires praise and reward, and substandard performance needs corrective action.

The style of transactional leadership is that of 'telling' in comparison to the 'selling' style of transformational leadership. It is a common approach for many managers but is closer to management rather than leadership.

The main limitation is the assumption that individuals are simply motivated by reward and exhibit predictable behaviour. Psychologists and behaviourists have identified that there are other fundamental needs that individuals seek to fulfil which may go unnoticed by leaders purely using this approach.

Within the health and safety programme, transactional leaders focus on compliance, rules and inspection.

Authentic Leadership

Authentic leadership as a concept has been around for centuries – in *Hamlet*, William Shakespeare wrote 'to thy own self be true' and the roots of authentic leadership go back as far as ancient Greece.

In 2003 however, this concept gained popularity after the publication of Bill George's *Authentic Leadership*. Many people have experienced leaders who behave in one way at work and another out of work, but this can be confusing and lead to mistrust or dislike by employees. An authentic leader doesn't do this – they are true to themselves in the workplace, understanding their own strengths and weaknesses and aware of their emotions, using them to connect with the team and communicating with empathy.

At the core of the authentic leader are three values: be true to yourself, be open with others and do the right thing, not what is best for you as a leader. Therefore it is clear that authentic leaders are interested more in the goals of the organisation than their own personal goals, they are focused on the results that can be achieved as a team and task driven. Authentic leaders will often be described as "self aware" and "genuine" – this is seen as an honest leader who inspires trust in others.

The main advantages of authentic leadership are that it helps build trust and meaningful relationships within the team and a consistent approach, with the belief in "doing the right thing" yielding high moral standards.

This is not without its problems however, this is a new field and the infancy of this approach means that measuring authentic leadership can be challenging. The process can be slow and may stop an organisation reacting quickly to make decisions (or decisions will be taken in a way not seen as "authentic"). Finally, a key drawback is the possible contradiction which can arise when an authentic leader has to make an unpopular decision in order to deliver what is necessary for the shareholders.

Resonant Leadership

The idea of resonant leadership is attributed to psychologist Daniel Goleman. If we think in physics terms of resonance being “*the reinforcement or prolongation of sound by reflection from a surface or by the synchronous vibration of a neighbouring object*”, then resonant leadership is leading with the understanding that the emotional state or attitude of the leader is amplified through the business. If a leader is therefore passionate about safety and positive about opportunities, then this will reverberate through the organisation; conversely, if a leader sees safety as a chore, then this attitude will pervade the organisation. Goleman goes on to define four types of resonant leadership:

1. Visionary: here, the leaders share the big picture, the goals and objectives of the organisation, and as a result, the team members work collectively to achieve the goal.
2. Coaching: leaders who are invested in developing their team members through coaching and mentoring build trust and motivation in the team. This builds resonance by understanding the connection between people’s individual goals and that of the organisation so that they are aligned.
3. Affiliative: the focus here is on building collaboration and relationships within the team. People feel valued, and in times of stress, this can heal divisions and strengthen bonds, building resonance and harmony.
4. Democratic: this style draws on the knowledge of the group and enables decisions to be made as a collaborative effort. Resonance is built through valuing everyone’s input.

Resonant leadership requires a high level of emotional intelligence, the leader really needs to want to engage and understand the importance of self awareness, empathy and honesty. Most leaders think that they have good communication skills, the resonant leader needs to seek feedback to ensure that this is the case. Resonant leadership, as it is based on coaching, mentoring and development of the team can improve bonds and relationships within the organisation.

The disadvantages, like authentic leadership are that the process is highly collaborative and this can reduce the organisation’s ability to rapidly adjust to changing circumstances and that when unpopular decisions are made this can be seen as contradictory. Finally the clear issue is that if good moods resonate so can the negative moods, and a leader with a poor opinion of safety can rapidly impact the organisation.

Behavioural Attributes of an Effective Leader

The styles of leadership we have discussed suggest a broad spectrum between the two extreme approaches of autocratic and democratic. However, there are also leadership behaviours which are regarded as being effective and are respected by followers.

These include:

- Integrity.
- Appreciation of corporate responsibility (the need to make profit is balanced with wider social and environmental responsibilities).
- Being emotionally positive and detached.
- Leading by example.
- Supporting and backing people when they need it.
- Treating everyone equally and on merit.
- Being firm and clear in dealing with bad behaviour.
- Listening to and understanding people (‘understanding’ is different to ‘agreeing’).
- Always taking responsibility and blame for mistakes and giving people credit for successes.

- Being decisive and seen to make fair and balanced decisions.
- Asking for views, but remaining neutral and objective.
- Being honest but sensitive in delivering bad news or criticism.
- Keeping promises.
- Always accentuating the positive.
- Involving people in thinking and especially in managing change.

STUDY QUESTION

4. Outline the basic principles of the following types of health and safety leadership:
 - (a) Transformational.
 - (b) Transactional.
 - (c) Resonant.

(Suggested Answers are at the end.)

Consultation

IN THIS SECTION...

- Understand how an organisation can consult effectively with its workers.

Formal Consultation

Successful OHS management depends on a workforce that is committed to OHS and which co-operates with the employer.

The following is from the ILO Encyclopaedia article: *Consultation and information on health and safety* (Part III, Chapter 21).

"The idea of employers and employees working jointly to improve health and safety at work is based on several principles:

1. *Workers can contribute to prevention of industrial accidents by spotting and warning about potential hazards and giving notice of imminent dangers.*
2. *Involving employees educates and motivates them to cooperate in the promotion of safety.*
3. *Ideas and experiences of workers are regarded as a useful contribution to safety improvement.*
4. *People have a right to be involved in decisions that affect their working life, particularly their health and well-being.*
5. *Cooperation between the two sides of industry, essential to improve working conditions, should be based on an equal partnership."*



Consultation has a direct effect on safety performance

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There is general agreement that consultative and participatory arrangements have a direct effect on safety performance.

In terms of international standards offered for adoption as national laws, **C155, Article 20**, states the basic approach:

"Co-operation between management and workers and/or their representatives within the undertaking shall be an essential element of organisational and other measures taken in pursuance of Articles 16 to 19 of this Convention."

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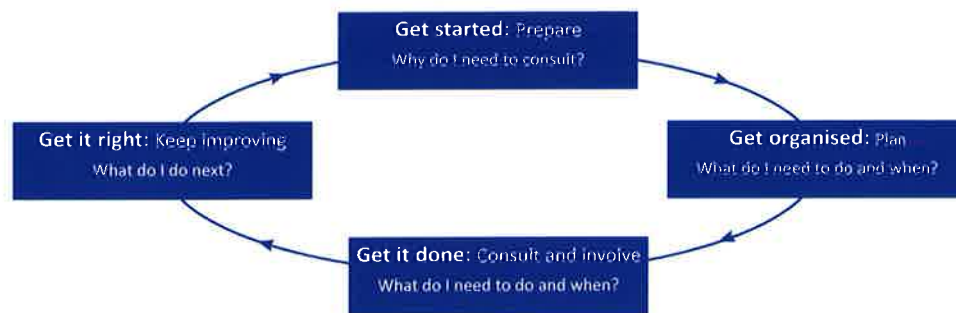
This is supported directly by the associated **R164** (see especially **Article 12**). Also relevant are the ILO's **Co-operation at the Level of the Undertaking Recommendation (R94) 1952** and the **Communications within the Undertaking Recommendation (R129) 1967**, which recommend consultation within the workplace.

The Four Stages to Consultation

The HSE publication *HSG263: Involving your workforce in health and safety* covers the key aspects associated with consultation. The guidance identifies a four step approach:

1. Get started: Prepare
2. Get organised: Plan
3. Get it done: consult and involve
4. Get it right: keep improving

The approach can be summarised with the following graphic, taken from HSG263.



The Four Stages to Consultation

Get Started: Prepare

This section highlights the value of the consultation process as a whole. Whilst legally required in some organisations, it is generally accepted that organisations which involve their workforce will gain joint solutions to problems, improve the safety culture, reduce accidents and ill-health, improve efficiency and productivity, meet customer requirements, and comply with legal obligations.

In order for consultation to be effective, there must be commitment from management and employees alike to make the process work. The business must resource the process and allow time for meetings, whilst employees must also be prepared to step forward as safety representatives.

Get Organised: Plan

In this section, consideration is given to how employers consult with their workforce, the issues that should be consulted on, when consultation should take place, and the training required for employees.

Simply put, the size, structure, nature, and diversity of the workplace all have an effect on the way that consultation can take place. Some organisations will have multiple sites that may need to link up to ensure effectiveness, others may operate shift systems which should be taken into consideration.

Consultation should take place on matters affecting the health and safety of workers, such as the changes which may have a substantial impact on health and safety (e.g. new premises, procedures or shift patterns).

Employers should consult "in good time" - not once the work is complete and the decisions have been made. Regular consultation will highlight upcoming issues, rather than simply responding to problems as they arise.

Finally, those representing your employees require training; whilst trades unions offer courses for their members, there are many other options available, but training should be provided.

Get it Done: Consult and Involve

This section covers the employer's duties when consulting, methods of involving employees, involving representatives in inspections and investigations, and establishing an effective safety committee.

The employer is legally required to provide time off for the representatives in order to attend training or to carry out their duties, provide facilities and assistance that they may require and provide certain information. If the representatives are from a recognised trade union, then if two or more representatives ask for one (in writing) the employer has to establish a safety committee.

Employees can be engaged and involved through face to face communication with the workforce, indirect communication, such as toolbox talks or by including safety as an agenda item in all meetings, or through safety representatives who may attend a safety meeting.

Other indirect methods of communication include staff surveys, company intranet sites, suggestion schemes and newsletters.

Additional effort may be needed if workers have poor written or spoken English; translations, interpreters, and pictorial communications can greatly assist, as can helping those who wish to build their language skills through training.

Employees can be invaluable in assisting with inspections and investigations. By utilising the experience of the representatives, the organisation can gain the co-operation of the workforce. These can include safety surveys, safety inspections, safety tours and inspections after an incident or accident in the workplace. After an inspection, it is essential that the organisation follows up on the actions and responds to the findings.



Indirect communication methods include staff surveys and the company intranet

As well as being a legal requirement for some unionised workplaces, the use of a safety committee can also bring huge benefits to most organisations if implemented effectively. When establishing a committee it is important to understand:

- how the committee will function;
- who the members will be;
- what action the committee will take;
- how decisions will be made; and,
- what resources will be required.

If well established, a safety committee can greatly improve communication in an organisation, ensuring that information flows between the different levels of the business. If badly implemented however, the committee can rapidly become a 'talking shop', which does not generate any significant action, and as a result, will lose energy and momentum. Committees will need a balanced membership with representatives from all areas of the organisation, and the management team not outnumbering the workforce. There must also be a real bias for action; if the committee can't remedy issues, it will quickly be viewed as pointless and will again lose steam.

Get it Right: Keep Improving

This final section covers monitoring performance, reviewing performance, and knowing what to do when things become challenging.

To monitor how well the engagement process is working, consider asking representatives if they have been given time to attend meetings, asking employees who their representatives are and how they could raise concerns, and look to see if issues raised are being reviewed.

The review of performance is carried out to ensure that the organisation is making progress and that things are improving, as well as the workforce being consulted with appropriately.

Finally, in most organisations there will be challenging times where the workforce and management disagree about a health and safety issue, or where other issues cloud the decisions being made on health and safety. Trades unions and arbitration services can ultimately assist if needed.

Behavioural Aspects Associated with Consultation

In any social group, conflict may arise between two or more people, interest groups, genders, ethnic or racial groups, and workplaces are no exception. Safety committee member 'A' serves on the committee to represent their department or perhaps a particular group of workers with common skills. Similarly, committee member 'B' represents *their* department members. A and B, although sharing a common membership of the safety committee, may well be pursuing different objectives. They may both be seeking improved health and safety arrangements for their members but may be in competition for the allocation of limited resources to their particular project.

- **Peer Group Pressures**

A safety representative serving on a safety committee may feel that they have to question and criticise any suggestion put forward by a management representative on the committee. Remember that the safety representative is a worker's representative; they are neither part of the management team nor necessarily 'a competent person'. Their perception of health and safety problems may be different from that of management and not constrained by budgeting considerations. Their role is mainly a policing one, in which they monitor the safety performance of management and, because of peer group pressure, they may see themselves in a conflicting, rather than co-operative, role.

- **Danger of Tokenism**

One of the dangers associated with consultation is tokenism – where management go through the consultation process but the views expressed by employees are apparently ignored. Clearly, during the consultation process, there is no obligation on the employer to make changes suggested by employees (unless there is a legal requirement) and this may be for perfectly legitimate reasons. However, the employer should respond to information gained during the consultation process and explain what action will be taken and why some proposals may not be implemented, otherwise there may be resentment and apathy toward the process.

- **Potential Areas of Conflict**

The safety representative may sometimes view themselves as an expert on health and safety matters. Conflict may arise between the safety representative and the first line supervisor where the safety representative may have advised their members (wrongly) not to carry out a particular management instruction. This is not to say that conflict always arises as a result of worker attitude toward management. The converse is equally true, with management taking the view that their opinions are correct simply because they are management and think they know better. Consultation about problems, where the views of all the participants are considered, should lead to effective decisions.

The Role of the Health and Safety Professional in the Consultative Process

The term 'safety professional' covers such diverse staff as: safety advisers, occupational hygienists, doctors, nurses, safety managers, human resources managers, training officers, facilities managers, ergonomists, engineers and radiation protection advisers. The qualifications range from the highly qualified doctor to the human resources manager who has completed perhaps a non-examination, three-day, basic health and safety awareness course. The health and safety professional needs to be a person with a wide range of abilities and a recognised safety qualification at diploma or degree level with Institution of Occupational Safety and Health (IOSH) membership.



Doctors, Safety Managers and Engineers can all be safety professionals

In relation to the health and safety consultative process, health and safety professionals have a substantial role to play. They are often the first contact for the employer or worker on health and safety matters. The safety professional maintains a number of relationships:

Within the Organisation

- The position of health and safety professionals in the organisation is such that they support the provision of authoritative and independent advice.
- The post-holder has a direct reporting line to directors on matters of policy and authority to stop work which is being carried out in contravention of agreed standards and which puts people at risk of injury.
- Health and safety professionals have responsibility for professional standards and systems and, on a large site, or in a group of companies, may also have line management responsibility for junior health and safety professionals.

Outside the Organisation

Health and safety professionals liaise with a wide range of outside bodies and individuals, including: local government enforcement agencies; architects and consultants; the fire department; contractors; insurance companies; clients and customers; the public; equipment suppliers; the media; the police; medical professionals; and hospital staff.

This is a very wide brief and indicates that the safety professional requires a broad and extensive knowledge of health and safety matters in order to fulfil their duties. They are the organisation's first contact when health and safety problems are encountered, and will give advice on short-term safety solutions to problems and follow this through with perhaps a recommendation for a change in policy or the introduction of new technology or new/revised safe systems of work. They will also recommend the services of outside expert consultants where the problem requires scientific, medical or technical advice which is outside their area of expertise. They may also be involved in safety committees in a chairing role or simply in an advisory capacity during committee deliberations.

MORE...

For more information on Consultation, visit the ILO Encyclopedia, *Part III: Management and Policy* at:

www.iloencyclopaedia.org

STUDY QUESTIONS

5. What does **Article 20** of Convention **C155** state about consultation?
6. What are the four stages of consultation as outlined by HSE publication *HSG263: Involving your workplace in health and safety*?
7. Name four of the external bodies that the Health and Safety Professional may have to liaise with?
(Suggested Answers are at the end.)

Health and Safety Culture and Behavioural Change Programmes

IN THIS SECTION...

- Understand what contributes to an effective health and safety culture and climate, and the impact that behavioural change programmes can have on culture.

The Meaning of 'Health and Safety Culture' and 'Health and Safety Climate'

There are numerous definitions for a health and safety culture but, essentially, it involves a system of shared beliefs about the importance of health and safety in the workplace.

The definition by the former Health and Safety Commission's Advisory Committee on the Safety of Nuclear Installations is:

"The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures."

Source: ACSNI Human Factors Study Group: *Third report – Organising for safety*, HSE Books, 1993.

What, then, is **health and safety climate**?

Unfortunately, there is no universal definition and many authors use the terms culture and climate interchangeably. One commonly accepted explanation is given by Sir Cary Cooper who distinguished between three related aspects of culture:

- Psychological aspects: how people feel, their attitudes and perceptions – safety climate.
- Behavioural aspects: what people do.
- Situational aspects: what the organisation has – policies, procedures, etc.

It is generally accepted that 'safety climate' refers to the psychological aspects of health and safety and is measured through a safety climate or attitude survey (see later).

The important thing to remember about a safety culture is that it can be positive or negative. A company with a negative or poor safety culture will struggle to improve safety or prevent accidents, even if they have excellent written procedures and policies and state-of-the-art safety equipment. The reason for this really comes down to people, their attitudes to safety and how this attitude is encouraged and developed.



Organisational Culture and Health and Safety Culture

Professor Edgar Schein wrote in his 1984 article *Coming to a New Awareness of Organizational Culture* that:

"Organizational culture is the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

Source: *Coming to a New Awareness of Organizational Culture*, MIT Sloan Management Review, vol.25 no. 2, 1984.

This definition has been reviewed and revised by Davide Ravasi and Majken Schultz in 2006 in their article, *Responding to Organizational Identity Threats: Exploring the Role of Organizational Culture*, stating that organisational culture is "a set of shared assumptions that guide behaviors". In both definitions, the similarities of organisational cultures are clear.

Professor Geert Hofstede describes organisational culture as a 'shared, collective phenomenon', which broadly means that the group will act in a way which reflects the organisational culture.

Culture is built up from multiple layers or facets which together shape the way the organisation operates. These layers include:

- Symbols: such as logos or company colours or monuments.
- Heroes: such as public figures or company founders.
- Rituals: both in works such as meetings and out of work such as leisure activities.
- Values: the standards that are taught to us that we find more palatable than the alternative, such as equality.

Hofstede further divides organisational culture into:

1. Optimal culture: the culture that is best for your organisation.
2. Actual culture: the culture you currently have.
3. Perceived culture: the culture you *think* you have.
4. Ideal work environment: the current feelings about the working environment which in turn greatly influences actual culture.

Hofstede then defines a model based upon six dimensions of organisational culture:

Dimension	Description	Features
Dimension 1: Organisational effectiveness	Means-oriented vs. Goal-oriented organisation	In a means-oriented organisation, the focus is on the way in which work is carried out; in a goal-oriented culture the focus is on the results that are achieved, and this can in turn tempt people to take risks.
Dimension 2: Customer Orientation	Internally Driven vs. Externally Driven	In an internally driven organisation, the work and standards are driven by the beliefs of the organisation and the understanding that this will in turn service the customer. In a highly externally driven organisation, however, the customer requirement is most important and in turn the focus again shifts towards results.

Dimension	Description	Features
Dimension 3: Level of control	Easy-going Work Discipline vs. Strict Work Discipline	In an easy-going culture there are few rules and many surprises – the opposite is true in a strict environment.
Dimension 4: Focus	Local vs. Professional	In a local culture, the staff identify with the boss, are internally focused, and like to be the same as everyone else. In a professional culture, the identity of the employee relates to their role or job title and workers are externally focused.
Dimension 5: Approachability	Open system vs. Closed System	In an open organisation, newcomers are welcomed, and it is felt that everyone will fit in; the same is not true of a closed system.
Dimension 6: Management Philosophy	Employee-oriented vs. Work-Oriented	In employee-oriented organisations, the personal circumstances of the employees are taken into account and there is a high level of focus on welfare. In work-oriented cultures, the job must be completed at all costs and the welfare of the employees is considered secondary.

MORE...

You can find out more on the Hofstede Insights at:

<https://hi.hofstede-insights.com/organisational-culture#step-5>

There is an excellent summary of organisational culture and a checklist at:

www.managers.org.uk/~media/Files/PDF/Checklists/CHK-232-Understanding-organisational-culture.pdf

Indicators of Culture and Measuring Health and Safety Climate

TOPIC FOCUS

Indicators of safety culture within an organisation include:

- Housekeeping.
- The presence of warning notices throughout the premises.
- The wearing of PPE.
- Quality of risk assessments.
- Good or bad staff relationships.
- Accident/ill-health statistics.
- Statements made by employees, e.g. 'My manager does not care' (negative culture).

Some of these indicators will be easily noticed by a visitor and help to create an initial impression of the company.

MORE...

Loughborough University has developed a Safety Climate Assessment Toolkit which you can find out more about at:

www.lboro.ac.uk/enterprise/case-studies/safety-climate

While there are many indicators that can give a first impression of a company's safety culture/climate, it is possible to measure some of the indicators to obtain a more accurate picture of the sense of culture within an organisation.

There are a number of measurement tools available.

Safety Climate Assessment Tools

The Health and Safety Laboratory has published a safety climate tool that uses eight key factors mapped around 40 statements on which respondents are asked to express their attitude:

1. Organisational commitment.
2. Health and safety behaviours.
3. Health and safety trust.
4. Usability of procedures.
5. Engagement in health and safety.
6. Peer-group attitude.
7. Resources for health and safety.
8. Accidents and near-miss reporting.

The kit is available in a software format and will analyse and present the results as charts that can be easily communicated to the workforce.

MORE...

The Health and Safety Laboratory (HSL) produced a Safety Climate Tool, which you can find at:

<https://books.hse.gov.uk/Safety-Climate-Tool>

Although this is not a free tool, it is very well developed. However, for an alternative, free resource, download The Paper and Board Industry Advisory Committee's Safety Opinions Survey from:

www.hse.gov.uk/paper/tools.htm

Perception or Attitude Surveys

These are survey questionnaires (often within a safety climate tool) containing statements which require responses indicating agreement or disagreement. Respondents are asked to indicate to what extent they agree or disagree with each statement, generally using a five-point scale that can then be coded to give a score. High scores represent agreement and low scores disagreement.

It is not difficult to produce a questionnaire about general health and safety which would give some idea as to the safety culture within an organisation. The questionnaire must be worded to avoid bias, and to obtain truthful answers, confidentiality is necessary. When carried out properly, these questionnaires can identify underlying anxieties and problems which would be difficult to identify by any other means. Take care, however, to make sure that the questionnaires themselves do not create anxiety or suspicion in the minds of employees. When carried out regularly, attitude surveys can identify trends and it is then possible to quantify how attitudes are changing.

Findings of Incident Investigations

Sometimes during an accident/incident investigation, the underlying cause is identified as 'lack of care'. This may indicate individual carelessness or, where carelessness is found to be the widespread cause of accidents/incidents, then this may be an indicator of poor safety culture.

Where the same underlying cause keeps recurring, the safety manager has to introduce a process of education or re-education of the workforce to encourage a change of attitude. The findings and lessons learnt from incident investigation are invaluable in preventing similar occurrences, setting policy, formulating safe systems of work, writing training materials and, after publication to the workforce, demonstrating company commitment to the principles of good safety management.

Effectiveness of Communication

DEFINITION

COMMUNICATION

The transfer of information from one person to another, with information being understood by both the sender and receiver.

The process of communication requires a sender, a receiver and feedback. Feedback is the part that is often left out of the process and this is what leads to problems. Successful communication is measured by feedback, which allows the sender to test whether the receiver has fully understood the communicated message.

Communication methods are written, verbal or visual, or a combination of all three. The method chosen must be appropriate to the type of information to be communicated and its objectives, the sophistication of the audience (receivers), and the structure and culture of the organisation.

Communication surveys can be used to find out how effectively information has been transferred to new members of staff. A sample of comparatively new members of staff can be interviewed to identify how well they have assimilated the company's safety culture or how much they have retained from company health and safety training. This type of survey can be done formally or informally.

Effective communication involves:

- Including everyone who should be included.
- Not overloading people with large quantities of information; prioritise anything urgent.
- Being brief, direct and keeping it simple.
- Being fast but not at the expense of accuracy.
- Being selective; sending only what is necessary.
- Encouraging feedback to ensure the message has been received and understood.
- Using as few links in the communication chain as possible to prevent distortion of the original message.

Evidence of Commitment by Personnel at all Levels

DEFINITION

COMMITMENT

A declared attachment to a doctrine or cause.

It is the goal of the health and safety professional to ensure commitment to health and safety by everyone within an organisation. This commitment must start at the management board level. It is essential that management show their commitment to safety as this sets the standard for the whole organisation. The workforce will only believe in this commitment if they know that management is willing to sacrifice productivity or time in order to ensure worker safety.

Evidence of commitment can be seen by management visibility. If managers are not seen on the shop floor or at the 'sharp end of activity', workers may assume that they are not interested in the job or health and safety. Lack of management visibility is seen as a lack of commitment to safety and this becomes part of the organisation's safety culture.

Visible commitment can be demonstrated by management:

- Being seen and involved with the work and correcting deficiencies.
- Providing resources to carry out jobs safely (enough people, time and money, providing appropriate PPE, etc.).
- Ensuring that all personnel are competent (providing training and supervision).
- Enforcing the company safety rules and complying with them personally (introducing safe systems of work and insisting on their observance).
- Matching their actions to their words (correcting defects as soon as is reasonably practicable, avoidance of double standards).

What May Promote a Positive Health and Safety Culture or Climate

Management Commitment and Leadership

The most important thing is 'leading by example'. As soon as management undermines the safety standards in order to increase productivity, or ignores an unsafe act, then they lose employee respect and trust and the whole safety culture of the organisation is threatened. It is important to ensure that management behaviour is positive in order to produce positive results and a positive culture.

High Business Profile to Health and Safety

A positive health and safety culture can be promoted by including safety in all business documents and meetings. All newsletters, minutes of meetings, notices, advertisements and brochures can include an appropriate reference to safety; it could simply be reference to the organisation's commitment to safety (e.g. a safety phrase appearing on all notepaper) or, with respect to meetings, it could be an opportunity for any safety concerns to be raised. If safety is seen as an integral part of the business, then the profile of safety will be raised.

Provision of Information

It is really important to provide information about health and safety matters in the form of posters, leaflets or in staff newsletters.

Involvement and Consultation

It is vital to involve staff members in health and safety matters. Areas in which staff representatives or health and safety representatives can be actively involved include:

- Risk assessments.
- Workplace inspections.
- Accident investigations.
- Safety committee meetings.

It is also a legal requirement to consult with employees in good time regarding:

- The introduction of any measures that may substantially affect their health and safety.
- The arrangements for appointing or nominating competent persons.
- Any health and safety information to be provided to employees.
- The planning and organisation of any health and safety training.
- Health and safety consequences of introducing new technology.

Involving and consulting with employees is an important process for getting employees to take ownership of health and safety issues. The fact that they or their colleagues have been involved in health and safety matters encourages respect for safety rules and improves attitudes towards safety. These values all help to produce a more positive safety culture within the organisation.



Health and safety law poster

Training

Training is vital to ensure that people have the right skills to carry out their job safely. Training also makes individuals feel valued and is an important part of their personal growth and achievement. Employees who receive training are more likely to be motivated and take newly learnt skills or ideas back to the workplace.

Promotion of Ownership

There are many ways to promote ownership in individuals. We have mentioned involvement and consultation already, but simply talking to people and asking their opinion or their thoughts on a health and safety problem can encourage them to think about health and safety and what they can do to improve it.

Setting and Meeting Targets

Setting safety targets for individuals or teams can have a positive effect on a safety culture. Usually, there will be an incentive, perhaps a bonus, linked to performance-related pay or an award or prize. The target could be, for example, to obtain a higher score in a health and safety inspection.

Aiming for the target should encourage people to work together in order to achieve it and this usually means people talking about health and safety and ways to improve it.

Once the target is met, that standard must be maintained and further improvements encouraged by setting another target. The targets must, however, be achievable in order to prevent employees becoming disheartened and abandoning the target.

Factors That May Promote a Negative Health and Safety Culture or Climate

There are a number of factors that may contribute to a negative health and safety culture or climate.

Organisational Change

Company reorganisations often leave individuals worried about job security and their position in the organisation. Many people fear change and, unless it is handled correctly, will mistrust management and become suspicious of any alterations to their role or environment (even ones that are beneficial).

Reasons for company reorganisation may be:

- A merger.
- Relocation of the business.
- Redundancies.
- Downsizing.
- External pressures over which the organisation has no power.

Companies may offer voluntary redundancies to make the job losses more acceptable but sometimes the redundancies are compulsory. The company may also offer generous financial packages in excess of the statutory minimum to soften the blow to employees. Problems may occur, however, when the retained staff have to work with reduced manpower and resources. The remaining employees may feel threatened by the possibility of further redundancies, leading to bitterness and anger. Further resentment may develop where shareholders and directors are seen to benefit from the loss of colleagues who have left the business.

Where outside pressures are the cause of the reorganisation, employees may be more understanding than if the changes are brought about by the need to improve profits.

Frequent reorganisations can be damaging to a company unless they are handled well. Increased workforce dissatisfaction may lead to some employees leaving, which in turn can leave gaps in the operation which cause further difficulties. This type of situation can lead to more accidents and incidents as well as increased sickness and absence from work.

Lack of Confidence in Organisation's Objectives and Methods

Most companies have objectives relating to productivity and safety. If productivity appears to take precedence over safety, however, then worker perception will be that the company is unethical and untrustworthy with little commitment to safety, which will lead to a subsequent deterioration in the safety culture.

Examples where workers may feel that safety has been compromised in order to achieve productivity include:

- Safety improvements only made after incidents have occurred.
- Double standards in the application of safety regulations by safety advisers and management.
- Unsafe practices ignored in order to improve productivity.
- Permit-to-work systems not being operated as they should be.
- Changes made to safety rules during operation.



Unsafe practices are sometimes ignored to improve productivity

Uncertainty

Security is a basic human need. In an uncertain environment, people generate feelings of insecurity. When security cannot be assured, humans cannot achieve their full potential. Uncertainty about the future can lead to dissatisfaction, lack of interest in the job and generally poor attitudes toward the company and colleagues.

Uncertainty is often caused by management behaviour which sends mixed behaviour signals to the workforce. If management is seen to say one thing and then do something different, this undermines their authority and credibility, e.g. managers using personal mobile phones when company policy stipulates that they are banned, or failing to wear PPE.



Management Decisions That Prejudice Mutual Trust or Lead to Confusion Regarding Commitment

Management decisions that are, or are perceived to be, inconsistent or poorly made can generate unrest and distrust in an organisation. There may be good reasons for the decision which is why it is extremely important that management are aware that good communication is an important part of the decision-making process.

Circumstances that could give rise to distrust and doubt about management commitment generally (these could equally apply to decisions about safety) include:

- Where there are no rules or no precedents, decisions may appear to be arbitrary and inconsistent.
- Employees are expected to wear PPE, whereas visitors or managers are not.

- Refusal to delegate decision-making, leading to demotivation and diminution of a sense of responsibility in subordinates.
- Constant rescinding by senior management of decisions made at lower levels of management.
- Delays in making decisions.
- Decisions affected by conflicting goals between management and worker.
- Decisions affected by conflicting goals between different departments.
- Lack of consultation prior to decision-making.

Changing the Culture

There are three factors that should be considered when managing a change in culture:

1. Dissatisfaction with the existing situation (e.g. too many near-misses).
2. A vision of the new safety culture.
3. Understanding how to achieve it.

Change is an inherent part of modern life but there are many people who find change difficult to deal with and who are afraid of it. In order to effect change within an organisational culture, you have to plan the strategy and communicate from the beginning in order to involve employees and not alienate them.

Planning and Communication

Planning for change should start at the top of the organisation but should encourage participation at all levels. There should be clear objectives as to what is to be achieved by the proposed change, e.g. a cost-benefit analysis of the changes suggested.

Plans for change should clearly designate who is responsible for initiating and implementing specified changes as well as how each stage of the change process will be conducted. Effective communication between all those implementing change is crucial.

To prevent rumours circulating and misunderstandings developing, it is important to publicise information relating to the pending change as early as possible. Wherever possible, direct briefings, meetings or interviews should keep managers and staff aware of proposed changes and the progress made as changes get under way.

Strong Leadership

Managers at all levels need to demonstrate strong leadership and not give inconsistent or mixed messages.

A Gradualist (Step-by-Step) Approach

One of the ways of effecting change in an organisational culture is by taking a gradualist (step-by-step) approach, with changes phased in over a period of time. The main advantage of this approach is that it ensures that there is time for adaptation and modification; it also allows time for the change to become part of the established culture.

The major disadvantage of this approach is that the changes take a relatively long time to implement. This can mean that unsatisfactory conditions and mindsets may be left in place for longer than is desirable.

Action to Promote Change

- **Direct**

This is where positive action is carried out with the sole objective of effecting change, perhaps by setting up a two-tiered system, i.e. a steering group and a working party. The steering group should consist of high-level personnel (e.g. directors and heads of departments) who give broad objectives, set timescales and meet approximately every three months. The working party, however, will meet every month and will consist of middle management, first-line supervisors and union/worker representatives. The working party will carry the 'message' to the workforce and provide feedback.

The chair of the working party should also be a member of the steering party and this role is usually filled by a safety professional who can act as the link between the two groups.

The pace of change should be dictated by the feedback given by the working party.

- **Indirect**

Indirect methods bring about change, but they are not necessarily the primary reason for carrying out the method. For example, risk assessments are not carried out specifically in order to improve the safety culture, but by training a proportion of the workforce in the risk assessment process and improving their risk perception, an organisation will benefit from this heightened understanding of risk. This in turn will improve the understanding of the importance of safety, the need for additional controls and in turn change attitudes. This is just one example of a way that safety can move gradually from being the responsibility of the health and safety team, to being a shared responsibility.

Strong Worker Engagement

Cultural change is not the sole responsibility of management; there also has to be significant commitment from employees who must recognise the need for change.

Training and Performance Measurements

- **Training courses** can include information about new or impending safety legislation or safety technology, thereby indirectly paving the way for future changes.
- **Performance measurements** can be introduced to encourage employees to have a greater interest and involvement in health and safety. Where performance measurements improve over time, they can be linked to an incentive scheme, but they should not be linked to accident/incident rates as this can lead to under-reporting. Performance measurements are an inexpensive way of promoting health and safety, but they need the support of management and unions to be successful.

Importance of Feedback

Feedback is crucial to ensure that any changes implemented are working successfully. Feedback from employees will enable management to evaluate the new processes, and fine-tune them where necessary.

Changes to the Working Environment

The working environment can have a significant impact on the way workers feel about their workplace, and the way that they in turn perceive they are valued. Imagine an organisation where the management team sit in palatial air conditioned offices, whilst the workforce in the factory are in hot, cramped and poorly maintained conditions – would that feel fair? What would that say about the way that the employees were valued? Equally, in a workplace where the conditions may not be palatial but management listen to workers and make improvements to provide better welfare facilities, good lighting, and a suitable rest area, the employees will feel cared for, and this will resonate through the business.

Building Trust in the Workforce

When considering culture, the word “trust” regularly pops up as an issue – in organisations where there is perceived mistrust of the management, it is hard to build a positive culture. Whilst there will be few organisations where all workers are happy and receive everything that they desire at all times, the confidence that decisions are made fairly and that the organisation has considered (if not always agreed with) the opinions of the workforce, will help gain a level of mutual respect that will help to build the culture. Safety teams or committees can be excellent forums for this, as providing a method that allows all voices to be heard is invaluable.

Problems and Pitfalls

In many cases, the introduction of change within an organisation is often accompanied by problems such as conflict. Problems associated with change include:

- **Changing Culture Too Rapidly**

Where changes have occurred too quickly, employees may feel extremely vulnerable, insecure, confused and angry.

Where the changes have brought together new personalities, then conflict between individuals may occur. Differences of temperament are at their most obvious when people are new to each other; a measure of tolerance may build up over time.

- **Adopting Too Broad an Approach**

Trying to do too much all in one go can dilute the resources so that little impact is seen. It is better to target resources on fewer, manageable issues. It is important to be clear about what the objectives are at the start so that everyone is aware of the changes that will occur.

- **Absence of Trust in Communications**

This is unsettling and demotivating. Inconsistent management behaviour can lead to mistrust and uncertainty causing a complete breakdown in relations between management and the workforce. Poor communications in periods of change can lead to misunderstanding and confusion, which can fuel conflict.

- **Resistance to Change**

Some people are more resistant to change than others. Older people tend to be more resistant than young people, and people with heavy financial commitments tend to fear change as they need to feel secure.

Some people develop set patterns of thought and behaviour which can be difficult to overcome when change occurs. This is known as perceptual set, and is the way in which observed information is processed by the individual to fit their internal experience, attitude, expectations, sensitivity and culture.

All these factors need to be considered and dealt with as part of the change process.



Change is often accompanied by conflict

HSE's Safety Culture Maturity Model

The *Safety Culture Maturity Model* produced on behalf of the HSE in the UK by Dr Mark Fleming, was initially focused on the oil and gas industry. In the study, Dr Fleming reviewed and revised previous safety culture maturity models and decided upon 10 indicators of cultural maturity:

1. Management commitment and visibility.
2. Communication.
3. Productivity versus safety.
4. Learning organisation.
5. Safety resources.
6. Participation.
7. Shared perceptions about safety.
8. Trust.
9. Industrial relations and job satisfaction.
10. Training.

By assessing each of the indicators an assessment of cultural maturity can be established at one of five stages. There is far more detail in the original report, but it has been summarised below:

1. Level 1: Emerging

Safety is seen as the responsibility of the safety department and not as a key business issue. Accidents are an occupational hazard.

2. Level 2: Managing

Safety is seen as a business risk and solutions are based around compliance with procedures and engineering controls. Accidents, though about average for the sector, are seen as preventable but the perception is largely that these are due to the unsafe behaviours of the workers.

3. Level 3: Involving

The accident rate has fallen but is levelling off and management understands that their decisions can contribute to accidents. The majority of staff see that they are responsible for their own health and safety and are willing to work with management. Safety is monitored using data gathered by the organisation.

4. Level 4: Co-operating

The majority of employees understand the moral and financial importance of safety and take responsibility for their own safety. There is a significant shift towards using preventative measures to reduce the risk of accidents, data is used effectively and safety is considered outside of work as well as at work (for example, by promotion of healthy lifestyles).

5. Level 5: Continually improving

Accidents are seen as preventable in the workplace and at home and this is seen as a core business belief. The organisation is not complacent about the fact that there has been a long period (several years) since the last major injury or high potential incident and safety is always seen as being on the agenda. There are still measures to monitor the safety performance but the processes are working well. Safety is seen as critical to the business by all employees.



MORE...

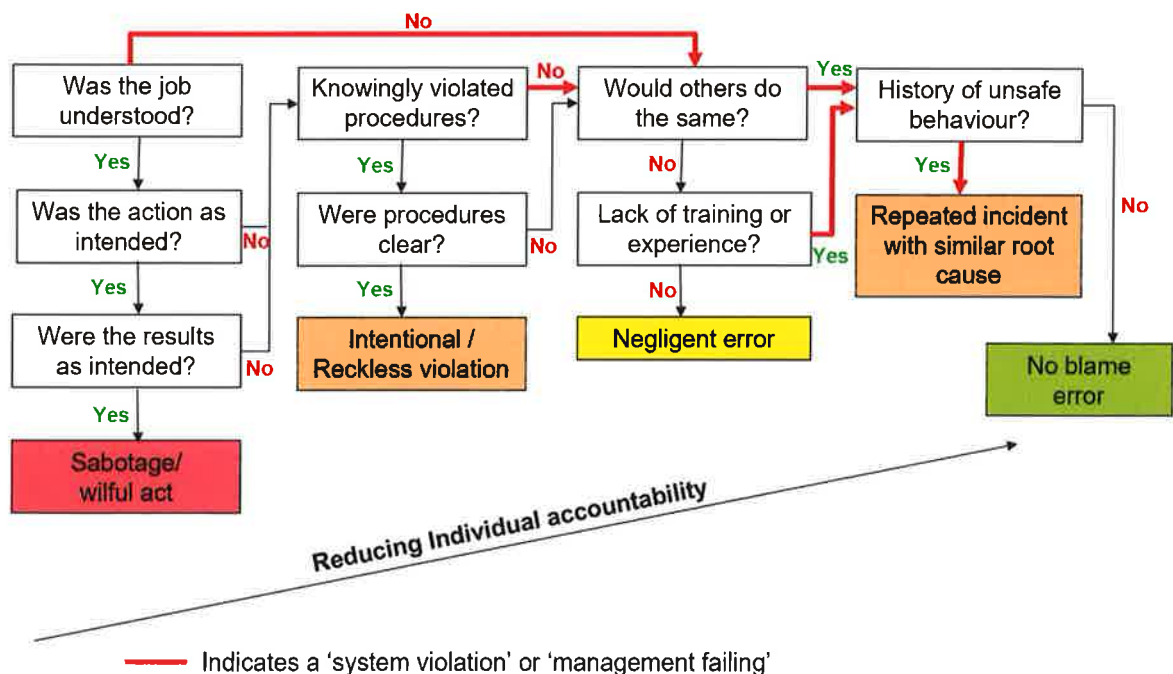
You can read the HSE's *Safety Culture Maturity Model* report at:
www.hse.gov.uk/research/otopdf/2000/oto00049.pdf

The Concepts of Blame, No-Blame and Just Culture (Dekker)

In a 'blame culture', it is the belief of the employees that the organisation will shift the responsibility for health and safety incidents onto them and so they are 'blamed' for events, whether or not they are within the control of the employees. This can result in the under-reporting of incidents for fear of retribution. Conversely in a 'no-blame' culture, the belief is that no action will be taken with regards to health and safety issues no matter how they were caused. Clearly this can result in an environment where there is no accountability taken for incidents as they are 'nobody's fault'. The balance lies somewhere in the centre, where incidents are reported and action is taken proportionately.

Dekker developed the 'Just Culture' model and this has been refined in his subsequent papers. In essence, the Just Culture model is about assessing the level of responsibility an individual may have for an event. At one end of the scale, a reckless and intentional act which the person knows will violate procedures and causes willful damage, would result in a high level of culpability. At the other end, a previously impeccable employee acting in line with custom and practice, and finding a way to overcome an unworkable procedure, would be seen as having a lower level of culpability as responsibility is shared with the organisation.

The Just Culture decision tree can be used to define the process, in order to determine the level of culpability that an employee has, rather than leaving managers to make arbitrary decisions.



MORE...

You can access Dekker's full article *Just culture: who gets to draw the line?* from:

<https://sidneydekker.com/wp-content/uploads/sites/899/2013/01/JustCultureCTW.pdf>

Behavioural Change Programmes

Why Behavioural Change Programmes are Used

Behavioural change programmes (sometimes known as "Behaviour Based Safety Management", "BBSM" or simply "Behavioural safety") aim to understand not only what an employee is doing but why they would seek to do that. By understanding the motivation to work in an unsafe or "at risk" manner, the organisation can remove barriers to safety and enable workers to work safely at all times. Some organisations have seen considerable success utilising the behavioural safety approach in increasing understanding and engagement amongst the workforce.

The HSE states that behavioural safety programmes are commonly used because:

- A significant number of accidents are caused by unsafe behaviours.
- They can increase management and worker participation in safety.
- They can improve the visibility of managers.
- Behaviours and attitudes can influence culture through perception.
- Behaviours determine the performance of systems.



Behavioural programmes can change individual behaviour

Advantages and Disadvantages of Behavioural Change Programmes

The advantages of behavioural change programmes (based on the HSE's concepts) are:

- It encourages and enables discussion of safety in the workplace.
- Management increase their visibility.
- Increased employee engagement in safety.
- Participants learn to observe and give constructive feedback.
- The team learn to act promptly on unsafe acts.
- It can improve knowledge of safety leadership.
- It introduces some aspects of human factors (such as understanding why people would violate rules to cut corners).
- Can provide some leading indicators for safety.
- Can actually change behaviour ("cognitive dissonance").
- It can identify and address dangerous situations.

Some potential disadvantages or pitfalls could be:

- The focus on the behaviours needs to be meaningful and not trivial.
- The programme will take real focus and effort, and some solutions which may be needed to remove barriers may be expensive.
- The process may not be 'owned' by everyone.
- 'Off the peg' or consultant-led programmes can fail because of poor fit with local style/culture (UK/US), and if this is not followed through and seen as a "fad", it can be more harmful.
- If there is a lack of trust or a lack of a friendly, approachable management style then this will be unlikely to work well.
- There is a tendency to focus on easy, low hanging fruit whilst ignoring more difficult safety problems.
- It can shift onus away from management onto individuals.
- The focus is on individual not management behaviour.
- There may be a suspicion of a blame culture.

It is important to focus on the safe/unsafe behaviours and not the desired outcome of the programme. So, if the objective of such a programme is to reduce the incident/accident rate, then it should focus on safe behaviours (and reward those) and not on the injury rate. If we rewarded a low injury rate, then this would encourage under-reporting rather than safe behaviours.

Principles of Behavioural Change Programmes

There are many different types of behavioural change programmes available, but all are based on the same fundamental principles.

The key principle is to positively reinforce the desired behaviour and deter the undesired behaviour through the education and engagement of the workforce.

The first step is to identify and clearly define the desired behaviour. The behaviour should be specific, observable and easily measured; for example, "wearing gloves" is not specific enough, a better behaviour would be defined as "when opening the oven, the worker wears oven gloves". There should be a small number of clearly defined behaviours that the organisation wants to focus on – think of these as "good safety habits" that you want to instill in your teams.



TOPIC FOCUS

Steps of a Behavioural Change Programme

- **Step 1:** Identify the specific observable behaviour that needs changing, e.g. increased wearing of hearing protectors in a high-noise environment.
- **Step 2:** Measure the level of the desired behaviour by observation. To do this, observers will need to be trained and go into the workplace to look at the current level of safe and unsafe behaviour.
- **Step 3:** Identify the cues (or antecedents) that trigger the behaviour and the consequences (or pay offs), both good and bad, that may result from the behaviour. Remove barriers to safe behaviour that you identify.
- **Step 4:** Train workers to observe, record and reinforce the safety critical behaviour. This can be peer-on-peer or involve managers, depending on organisational maturity.
- **Step 5:** Provide immediate feedback/praise to reward safe behaviour, and discuss concerns about any "at risk" behaviours observed in the worker. All behaviours should be acknowledged – the strength of the process is that nothing is ignored, and whilst observing, the observer delivers feedback whether constructive or as praise.
- **Step 6:** Feedback safe/unsafe behaviour levels regularly to the workforce. Celebrate success together and show the improvement that is being made.

Many behavioural change programmes identify a few key behaviours that have, perhaps, led to accidents previously, or gave cause for concern – for example, the failure to wear gloves when handling knives. The desired behaviours are then identified (such as 'when handling knives, the worker wears cut-resistant gloves') and the observers then observe against this specific behaviour. If the operator is wearing their gloves, then positive reinforcement and thanks are given. If the operator is **not** wearing their gloves, then the observer highlights their concern and discusses any barriers to safety that could have resulted in the action. By being observed and given feedback regularly, workers' behaviour changes, such that the correct behaviours become almost good habits. At this point, a new behaviour may be added to the observation sheet, and the process continues.

TOPIC FOCUS

The Observation Checklist

All programmes need behaviour which can be easily observed and assessed.

In a factory, a process involves loading a pallet with 25kg sacks of cement and then transporting the pallet to a lorry for despatch.

A checklist is then developed to identify the expected behaviour and record the number of safe and unsafe acts. Here is an extract:

Task	Expected Behaviour	Safe	Unsafe	Not Seen	Comment
Loading pallet	Loader wears safety gloves	3	1		
	Loader wears safety shoes	3	2		
	Loader adopts safe lifting procedure	2	0		
	Loader places pallets only in correct location	1	1		
Transporting pallet by FLT	Driver sounds horn when approaching exit doors	4	1		
	Driver wears seatbelt	4	2		
	Driver keeps forks lowered whilst travelling	2	0		
TOTAL		19	7		
% safe		75	24		

(FLT = forklift truck)

For each of the two tasks, a list of expected observable behaviours is identified. Observers then regularly visit the workplace and observe the behaviour and record whether it was safe, unsafe or not seen. Observers may include all workers and should not be just those with management or supervisory roles.

Following each observation, the feedback, either individually or as a team, in which safe behaviours are praised and unsafe behaviours discussed. The worker(s) observed are invited to give feedback and to explain, for example, why it was not feasible to wear gloves. The discussion may lead to suggestions as to how to change the task to improve safety.

Clearly, the discussion will need to be handled carefully and should not create hostility.

Following a series of observations, the percentage of unsafe behaviour can be calculated and publicised:

$$\text{Percentage safe behaviour} = \frac{\text{Sum of safe observations}}{\text{Sum of safe} + \text{sum of unsafe behaviours}} \times 100$$

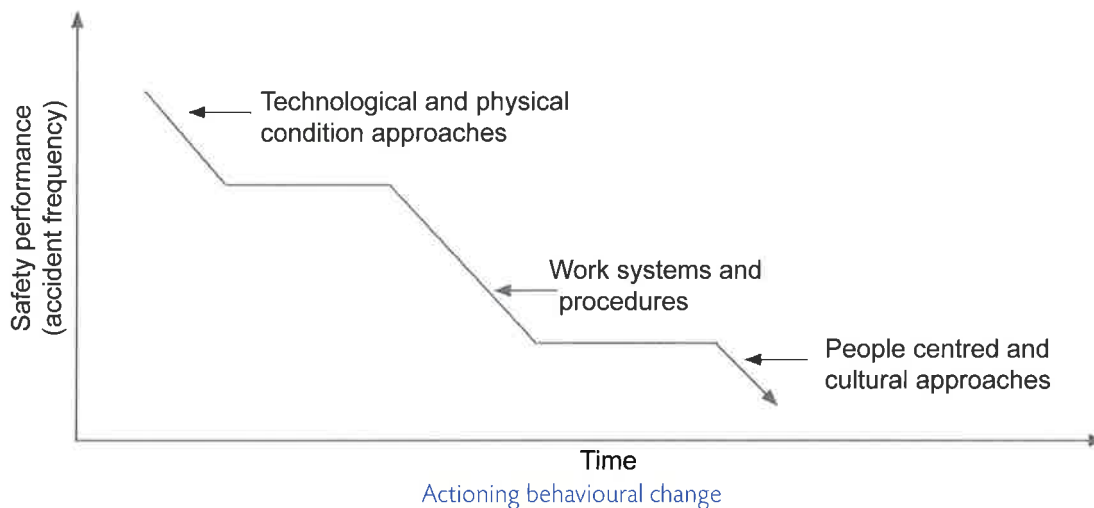
In a practical example, the wearing of seat belts on lift trucks had been required on a site for some years, yet routinely the safety manager was told that this was “impractical” and “couldn’t be done”. Technical solutions such as alarms and flashing lights were available to indicate if belts were being fastened: these were considered but it was known that by simply plugging the seatbelt in and sitting on the belt then the system could be overridden.

The organisation could opt to discipline the workers into being safe, but like speed limits on public roads, that only guarantees compliance with the “safety police” are present. The organisation instead opted to use behavioural safety. By understanding the concerns of the workers (it makes the job too slow), the importance to the management team (your life is worth more to us than our products), and by providing constant feedback (positive and guidance for non-compliance), the same organisation created the safety habit of wearing a seatbelt in a very short space of time.

The Organisational Conditions Needed for Success in Behavioural Change Programmes

Behavioural programmes should not be viewed as quick fixes and, unless they are properly resourced with overt continuing management commitment, they are unlikely to succeed.

As the behavioural change process hinges on the ability to give and receive positive and negative feedback, the organisation and its employees must be ready to accept this step. It may seem strange to have someone thanking you for wearing PPE, but this positive feedback is a critical part of the process. Equally, any negative feedback is there for guidance and so should also be received with an open mind, which can be a struggle if the safety culture is not well developed.



This graph illustrates that, typically, organisations first consider the technical issues that affect safety, such as having safe equipment and premises. When these are in place, they then turn to ensuring that the systems of work and procedures are satisfactory. Unless these two approaches are in place, a behavioural programme is unlikely to work.

A behavioural programme is more likely to be effective if the reward/punishment is:

- Likely or even certain.
- Important to the individual.
- Given soon after the safe/unsafe act.

Feedback needs to be provided very soon after the safe/unsafe act so that the safe behaviour is reinforced, not only to the individual but to all those affected, so that they appreciate the impact of the programme, e.g. collective results published weekly.

In one published study, workers were provided with earplugs to protect them from very high noise levels. The initial usage rate was only 35%. After a two-month programme in which the wearing of the plugs was rewarded with tokens, the usage rate had increased to 90%. The scheme was finished and it was found that usage had been maintained a further three months later. The initial discomfort often experienced by wearers of hearing protection had worn off and when users removed the ear plugs, their heightened awareness of the high noise levels further reinforced the desired behaviour.

STUDY QUESTIONS

8. Define the term 'safety culture'.
9. How may the safety climate of an organisation be assessed?
10. Name three ways in which management commitment can be demonstrated.
11. Identify the features of a positive health and safety culture within an organisation.
12. Briefly explain what is needed to effect cultural change within an organisation.
13. Outline the steps of a behavioural change programme.

(Suggested Answers are at the end.)

Traditional and Proactive Safety Management

IN THIS SECTION...

- Outline the main differences between traditional and proactive safety management models.

Traditional Approach to Safety (known as Safety I)

In this section we will be looking at the work of Erik Hollnagel and Sidney Dekker. We will all have experienced the traditional model of safety (now known sometimes as 'Safety I'). Safety here is defined as the "absence of danger" and the focus is concentrated on accident prevention, and that in practice means "ensuring as few things as possible go wrong". It is a natural instinct following an accident to analyse and identify the root causes in order to put in place corrective measures: indeed organisations such as the HSE and the Chemical Safety Board (CSB) in the US, issue detailed accident investigation reports which explain the failings and the corrective measures. These failures could be as a result of a technical fault, human error or a violation of the system and we focus on identifying the failures and putting corrective actions in place, usually centred around a new rule or technical solution which will require "compliance".



Failures could be as a result of a technical fault

Hollnagel points out that when we react to incidents, we ask "what went wrong?" but never "why does this usually go right?" Returning to the HSE, the regulatory framework focuses on incidents and failures, despite the fact that the number of failure events is very small. There are few success stories published, and as health and safety professionals, we see far more "in court" headlines than we do proclamations by the HSE that organisations example excellent safety performance.

Key Performance Indicators

Traditional safety key performance indicators (KPIs) are based around reactive measures: the number of incidents, days since the last lost time incident, the number of days lost, etc., whilst making managers accountable for the safety within their teams. This could, of course, result in the temptation to "cook the books" and manage the data to reduce the number of incidents rather than actually address the issues – a challenge faced by safety professionals for decades.

People as Part of the Problem

'Safety I' considers only two modes of operation: success or failure. If the system works then that is because the safety systems worked as they should, conversely if things go wrong it is because the system failed in some way. So as health and safety professionals, we "find and fix", whether through accident investigation or risk assessment, the focus is on preventing further system failures to ensure success – people are seen as a problem to be managed and controlled. This in turn generates a focus on compliance. We introduce more and more standardised, centralised procedures and policies which we hold the managers accountable for delivering on their site, stipulating how the job should be carried out without necessarily entirely knowing how the job should be done. This can result in frustration from the workforce.

Performance Variation

In 'Safety I', we monitor the performance of the system to reduce variability to try to ensure that everything is "safe" and "normal". This does however mean that the available data to monitor decreases as the system becomes "safer". There may be fewer incidents so the organisation believes it is "safer" but if we go back to the start of this section, safety is far more than the absence of incidents.

Proactive Safety Management (known as Safety II or Safety Differently)

Hollnagel refers to proactive safety as 'Safety II', Dekker uses a similar approach terming it 'safety differently', but it is clear that both authors see that, in order to progress and truly improve safety, it is essential to look far beyond the concept that safety is the absence of danger.

In proactive safety management, the emphasis is on creating a culture whereby people contribute to the safety of their team, not by "keeping safe" but by engaging and making changes that they are involved in – safety is the presence of positives, not just the absence of negatives.

In traditional safety, the emphasis as we have seen is on centralised and standardised policies and procedures that are rolled out through the organisation – for example, in a supermarket chain there may be procedures which stipulate the cleaning regimes, policies to control contractor activities and checklists which must be completed, monitoring the fire safety provisions. Dekker highlights the successes that organisations have experienced by devolving responsibility for safety to the teams, decentralising control by giving them some autonomy over how the safety performance is improved. Part of this process is to declutter the systems, remove outdated procedures and streamline the processes to make them more effective. In studies cited by Dekker, Origin energy reduced the size of their safety management system by 90%, made safety an operational issue rather than a centralised function and in so reduced bureaucracy which is so often a barrier to safety.

Reducing Risk-Based Decisions to the Lowest Possible Level

Managers often ask why workers aren't engaged in health and safety and what they need to do in order to improve employee engagement. Dekker looks at this differently and points out that whilst managers 'manage' safety and instruct employees how to work safely, this is unlikely to make them feel engaged and involved. Dekker encourages employers to think of employees not as a problem, but as people able to create a solution given the opportunity. He cites an example of the town of Drachten in the Netherlands: this city had a square where there were frequent traffic accidents despite multiple safety controls and signs clearly telling people what to do and how to behave (an example of 'Safety I').



Traffic engineer Hans Monderman identified that telling people how to be safe wasn't working, and that although people did actually know how to be careful, the layers of controls were taking away their basic instincts to look after each other. In his experiment, Monderman created a 'shared space', where there were few signs and signals, and instead, the drivers and pedestrians were trusted to make good decisions to look after their own safety and that of others. By reducing safety decisions so they are made by people, not managers, the accident rate was greatly reduced. Shared spaces are being rolled out across Europe as a result.

'Safety II' considers this to be a continuous learning process – one of the keys to its effectiveness is the utilisation of people as a solution, rather than the problem that they were in 'Safety I'. When looking at an accident, too often the findings are that the way the work was supposed to be done didn't match the way it was actually being done; there may be an alternative method that is better than the one prescribed, which is why the involvement of workers is so

essential. Workers are the experts in their field, and by asking them “what are your concerns?” and “what do you need?” you are likely to achieve a better result than imposing a centralised solution for a problem that they don’t think they have. By engaging with workers to utilise their experience, you will drive the safety culture forward and further away from the traditional approach that safety is the responsibility of the safety team and instead towards a view that safety is a delegated and shared responsibility.

MORE...

You can read more on Hans Monderman’s ‘squareabout’ and the effect of creating this shared space on the accident rate on:

https://www.maharam.com/stories/rawsthorn_hans-mondermans-naked-streets

How Success can be Created

Dekker highlights in his work that Traditional Safety or ‘Safety I’ considers that:

- People are the problem.
- We need to tell them what to do.
- We count success by the absence of negatives.

When we reflect upon this we can see that many organisations still focus on statistics and records, such as the number of days since the last time accident, or hours worked without incident. Think about the person who has an accident and as a result will ‘ruin the record’ – are they likely to report it? Perhaps this is one of the reasons why, when we ask “do all accidents get reported?”, the usual answer is no.

The Deepwater Horizon oil rig disaster in the Gulf of Mexico occurred in April 2010. Executives from BP were on the rig at the time of the disaster, celebrating 7 years without a lost-time accident, and the Federal Minerals Management Service had awarded the operator a Safety Award For Excellence (SAFE award) just the year before. This goes to show that past results are no guarantee of future success.

Rather than asking how incidents can be prevented, Dekker looks to see how success can be created. In ‘Safety Differently’, people are not seen as a problem to be controlled but rather:

- People are the solution.
- Ask them what they need.
- Identify the positive capabilities amongst the team.

Dekker believes that with support and encouragement, the workforce can find a route to a truly safe workplace, rather than the superficially safer one which displays a low number of incidents and then is surprised by a catastrophic event. More minor events (truthfully reported) which are acted upon by the workforce, can generate an environment where there are fewer major incidents.

The Four Varieties of Human Work

In ergonomics and human reliability, there are four varieties of human work and this is embraced by Hollnagel: work as imagined, work as prescribed, work as disclosed and work as done.

1. Work as imagined

'Work as imagined' is (in simple terms) a mental model of work that we think is done. As managers we have an idea about what the workers are doing, workers in turn have an idea about the work that the managers are doing, and in reality both groups will be wrong to some extent. Work as imagined can be thought of as the view of the way things should be carried out from the comfort of the desk, rather than "work as done" (what is happening in practice).

2. Work as prescribed

'Work as prescribed' is the specification of the way that tasks and activities should be done; this can be as a result of legal requirements, management decisions and policy makers and for this reason there is often a significant difference between what should be done and what is actually done (work as done). This is generally the "safe and correct" way to do the work, however as Hollnagel identified, there is usually more than one way to do the work and that results in differences in the way the work is carried out. Other factors, such as the fact that we rarely focus on one activity at a time, that the operational conditions are continually changing, and that people interpret procedures differently, all result in a reality that what people actually do and what they should be doing frequently (but not always) differ.

3. Work as disclosed

'Work as disclosed' is what we say about the work that we are doing. Whether written or verbal, the "nitty gritty" of the job is something that we explain in different ways to different audiences. If a manager asks about a task, what they are told could be closely linked to the work as prescribed, and similar could be assumed if talking to a regulator. However if a union rep was discussing the activity, the picture that is painted to them could be entirely different.

4. Work as done

Finally, 'work as done' is the actual activity as it is performed: it is simply what people do. It takes place in a dynamic operational environment where the conditions are frequently changing and resources or conditions may well not be as imagined. In some circumstances, organisations using operational experience to establish "work as done" can be empowering and generate trust; however in other sectors, such as high risk environments (health, rail, nuclear, etc.), such latitude is not feasible. By encouraging workers to disclose the way that work is done, organisations can harness the expertise of the workers, and potential issues and pitfalls can be identified and issues foreseen. In this way, analysis of the work as done can improve the safety of an organisation, however many employees will still not disclose all of the "deviations" from the prescribed process. Whilst some may be gleaned through observation, there are inherent difficulties in this due to the complex nature of the work that is being carried out.

Low Likelihood, High Consequence Events

As traditional safety approaches focus on compliance, there is a temptation to monitor the small details which often equate to high frequency, low potential events. This however can be frustrating for workers in high hazard installations who may not see the significance of holding the handrail on the stairs or ensuring drinks are carried in lidded cups. 'Safety II' moves away from this and concentrates on the low frequency, high potential events which are often more relevant, which can improve engagement.

Resilience

'Safety II' approaches embrace the concept of resilience. In the basic sense, resilience is the ability of an organisation or individuals to recover from an adverse situation without failure occurring. This was expanded upon by Hollnagel, who defines resilience engineering as:

"The intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions."

Source: Hollnagel, E., Woods, D., Leveson, N., *Resilience Engineering: Concepts and Precepts*, 2006.

Effective safety systems clearly need to be designed to be resilient so that situations are anticipated and responses developed, and workers are able to adapt to unexpected circumstances without incident – for example pilots having checklists to follow and manuals covering emergency situations. They train for hours on situations and routines that they hope they will never need for the one-in-a-million event.

Performance Variation

Finally whereas in 'Safety I' the emphasis is on compliance and adherence to procedures, in 'Safety II' it is understood that variation is inevitable – even within well established processes people will naturally find slight modifications to their working methods or environments. The difference is that in 'Safety I' this is likely to be hidden, but in 'Safety II' it is considered useful. If we revisit the role of an airline pilot, they have extensive training in the emergency protocols, yet still situations arise where the pre planned routines wouldn't work; the January 15th 2009 landing of a plane successfully on the Hudson river was a case in point, and was only achieved due to a deviation from the standard process.

The variations that occur, such as adaptations to procedures, should be monitored and managed, and if useful and appropriate, changes are carried out in other areas as a result of the sharing of this knowledge. Humans have the skills and ability to adapt and develop processes, and therefore by listening to the workforce to find out how work can best be carried out, rather than constraining work with extensive rules and guidelines, people are seen as part of the solution rather than a variable that needs to be controlled – the whole basis for 'Safety II'.



Limitations of Traditional and Proactive Safety Management

Traditional safety management is also known as "reactive" management – by definition, actions arise only in response to an incident or a concern. Clearly this means that it is too late to prevent the incident, and as (hopefully) organisations will have few incidents, there will be limited data to react to in order to make improvements.

Traditional safety is seen as bureaucratic and compliance driven – procedures are developed which are supported by checklists and audits, and these all flow from a centralised function. This is not particularly motivating for the workforce who may feel that this authoritarian "we are Safety and we know best" approach isn't taking their concerns and opinions on board.



Traditional safety management methods can be authoritarian

Proactive safety relies not on what has actually happened, but on what the organisation thinks could happen. In any workplace predicting future events is at best difficult, and not all eventualities can be anticipated. Accordingly, great efforts can be made to prevent a predicted event which may not arise and this use of resources (not just financial but also time and people) may be seen as an unnecessary drain on the organisation. Of course the future remains uncertain – every safety professional knows that making assumptions means that sometimes you will naturally be wrong, meaning that incidents could still occur.

For many organisations who have managed with 'traditional safety' for decades and feel that they are doing "just fine", the move to 'Safety II' or proactive safety may seem alien. It is hard to change, especially when the traditional safety KPIs show a relatively low accident rate, which signals in the world of 'Safety I' that all is well. Reacting to problems and "fire fighting" can be exciting, and it is certainly still a more common method of managing safety, however it is clearly better not to have fires in the first place. Despite the evidence, it may still prove difficult to convince traditional managers and organisations to move away from 'Safety I' and embrace 'Safety II'.

The Effect of Safety Management on Culture

The links between the different styles of safety management and the safety culture of an organisation is clear: whether you embrace 'Safety I' or 'Safety II', organisations have to learn from their mistakes, it would be negligent to do any less and for this reason 'Safety II' does NOT replace 'Safety I' entirely. Being an improving organisation is still an essential indicator of safety culture. By adopting the proactive stance of 'Safety II', managers move away from authoritarian, centralised control of safety and towards a vision where safety is truly part of the day to day rhythm of a business. Where would you feel safer: the oil and gas installation that does a frenzied tidy up and gets their documents ready for an audit by the centralised safety team, breathing a sigh of relief once they leave so life can return to normal? Or one who owns the processes themselves, monitors them and makes improvements based upon the experience and knowledge of their staff, who are truly involved in the safety goals and ambitions?

MORE...

More information on the 'Safety I' and 'Safety II' models can be found at:

www.england.nhs.uk/signuptosafety/wp-content/uploads/sites/16/2015/10/safety-1-safety-2-white-papr.pdf

'Safety Differently: The Movie' demonstrates the ways Dekker's concepts have been used in real organisations. You can find this video at:

www.youtube.com/watch?v=moh4QN4IAPg&t=4s

STUDY QUESTIONS

14. If the focus in Traditional safety or 'Safety I' is on control and compliance, what is the focus of the 'Safety II' or 'Safety Differently' approach?

15. What are the four varieties of work?

(Suggested Answers are at the end.)

Risk Perception

IN THIS SECTION...

- Know how perception of risk can affect health and safety in an organisation.

Human Sensory Receptors

The natural senses are:

- Sight.
- Hearing.
- Taste.
- Smell.
- Touch.

(Note that there are others, such as the sense of temperature and the sense of acceleration.)

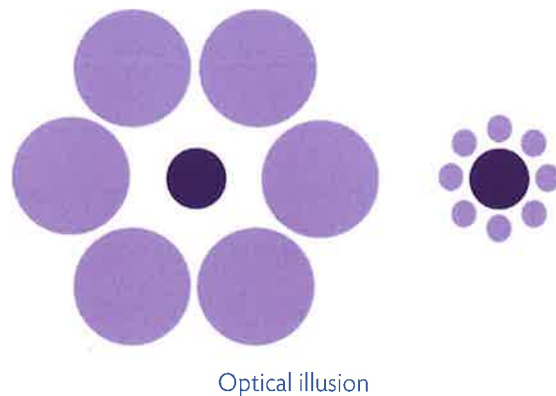
Personal safety involves reacting to the signals sent by our human sensory receptors to the brain.

For example, the eyes send small electrical signals to the brain, where the visual image is constructed and interpreted. Sometimes the eyes see an image one way and the brain interprets it differently. Consider this example of an optical illusion:

Which centre dot is larger?

They are, in fact, the same size.

Each of the other senses also works by sending signals to the brain. There is a time interval between the signal being sent from the sensory receptor and the brain making the person aware of the situation. Remember that the senses are the main way that people get a warning of danger.



Sensory Defects and Basic Screening Techniques

You will be aware, on occasions, of not seeing or hearing something that was very plain to someone else. Sensory defects increase with age and failing health and some people may need spectacles and hearing aids to compensate for these deficits. The safety professional probably needs to be more concerned about those who don't know that they have sensory defects or who try to forget about them.

People also have the ability to shut out things that they are not interested in, or screen out those things that they consider are not worth concentrating on. For example:

- Someone may live within two miles of a motorway, but really has to concentrate to hear the traffic on it.
- A worker is able to filter out background noises in a workshop and maintain a conversation.
- When driving a car, or a work machine, or typing at a keyboard, most of the operations are done in 'auto-pilot' mode. This saves effort and allows us to concentrate on other things, or think ahead.

Screening is a useful asset to have, but it is the reason for many accidents. You cannot expect 100% concentration on safety matters from others if you seldom give 100% attention yourself.

The Process of Perception of Danger, Perceptual Set and Perceptual Distortion

Perception of Danger

DEFINITION

PERCEPTION

The recognition and interpretation of sensory stimuli, based chiefly on memory.

Research into the perception of danger by individuals and groups shows that there is a clear distinction between how we perceive risks to personal safety, dangers to health, and dangers to society. Individuals who take part in hazardous sports and activities may be very reluctant to take even a small risk in the work situation.

The factors involved in perception are:

- **Signals from the Sensory Receptors**

Our eyes, ears, nose, touch and perhaps taste make us aware of the situation, but these signals can be misleading if we suffer from a sensory defect.

- **Expected Information from the Memory**

We have an expectation of what to see and hear; this signal is from the memory. We sometimes see things which are not there, and don't see things which are. This signal can also be misleading, particularly if it is affected by stress, alcohol, drugs, fatigue or just familiarity.

These two signals combine to give us a 'picture' of the situation of hazard, which is then processed by the brain. We then take, or decide not to take, action.

Perceptual Set

This is sometimes called a 'mindset'. We have a problem, and immediately perceive not only the problem, but also the answer. We then set about solving the problem as we have perceived it. Further evidence may become available which shows that our original perception was faulty, but we are now so pleased with our intelligent solution that we fail to see alternative causes and solutions. This is a basic cause or factor in many accidents and disasters.

Students often get such mindsets when answering examination questions and assignments. You have prepared yourself well for a particular type of question. This seems to be there on the examination paper and you immediately set about writing the answer. Later, when discussing this with others or re-reading the question, you wonder how you could have missed the point. The examination committee spent a great deal of effort to make it perfectly clear what was needed, but all to no avail.

The same thing can happen in work situations. For example, a signaller was expected to check that there was a red light at the back of every train which passed his signal box. He had never seen a situation where this was not so in the 10 years that he had been doing his job. However, on one occasion, part of the train had become uncoupled, but he distinctly remembered checking and 'seeing' the red light as the train passed, even though this was impossible. This then resulted in a following train colliding with the part of the train that had become uncoupled. This was a typical case of mindset or perceptual set.

Perceptual Distortion

Everyone's perception of a hazard is faulty because it gets distorted. Things that are to our advantage always tend to seem more right than those that are to our disadvantage. Management generally tend to have different perceptions of hazards from those of the workers. However, when it affects work rates, physical effort or bonus payments, workers also suffer from perceptual distortion.

Errors in Perception Caused by Physical Stressors

In examining the cause of errors in perception, we also need to consider the effects of fatigue, overwork, overtime, stresses from the workplace, and stresses from home and outside activities. Shift work is a major factor. Our bodies operate best when we have a regular routine. There is an inbuilt clock (the circadian cycle – the internal body clock which dictates when the body should be active and when it should rest), and the pattern of work, rest and sleep is upset by a change of work pattern. It is even possible that we are locked into a seven-day pattern.

Perception is affected by having to keep awake and alert when the body feels that it is time to sleep. Fatigue is more than tiredness of the muscles and the mind; there is a physical, mental and psychological dimension.



Fatigue can lead to errors in perception

Perception and the Assessment of Risk, Perception and the Limitations of Human Performance, Filtering and Selectivity as Factors for Perception

If there are problems in our basic perception of a situation, then there are going to be errors in our perception of risk. In assessing a risk, there is safety in numbers. One's faulty perception of a risk could be corrected by another person's clearer perception of an issue. Perception also depends on knowledge and experience. A group will usually have more to contribute than an individual.

Perception and the Limitations of Human Performance

Even when we have achieved perfection in the realm of perception (and this is very unlikely), we still have to put the solution into effect. As human beings, we have limitations in knowledge, strength, physical and mental ability. We have plenty of excuses for getting things wrong.

The major problem is that legislation, the courts, the media and the public at large, expect perfection in the realm of health and safety. Representatives of the media will ask: 'Can you guarantee that this will never happen again?' when investigating an industrial accident situation. We can only say something like: 'We have learnt from this mistake and we consider the possibility as now remote'.

Filtering and Selectivity as Factors for Perception

Our senses are continuously receiving information and the brain is processing it. However, we cannot keep our mind on all that is coming to us all the time: we use a filter mechanism.

Information passed to higher levels of management is also filtered. From all the information available, only the vital elements are passed on.

In much the same way, workers are continuously screening out those items that are not of immediate interest. For example, in a noisy workshop, an operator will tend not to hear the background noise. If a person 'speed reads' then they do not see each individual word, rather they quickly scan a page, only seeing words that convey vital information. For instance, if they were looking for some information about 'filtering', they could rapidly scan an article and be stopped by the occurrence of the word 'filter', without reading the whole article.

Filtering and selectivity are vital human activities, since we often tend to do many activities in 'auto-pilot' mode. From a safety point of view, however, the process of filtering and selectivity presents a danger. While concentrating on a particular topic, to the selective exclusion of others, we can easily miss a vital signal which should have warned us of danger. However, we do tend to notice changed situations. Danger signals and warnings are more likely to be noticed if they involve loud bells or klaxons and flashing rather than fixed lights.

STUDY QUESTIONS

16. Outline, with examples, how the human sensory receptors react to danger.
17. Explain how failings in the human sensory and perceptual process may lead to accidents.

(Suggested Answers are at the end.)

Human Failures and Human Factors and Improving Human Reliability

IN THIS SECTION...

- Understand how human failures and factors are classified, connected, and can contribute to incidents, and how human reliability in the workplace can be improved.

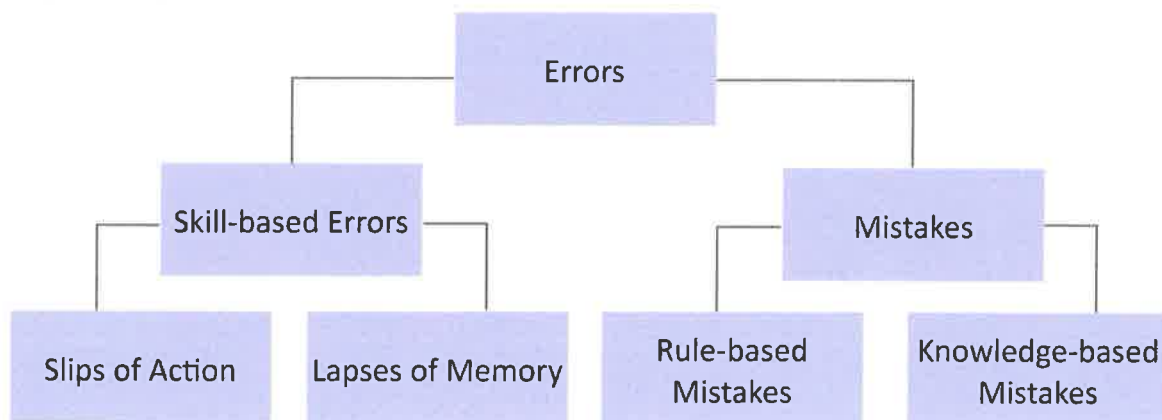
The Classification of Human Failure with Reference to HSG48

The UK HSE publication, *Reducing error and influencing behaviour (HSG48)*, identifies two types of predictable human failure: errors and violations.

Errors

Errors are actions or decisions that were not intended and involved a deviation from an accepted standard, which led to an undesirable outcome.

Errors can be further split into several types, based on Rasmussen's skill-, rule- and knowledge-based behaviour theory – see later in this section.



Types of error

TOPIC FOCUS

Skill-Based Errors

(Note: the term 'skill' as used by Rasmussen (and here) is not used in the way people generally understand it.)

These types of error occur in very familiar tasks which require little conscious attention, e.g. an experienced driver driving on a familiar road. Errors can occur when we are distracted or interrupted:

- Slips: failures in carrying out the actions of a task. Examples include:
 - Performing an action too soon or too late.
 - Leaving out a step or series of steps from a task.
 - Carrying out an action with too little or too much strength.
 - Performing the action in the wrong direction.
 - Doing the right thing but with regard to the wrong object (or vice versa).
- Lapses: forgetting to carry out an action, losing a place in a task or forgetting what we had intended to do. These are often linked to interruptions or distractions. Using a simple checklist can help to reduce the likelihood of lapses occurring.

Possible prevention strategies for skill-based errors include: verification checks, such as checklists; feedback; warning signals if wrong action is selected; design of routines to be distinct from each other; and supervision.

Mistakes

These are where we do the wrong thing believing it to be right. The failure involves our mental processes that control how we plan, assess information, make intentions and judge consequences:

- **Rule-Based Mistakes**

These occur when our programme is based on remembered rules or procedures. We have a strong tendency to try to use or select familiar rules or solutions. Errors occur if:

- No routine is known that will solve the new situation, so we don't know what to do.
- We try to apply the usual remembered rules and familiar procedures because of familiarity with similar problems from previous experience, even when they are not appropriate.
- The wrong alternative is selected, or there is some error in remembering or performing a routine.

Possible prevention strategies include: simple, clear rule sets; system designed to highlight unusual or infrequent occurrences; clear presentation of information.

- **Knowledge-Based Mistakes**

These may occur in unfamiliar situations where no tried-and-tested rule exists. They are often related to incomplete information being available or misdiagnosis where, when facing new or unfamiliar situations, we are trying to solve problems from first principles. Errors occur when:

- Some condition is not correctly considered or thought through, or when the resulting effect was not expected or is ignored.
- There is insufficient understanding or knowledge of the system.
- There is insufficient time to properly diagnose a problem.

Possible prevention strategies include: training; supervision; use of checking systems; provision of sufficient time and knowledge.

Violations

Violations are a deliberate deviation from a rule or procedure, such as driving too fast or removing a guard from a dangerous piece of machinery, both of which increase the risk of an accident. Health risks are also increased by rule-breaking: a worker who does not wear ear defenders in a noisy workplace increases their risk of occupational deafness.

TOPIC FOCUS

There are three types of violation:

Routine

A routine violation is the normal way of working within the work group and can be due to a number of (sometimes overlapping) factors, including:

- Cutting corners to save time and/or energy – which may be due to:
 - Awkward, uncomfortable or painful working posture.
 - Excessively awkward, tiring or slow controls or equipment.
 - Difficulty in getting in or out of maintenance or operating position (posture).
 - Equipment or software that seems unduly slow to respond.
 - High noise levels that prevent clear communication.
 - Frequent false alarms from instrumentation.
 - Instrumentation perceived to be unreliable.
 - Procedures that are hard to read or out of date.
 - Difficult to use or uncomfortable PPE.
 - Unpleasant working environments (dust, fumes, extreme heat/cold, etc.).
 - Inappropriate reward/incentive schemes.
 - Work overload/lack of resources.
- Perception that rules are too restrictive, impractical or unnecessary (particularly where there has been a lack of consultation in the drawing up of the rules).
- Belief that the rules no longer apply.
- Lack of enforcement of the rules (e.g., through lack of supervision/monitoring/management commitment). In certain cases, the violation may even be sanctioned by management 'turning a blind eye' in order to get the job done (related to cutting corners, see above).
- New workers starting a job where routine violations are the norm and not realising that this is the incorrect way of working. This in itself may be due to culture/peer pressure or a lack of training.

(Continued)

TOPIC FOCUS

Situational

Situational violations are where the rules are broken due to pressures from the job such as:

- Time pressure.
- Insufficient staff for the workload.
- The right equipment not being available.
- Extreme weather conditions.

Risk assessments should help to identify the potential for such violations as will good two-way communications.

Exceptional

Exceptional violations rarely happen and only occur when something has gone wrong. To solve a problem, employees believe that a rule has to be broken. It is falsely believed that the benefits outweigh the risks. Means of reducing such violations could include:

- Training for dealing with abnormal situations.
- Risk assessments to take into account such violations.
- Reduction of time pressures on staff to act quickly in new situations.

HSG48 provides a powerful model for showing the type of human errors and violations that can be predicted from consideration of organisational, job and individual factors. Such a model can be used both in risk assessments and accident investigations to suggest the control measures required to prevent either an occurrence or a recurrence.

MORE...

You can download the HSE's *Reducing error and influencing behaviour (HSG48)* from the HSE website, at:

www.hse.gov.uk/pubns/books/hsg48.htm

The Application of Cognitive Processing

Cognitive Processing

Decisions have to be made during any working situation; these decisions can be regarded as on-line and off-line processing:

- On-line processing involves those decisions which have to be made as a work process is in operation. Since the human brain can only really deal with a few matters at the same time, operations and the decisions involved tend to be grouped. For example, a machine will be set up to perform a sequence of operations. Once set in motion, it may be difficult to stop the operation until the sequence has been completed. On-the-spot decisions of this type have to be made without too much thought, and so tend to be skill-based. A wrong decision or a missed danger signal can lead to situations where the condition is quickly made worse. Trial and error involves on-line processing.



A work process in operation

- Off-line processing involves those decisions which can be made after consideration of a number of alternatives. It is often possible to consider, and reject, unsuitable alternatives without the need to try them out first. Often this will involve knowledge and intelligence. Problems occur when we assume that we have correctly interpreted the data available and come up with a solution to the situation. We then fail to search for alternatives, and opt for a wrong course of action. Other errors occur when we attempt to solve a complicated problem mentally, when really it requires a more detailed, written-down, mathematical treatment, or a group decision might be more sensible. Our mental capacity not only depends on knowledge, intelligence and ability, but also on our fatigue levels and our mental state at the time. It is not easy to make correct decisions under situations of pressure, stress or panic.

Knowledge-, Rule- and Skill-Based Behaviour (Rasmussen)

TOPIC FOCUS

Rasmussen's model suggests three levels of behaviour that explain the human error mechanisms:

- **Skill-based behaviour** describes a situation where a person is carrying out a tried-and-tested operation in automatic mode. A competent cyclist can ride a bicycle without any conscious effort or an experienced driver can change gear without thinking of the sequence of events involved. Little or no conscious thought is required; in fact, thinking about the task makes the task less smooth and efficient and increases the chance of error. In this situation, errors occur if there are any problems, such as a distraction.
- **Rule-based behaviour** is at the next level; the situation where the operator has available a wide selection of well-learned routines (i.e. rules) from which appropriate ones can be selected to complete the task, i.e. if X happens, then I do Y. An example is obeying The Highway Code when driving; if there is a red traffic signal, the rule is to stop. In this situation, errors occur if the wrong rule is applied.
- **Knowledge-based behaviour** is for situations where a person has to cope with unknown situations, where there are no tried rules or skills. The individual, using their experience and perhaps trial and error, tries to find a solution to solve a novel situation. In these circumstances, the chance of error is the greatest.

What are Human Factors? (with reference to HSG48)

Job Factors

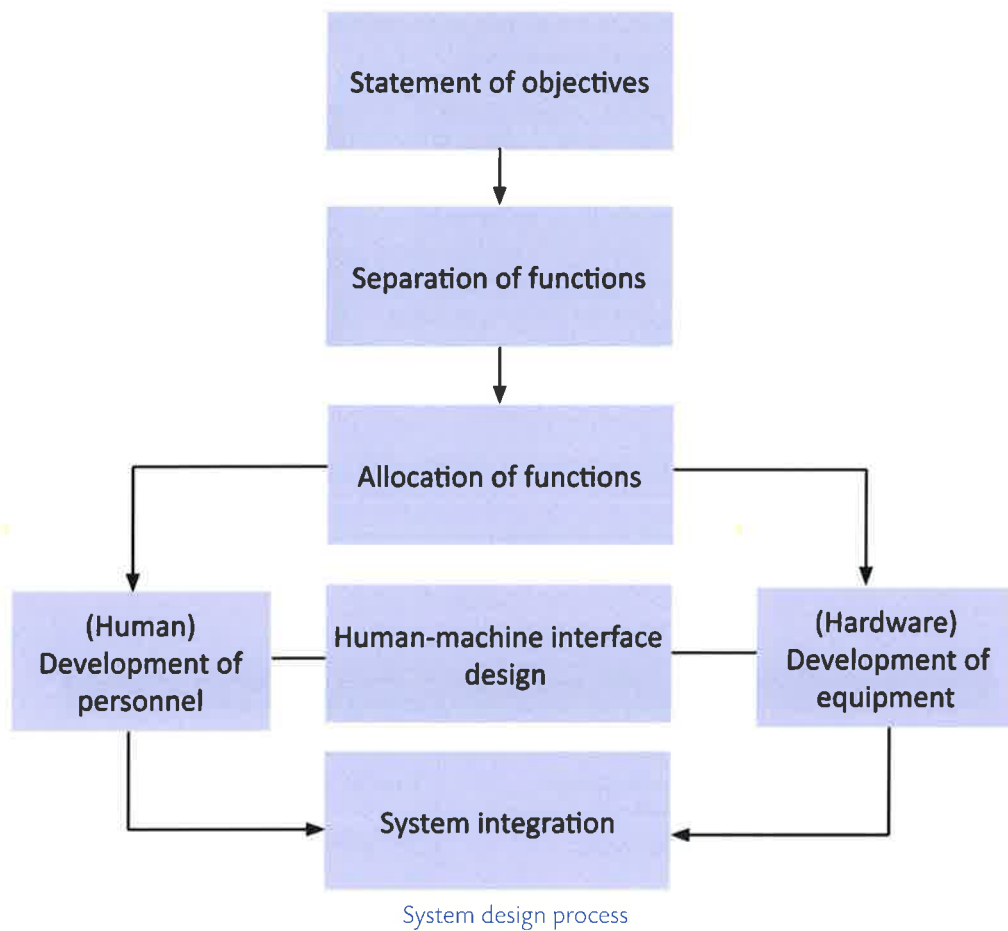
Role of Ergonomics in Job Design

Ergonomics is concerned with 'fitting the job to the worker' rather than expecting the individual worker to adapt to the job.

Influence of Process and Equipment Design on Human Reliability

Human beings are unreliable – how unreliable depends on the individual and the work environment. Consider the effect that being in a very hot environment has on your work performance; or, when you have had a large lunch, how your output is affected by a feeling of sleepiness. However, much can be done to minimise such effects by improving the environment and making the task such that errors are minimised. This is achieved by careful design of any controls.

Workers and machines are each better at some things than the other. Ideally, you want to use the strengths of both to minimise possible weaknesses; together they represent the 'system' for meeting the requirements. This can be illustrated diagrammatically as in the following figure.

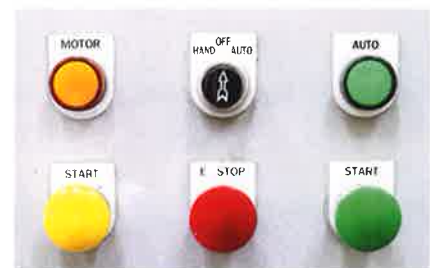


Ultimately, every piece of plant can be represented by what is often called the HMI, or 'human-machine interface'. Ergonomics is the study and design of this interface, such that the operator can perform their duties efficiently, in comfort and with minimum error.

Grouping of displays and dials next to their controls, and consistency in these displays – for example, all moving the same way for increase – are important in allowing the operator to form a mental picture of what is actually happening in the plant under that person's control:

- Displays should be arranged so they can be scanned with minimum effort.
- Display dials should be the appropriate type for the reading (digital v. analogue).
- Dials should have identified areas for normal and abnormal readings to make it easier to see if something is starting to wander, e.g. a fuel gauge in a car.
- Bulbs and other indicators should be shielded from glare so that their status cannot be confused.

Consistency is important in the action of control devices; we all expect to turn something on and increase some variable, by turning a knob clockwise. Relative positioning of control devices and displays is important. People expect to see a reaction to an action, even if it is only a light that indicates the action is being acted upon (the lift call-button effect) and, of course, they should be within easy reach of the operator. Controls should be organised and laid out so as to logically follow the process. They should be clearly marked or labelled. The number of controls should generally be kept to a minimum.



Displays and dials should be consistent

Emergency arrangements should be distinctive so that emergency stop controls can be easily located, and any audible warnings should take account of expected background noise levels.

Possibly the most important aspect is the worker's immediate working space and environment. Reliable work cannot reasonably be expected from an operator who has a headache or a sore back within an hour of starting work. Factors such as noise, dust, smell, vibration, temperature (and temperature changes), lighting levels (and glare), and humidity all contribute to a worker's ability to concentrate. Psychological factors, such as the degree of concentration necessary, and the ability to mentally rest and 'coast' for a short period, are also important. Also, remember the importance of providing chairs, if appropriate, to avoid fatigue from prolonged standing.



The appropriate grouping and display of controls is vital

The layouts of controls, displays and seating for convenience of operation are often overlooked.

To ensure that the strengths of worker and machine are utilised, a Fitts List (named after Paul Fitts, who developed the technique) is produced for the system.

Example of Fitts List

Activity	Machine	Human
Speed	Much superior	Lag > 1 second
Power	Consistent, large, constant, standard and precise forces	2 hp for 10 seconds 0.6 hp for minutes 0.2 hp over day
Consistency	High	Not reliable, must be monitored
Reasoning	Good deductive	Good intuitive
Input sensitivity	Some outside human range (e.g. X-rays)	Wide range, good pattern identification

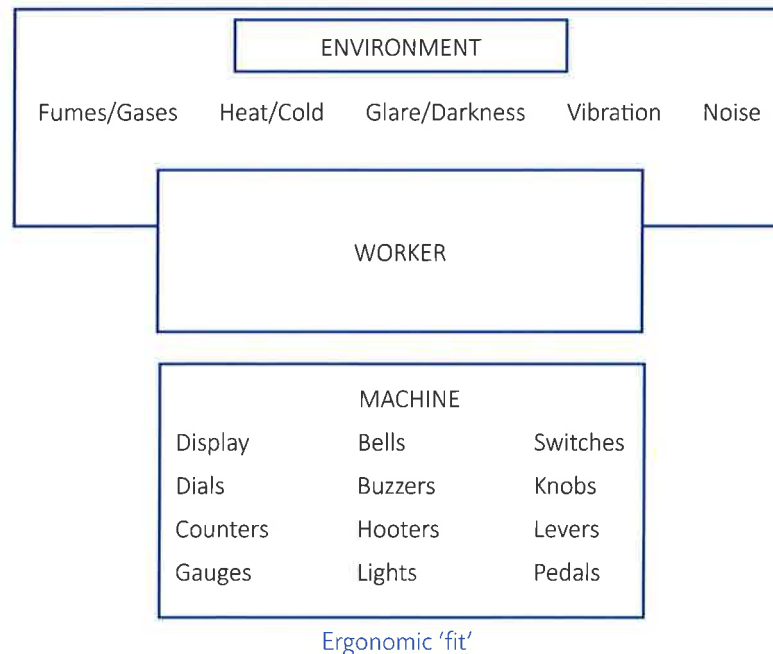
(hp = horsepower)

Note that this is given as an example for a system that requires the given ability. Each system will require a Fitts List developed to suit its specific requirements for actions to be performed, although, with practice, such a list does not take long to produce.

The Worker and the Workstation as a System

In ergonomics, the worker, the machine and the working environment may be considered as the elements which together comprise a system.

When considering the ergonomic 'fit' of the workplace to the worker, there are a number of factors to take into account:



Elementary Physiology and Anthropometry

The skills of an ergonomist include:

- **Anthropometry**

This is a study of human measurements, such as shape, size, and range of joint movements. A machine must be designed for the person. Since no two people are the same, a design is required that will suit, or can be adapted for, a wide range of sizes of individuals. It is typical to design for a range which suits most people, which usually includes all but 10% of people at either end of the measurement scale. Group characteristics must also be considered, e.g. the average height of people varies between different populations.

- **Physiology**

This is a study of the calorific requirements of work (how much energy is needed) and body functions, the reception of stimuli, processing and response. The operator and machine must be complementary. A person must not be expected to do more than the human body is capable of. Some things are best done by a person; other things by a machine.

Physiology includes a study of the operation of machines. A person can operate two foot controls when sitting, but only one when standing. An investigation by Cranfield Institute of Technology determined the ideal dimensions of the average operator of a horizontal lathe – 'Cranfield man' would need to be 1.35m tall and have a 2.44m arm span.

The ergonomist should make a contribution at the design stage to try to prevent problems occurring later.

Degradation of Human Performance Resulting from Poorly Designed Workstations

The **British Standard 3044:1990, Guide to ergonomics principles in the design and selection of office furniture**, is one example of the help available to designers. The HSE leaflet *INDG90, Ergonomics and human factors at work*, aims to help employers and managers to understand ergonomics and human factors in the workplace by giving examples of ergonomic problems and simple, effective advice about how to solve them.

Workstations are usually designed for the 'average' person. If a doorway was designed just for the average person, then some of the population would have problems getting through.

Workstations need to be capable of adjustment. Unsuitable workbench height causes the operator to develop musculoskeletal problems:

- If the workbench is too high, the operator has to adopt an unnatural posture, with the elbows away from the body and the shoulders raised. This causes discomfort in the shoulders and neck.
- If the work surface is too low, the operator will have to lean forward. This causes neck and lower back problems.
- Repetitive movements, particularly those requiring the operator to exert force or use an unnatural action, can lead to upper limb disorders. One problem is tenosynovitis or inflammation of the tendons of the hand and wrist. This is a common problem with keyboard operators.

Ergonomically Designed Control Systems

• Production Process Control Panels

The operator of a production process control panel must be able to operate the panel from a safe place. For some production processes, this may be from an adjacent area or, for more dangerous operations, the panel will be located at a safe distance or even within an enclosed area away from the production area. Noise, dust and fumes must all be considered.

The operator must be able to reach all the dials and switches, easily. Emergency controls must be clearly identifiable and easy to operate. The operator must also have a view of the production area so that they can see what is happening and react, as necessary.

MORE...

The Chartered Institute of Ergonomics and Human Factors offers more information on ergonomics, find out more at:

www.ergonomics.org.uk/

• Crane Cab Controls

A crane driver has to be in absolute control of the load that is being moved because the slightest slip of the controls may result in damage to buildings, materials or people. For this reason, it is vital that the controls in the cab are within easy reach and move in straight lines to permit ease and delicacy of control. The driver must be provided with an adjustable seat (to fit accurately 90% of all possible sizes) so that they have a full view of the working area.

The driver must also be protected from the ingress of dust, fumes and heat from the external environment. The provision of filtered and refrigerated air, where necessary, ensures cool and comfortable working conditions.



A crane driver must have a full view of the working area

- **Aircraft Cockpit**

It is vital that a pilot can interface easily with all the controls in the cockpit. The controls/displays must be fitted around the cockpit in a logical way so that the pilot can easily reach and see the more important controls/displays (e.g. speed and altitude dials), while they may need to move to reach the less important ones. It is important that safety-critical switches cannot be inadvertently operated. These should be designed so that there has to be a positive action by the operator in order to initiate them.

Emergency controls must be clearly identifiable, easy to use and situated in a suitable location. The emergency controls must be accessed quickly to prevent unnecessary delay in stopping the activity that they control.

It is also important that the pilot can adjust their position to obtain the best field of vision and enable quick responses for movement of the various controls. For this reason, the pilot must be able to alter the height and position of their seat to ensure that the controls are in comfortable reach. The temperature, ventilation and lighting in the cockpit must also be adequate and these must be adjustable to suit the individual.

- **CNC Lathe**

The CNC lathe is computer-operated using a keypad or keyboard. It is important, therefore, to ensure that the operator can access the keypad or keyboard easily and that they can use the keys comfortably. For this reason, the operator must be able to adjust their operating position, (i.e. chair height and position), as well as the actual position of the keyboard.

Matching the Job to the Person

Physical Match

Workstations should be designed to be wherever possible adjustable to suit the individual using them. Control of the workstation and working environment by the workers may not always be totally possible but even relatively small changes can result in huge improvements. In many supermarket checkout operations, the staff can only make slight adjustments to the chair height at their workstations. In some organisations however, workstations are much more adjustable; workers can sit, stand, walk and use the hand scanner or use the barcode scanner on the belt, all of which can help to reduce the stresses placed upon them in a working day.

Mental Match

It is often said that the world would be boring if we were all the same, and this is just as important to remember when assigning tasks to individuals. Some people relish dealing with facts and data, others would much rather deal with the written word. Some love engaging with people, others would not describe themselves as “a people person” at all. We all have different skills – some may struggle with maths or literacy which can be managed in many roles, but, for example, a technician who can’t carry out basic calculations may not be able to safely operate a production process. These are just some of the considerations organisations should be making when assigning tasks to individuals.

Task Complexity

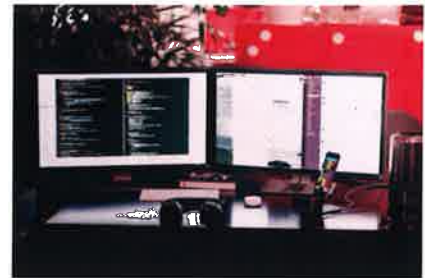
The complexity of the task can have a significant effect on the propensity for human error. Tasks that involve complex calculations, decisions or diagnoses will present more opportunities for such error. Such tasks should be broken down into simpler units to give greater clarity.



Tasks should be broken down to give clarity

Application of Task Analysis

Task analysis is a process that identifies and examines tasks performed by humans as they interact with systems. It is a means of breaking down a task into each individual step and is a technique that looks at an activity in detail. The activity in question may be one where a number of people have injured themselves. By breaking the task down into each step, the cause of the injury may become apparent and a better way of completing the task may be identified. Each step can be examined in detail to try to identify where human error might occur. Could slips occur by performing an action too soon or by leaving out a step from a task? Is it possible to make a mistake by selecting a wrong alternative? Once the possibility of human error has been identified, the task can be modified to reduce its likelihood.



Task analysis

For example, consider the school cooks who produce hundreds of hot meals per day. A number of incidents have occurred, which on the surface seem unrelated, e.g. back strain, burns, slips and trips. Looking more closely, however, it seems that all the accidents have occurred while removing or putting items in the oven. After breaking down each step, it becomes apparent that the oven door does not always stay fully open so the cook has to balance the trays of hot food while trying to keep the door open. This sometimes means holding the food in an awkward manner (leading to back strain) or spilling the food (leading to slips and trips) or being burnt by the oven door. In this simple example, it may be possible just to fix the door so it stays open, or to change the procedures, or it may mean someone has to hold the door open while another person removes/replaces the food.

By breaking down a task, you can see exactly what happens without making assumptions about some of the steps.

Individual Factors

Relationship Between Physical Stressors and Human Reliability

Stress can be caused by a number of factors, including physical stressors, such as extremes of heat, humidity, noise, vibration, poor lighting, restricted workspace, etc. The presence of physical stressors has a negative effect on people and means that errors are more likely to occur.

Physical stressors affect how comfortable a person is and their ability to concentrate and may even make them feel unwell. Different people may be affected by varying degrees of the physical stressor.

For example, some people are not affected by increased room temperature, while others start to feel uncomfortable and may become restless after a few degrees' rise. Pregnant workers are more likely to be affected before other members of the workforce. However, if the temperature continued to rise, then more and more people would be affected and the likelihood of errors occurring would rise too as concentration levels dropped. In addition to this, people are more likely to lose their tempers or have decreased levels of patience which, again, may lead to errors or incidents occurring. Eventually, a very warm working environment may result in fainting or heat exhaustion, which could have serious implications in a high-risk environment.

Some environments are very warm by their nature, such as working in a busy kitchen. Procedures should be in place to ensure that individuals are protected from excessive heat, for example: regular rest breaks away from the heat, availability of cold drinks, good air circulation, etc.

In order to prevent errors, or reduce them as far as possible, you need to ensure that the working environment is as comfortable as possible. Where physical stressors are likely to be a problem, (e.g. in a noisy environment), other controls must be in place to prevent them affecting an individual's ability to work safely. These controls may be in the form of suitable PPE, limited time within the environment, or regular breaks.

Effects of Under-Stimulation, Fatigue and Stress on Human Reliability

Stress is the reaction that people have to excessive pressure and occurs when they worry that they can't cope. Stress can affect performance and an individual's ability to make decisions and work effectively.

Both work overload (having too much to do or the work being too difficult) and work underload (routine, boring and under-stimulating tasks) can be sources of stress:

Under-Stimulation

With advances in technology, jobs can become more monotonous and controlled if they are designed to minimise skill requirements, maximise management control and minimise the time required to perform a task. Such jobs are likely to create negative attitudes and poor mental and physical health. It is only through re-designing such work that improvements can be made in the quality of working life and the performance on the job.

Fatigue

Fatigue can be defined as 'weariness after exertion' or can occur after repeated periods of stress. Severe fatigue can lead to poorer performance on tasks requiring attention, decision-making or high levels of skill. Shift work, working at night or extended hours can all result in fatigue and have an adverse effect upon health. For safety-critical work, such as train driving, the effects of fatigue can give rise to increased risks.

Shift work, especially night-working, can impact on safety. During the night, job performance may be poor and tasks completed more slowly. The hours between 02.00 and 05.00 are the highest risk for fatigue-related conditions. Sleep loss can lead to lowered levels of alertness. Sleep debt, which is a build-up of sleep loss, leads to reduced levels of productivity and attention. These effects can also affect early morning shift workers and people who are on call.

MORE...

You can find further information on the effects of fatigue on human performance at:

www.hse.gov.uk/humanfactors/topics/fatigue.htm

Stress

DEFINITION

STRESS

The reaction that people have to excessive pressure or other types of demands placed on them.

The introduction of new systems can also be a source of stress where complicated technology and the absence of training and support can exert undue pressure on individuals. There are also factors intrinsic to the job that can act as stressors, such as:

- Poor physical working conditions (e.g. high levels of noise, poor ventilation).
- Working inconvenient and excessive hours.
- Working on a repetitive and fast-paced task.
- Having a job which involves risk or danger.

When attempting to improve job satisfaction and reduce stress levels, organisations often focus on the individual worker by providing stress management courses and employee assistance programmes. These are attempts to deal with the problem on an individual basis, whereas the longer-term solution is to consider organisational and job design issues in order to deal with the underlying work-related causes of stress.



The Effect of Personal Attitudes

The risk perception of individuals will be very different based upon their knowledge, experience and personality. A safety professional who has studied disasters may be very concerned when discovering that a manufacturing organisation doesn't have a permit to work process in place, whereas an engineer who has worked there for years with seemingly no incidents may not see what all of the fuss is about. Personality, attitudes and habits can also play a part in defining the way an individual responds to a safety situation; we can influence someone's attitude to safety through training, by increasing awareness through high impact interventions and by coaching and mentoring; the Speed Awareness courses operated by the police force for drivers caught speeding are intended to do exactly that. Someone's personality, however, is fixed – if you are a reckless person who likes to break rules, an organisation can no more change that than they could make a grumpy person jolly! Organisations must know their workers and ensure that the right people are in the right roles.

Organisational Factors

The Effects of Organisational Factors on Health and Safety Culture

When investigating accidents all too often we hear of organisational failings which have resulted in poor decision making. Individuals may know what they should do, an organisation may espouse "safety first" as a mantra emblazoned on t-shirts and stickers, but what if managers and supervisors are demonstrating that safety is less important than delivery times? Will employees feel that they need to cut corners to get the job done? More effective organisations engage with their workers to ask their opinions and promote safety, clearly demonstrating that "getting the job done" does not mean "getting the job done at all costs". Organisations need to understand the impact that the safety culture can have on individual behaviours.

Organisational Factors that Affect Human Reliability

- **Patterns of Employment**

These days, it is accepted practice for workers to be on short-term contracts and this clearly has an effect on individuals seeking job security. Some people in this position may suffer from stress due to the lack of job security, particularly if they have always had a 'permanent' job in the past. Other people acknowledge that there are now few 'jobs for life', and take short-term contracts in their stride.

Short-term contracts often mean that the employer can choose to retain the best workers. Where there is a good safety culture in place, this will often mean workers who perform well and safely. Where the safety culture is poor, this may mean workers who work the quickest will be kept on. So, the type of organisation will determine how the individual will work in order to ensure that their contract is renewed. On the other hand, where short-term contracts are in place, there may be little loyalty from the workforce and so turnover of staff (particularly good performers) may be high.

'Permanent' contracts may lead to complacency in the workforce, in which case the employer needs to ensure that individuals achieve their potential and work toward the company goals. There are many ways of encouraging improved performance, e.g. reward and incentive schemes.

The way the work is organised between people can also have a major effect on performance. Where people work in small teams with some variety to their tasks then this can build comradeship and a good working environment. However, where people work alone, work can become a lonely place and the tasks can become monotonous.

- **Payment Systems**

The way in which people are paid can have an effect on the way they work. For example, piecemeal workers are paid by performance; abattoir workers are often paid per animal slaughtered, so for them, speed is of the essence because, the faster they work, the more they get paid. While safety may not be the top priority, they understand that their own safety is paramount because if they injure themselves, they won't be able to work and then they won't get paid. So, by default, personal preservation may lead them to work more safely.

This is really the same for all self-employed people. On the other hand, employed people who still get paid if they are absent from work may not think about their own safety in these terms, and so may or may not work more safely.

- **Shift Work**

Shift work has a great effect on an individual's performance. In addition to fatigue and stress, individuals may find that their social lives and family life are affected. The effects of this will rather depend on the individual and their circumstances, as well as the shift pattern itself. If, however, an individual is unhappy at home, then this will often spill over into their work life and performance may be affected.

Shift workers (especially night workers) may experience negative effects on their health:

- Gastrointestinal problems are more likely to occur due to eating snack meals during work hours.
- Respiratory problems, such as asthma, tend to be worse at night, as do allergic reactions.
- Lung function also declines at night, especially for those people with chronic respiratory problems. Clearly, where people's health is affected, performance may also be affected.

Shift work interferes with the body's natural circadian rhythm. Even when working nights, the body still reduces its temperature in the early hours of the morning, reduces blood pressure and stops digestion, which leads to an individual feeling sleepy and less alert.

Shift workers need adequate rest between shifts as well as regular rest days to 'recharge their batteries'. The shift pattern itself may also affect individuals. Shift patterns that alter once a week are likely to be more difficult to adjust to rather than those that change more rapidly or more slowly.



Lone working can be lonely and tasks can become monotonous

Effect of Weaknesses in the Health and Safety Management System on the Probability of Human Failure

Inadequacies in Policy

Organisations must appreciate that they need to consider human factors as a distinct element which must be recognised, assessed and managed effectively in order to control risks. For this reason, human factors must be considered and included in the company health and safety policy; if they are not, then it is more likely that these important factors that can affect the way in which individuals work, will be overlooked and human failure is more likely to occur.

For example, some of the common organisational causes of human failure include:

- Inefficient co-ordination of responsibilities.
- Poor management of health and safety.

Both of these stem back to inadequacies in policy. If the health and safety policy defines the responsibilities correctly and the ways in which health and safety are to be managed, then failure is less likely to occur due to these causes.

Setting of Standards

The setting of standards and the use of benchmarking, is a feature of any health and safety management system. Recognising human error is essential in such areas as identifying foreseeable misuse is a necessary element of a suitable and sufficient risk assessment.

Information

The availability of information within an organisation or system is vital and the information should be:

- accurate;
- timely (e.g. it is no good being informed of a new procedure three weeks after the implementation date); and,
- relevant.

Too much information can be overwhelming and will mean that the important bits may get overlooked.

Providing the right information, at the right time, and to the right people, is not easy but it goes a long way to ensuring a good working system and one where the employees feel involved and appreciated. One example is ensuring written instructions (including warning signs) are clearly understood by everyone, including those with a poor understanding of English. Anyone who has worked for a company where information was not provided adequately knows the confusion and mistrust this can cause.

The information required may range from the structure of the organisation and the responsibilities within it, to the operating instructions for a piece of equipment.

Planning

The proper planning of a system ensures that it works effectively, and so all aspects of it must be taken into account. This includes the inputs, the outputs, the work in the middle (production/processing), as well as the effect of the environment. All these areas need to be looked at to see how they affect the system or how the system affects them. Different scenarios should be considered so that the system can operate in changing circumstances.

For efficient working, system planning must take account of relationships between processes, (i.e. the organisation and communications), and the ability to adapt to change. This might include:

- Proper work planning, including the task steps as well as relationships with other tasks – to remove unnecessary work pressure.
- Properly integrated procedures and safe systems of work.
- Proper co-ordination.
- Communications – two-way to allow feedback for improvements and clarification.



Too much information can be overwhelming

Responsibilities

To implement an effective system, everyone involved must understand their role and how it integrates into the system. Each person must also appreciate the effect on the system as a whole if they don't play their part. Unless responsibilities are clearly defined and understood, then there will be an increased risk of tasks not being fulfilled, e.g. maintenance. This will have a consequential effect on safety and health.

Monitoring

Feedback and monitoring of a new system is vital to ensure that the system works and that, where necessary, improvements are made. Human error is significantly reduced by providing proper, timely feedback to the individual or group.

Influence of Formal and Informal Groups

Formal Groups

You will remember that we looked at formal and informal organisations earlier in this Learning Outcome.

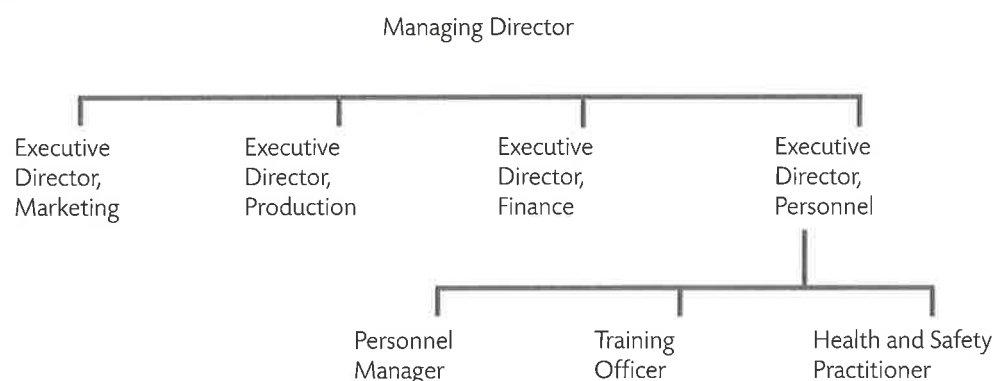
Formal organisations:

- Are established to achieve set goals, aims and objectives.
- Have clearly defined rules, structures and channels of communication.
- Are often divided into productive and non-productive, productive organisations being involved in the production of goods and services.

To be successful, an organisation has to have clearly defined objectives and be positive in aiming to achieve them in the most efficient manner. Where this positive direction is lacking, an organisation is likely to fail.

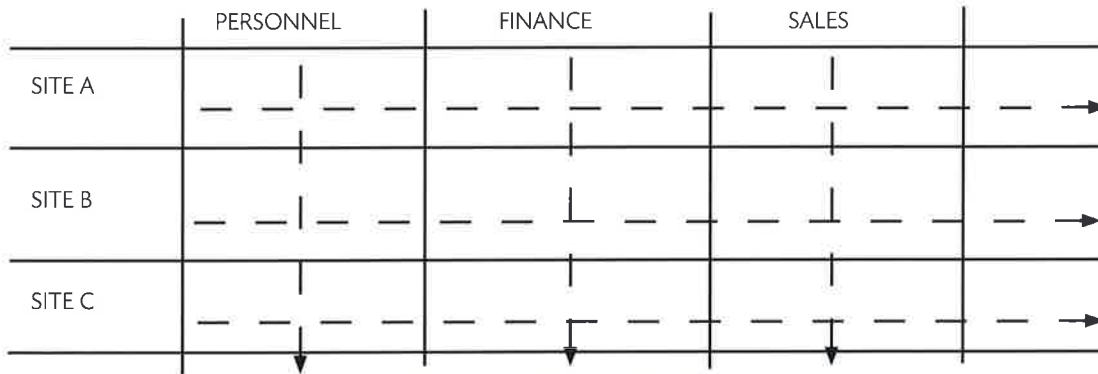
Nearly all organisations are hierarchical in structure, i.e. they have different levels of authority and responsibility within their structure.

The simplest way of depicting such a functional hierarchy is with a line diagram (or organisation chart) similar to the one that follows.



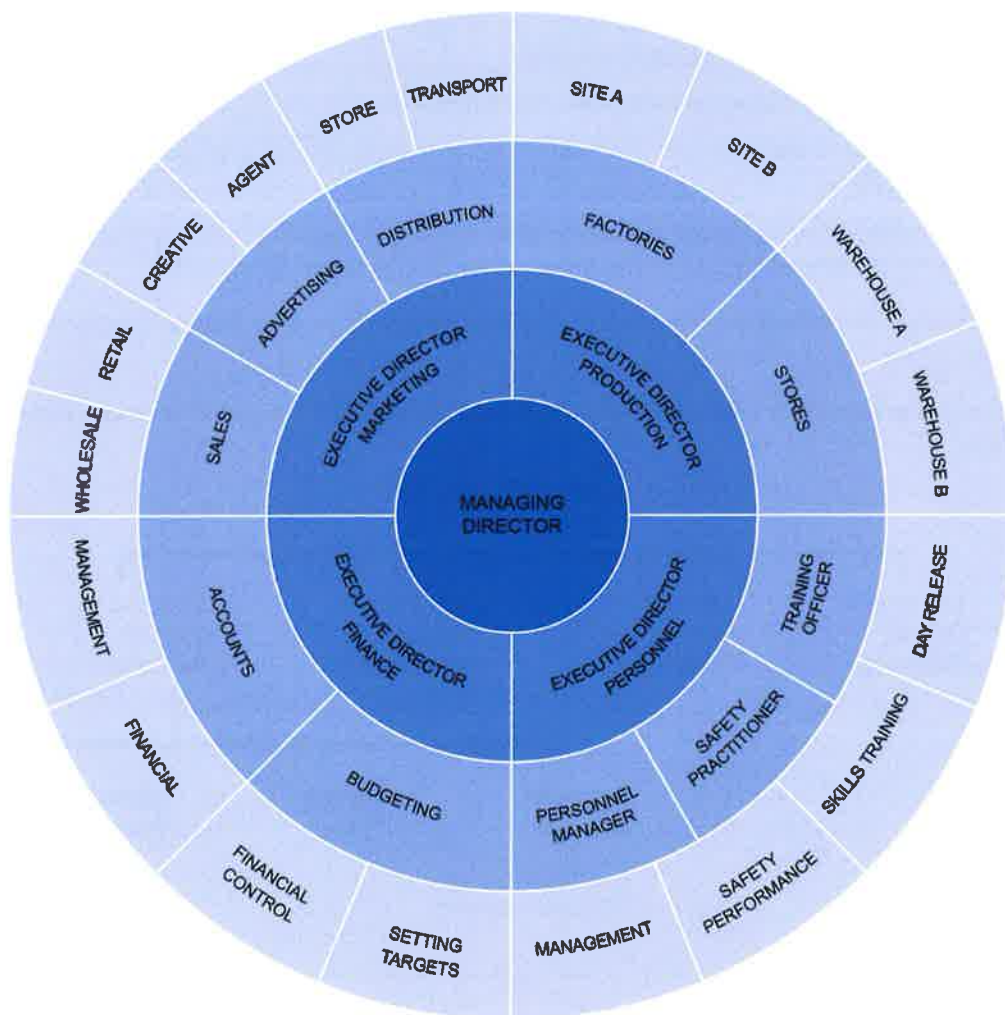
Functional hierarchy

Organisations also make use of matrix charts to depict organisational structure. In the figure below, staff functions are shown across the top and line functions down the side. Interaction takes place where the functions cross.



Matrix chart of organisational structure

Concentric circle charts (see the following figure) show the management functions to be the hub of the organisation around which all other decisions and functions revolve.



Concentric circle chart

Informal Groups

The organisation chart shows the formal organisation of the company and indicates the direction of communications. There will also be formal working groups and committees. In a large organisation, this can be cumbersome and some decision-making processes use informal routes. The health and safety professional needs to be aware of these informal methods.

Although a formal structure would suggest that they might communicate with the works foreperson by reporting to the human resources manager, who contacts the managing director, who then passes the information or instruction to the foreperson via the production manager and supervisor, in practice the safety professional goes directly to the foreperson and, if necessary, reports this using the formal channels.



Grapevines are useful for passing on gossip but not important information

Within any organisation there is a 'grapevine'. This is usually very effective in passing on gossip and information. Since the source is difficult to trace, the information might not be totally reliable. So, superimposed on the formal organisational structure is an informal structure of communication links and functional working groups. These cross all the barriers of management status and can be based on:

- Family relationships.
- Out-of-work activities, such as the church, golf club, or local pub.
- Valuable experience or expertise.

Organisational Communication Mechanisms and Their Impact on Human Failure Probability

Every organisation depends upon an intricate communication network; the bigger the organisation, the more elaborate the system. The precise form of the network will vary from company to company. The following networks and the direction of communication they deal with are the most common, although, in practice, the communication system in a particular company will inevitably be far more complex. Communication systems vary in their complexity, reliability and formality.

Modes of Communication

Communication can be either one-way or two-way.

In one-way communication:

- Sender identifies the message.
- Sender transmits the message.
- Receiver receives the message.
- Receiver interprets the message.

Although this is quick and gives the perception of efficiency and control, there is no opportunity for feedback and the assumption is that the receiver has paid adequate attention.

Examples include: a tannoy message in a factory, a safety poster, following written or e-mail instructions.

In two-way communication, there is the opportunity for the receiver to transmit information or questions back to the original sender and for the sender to respond such that a conversation takes place. Although more complex and time-consuming, two-way communication is likely to be more effective and reliable by placing the onus on both parties rather than one. Achieving a mutual understanding between the two parties ensures that the correct message is received and understood and contributes to an improved safety culture.

Examples include: a one-to-one meeting, a toolbox talk with the opportunity for questions, or a telephone call.

Shift Handover Communication

Shift-working and shift handovers are characteristic of many organisations, not only in the process industries but also in healthcare. During shift handover, relevant information has to be communicated to maintain the continuity of the activities; if this fails, there is the risk of serious consequences. A key factor in the Piper Alpha disaster in 1988 (discussed in more detail later on) was the failure in the permit-to-work system such that the oncoming shift members were unaware of the removal of a safety valve. This failure led to actions that initiated the disaster.

In 2004, the British Medical Association published guidance on good practice handovers in healthcare and detailed five questions:

1. Who should be involved?
 - All key personnel at all grades.
2. When should handover take place?
 - At fixed times, of sufficient length and arranged to allow both the off-going and on-going shifts to attend within their working hours.
3. Where should it take place?
 - Close to the most used work sites so that there is room for both sets of staff to attend.
4. How should handover happen?
 - A specific formal format should be devised and consistently followed.
5. What should be handed over?
 - This might include written notes as well as electronic information.

Organisational Communication Routes

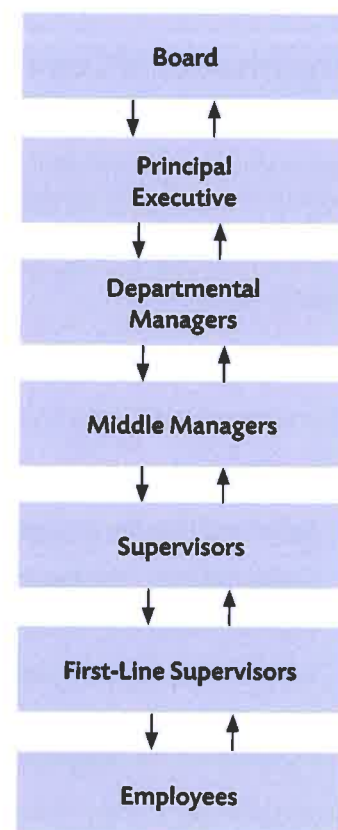
- **Vertical Communication**

The amount of communication downwards tends to exceed that going upwards:

- **Downwards**

Communication will usually be made along the lines of authority, from Managing Director down to Section Leader and on to the clerk and shop-floor worker (see following figure).

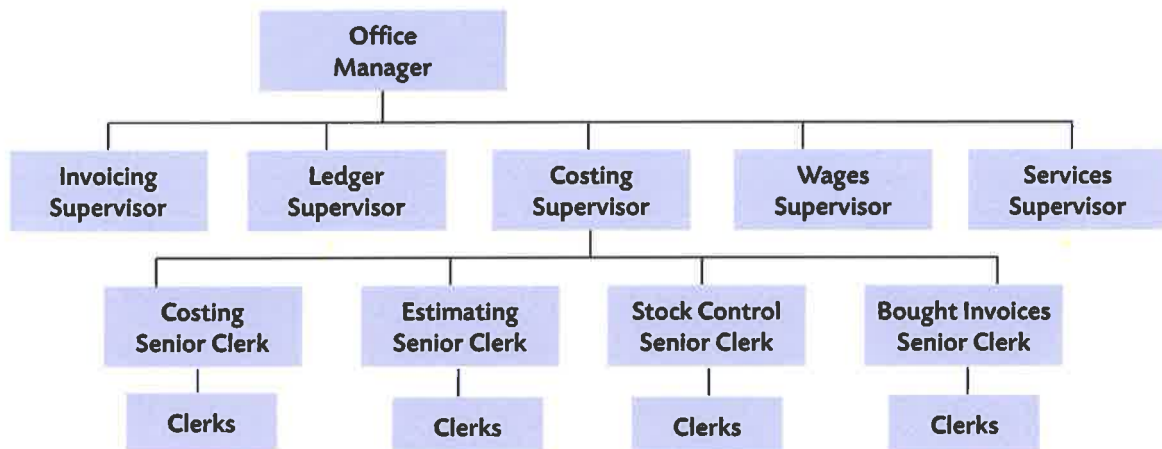
At each managerial level, there must be responsibility for passing on information. Each superior level must be responsible for ensuring full, accurate knowledge and understanding at the next subordinate level. The importance and use of communication must, therefore, be included in any management training programme.



Vertical communication – downwards and upwards

The passing 'downwards' of some directive, communication or instruction, implies temporary 'storage' of that information in the mind, or the 'in-tray', of all intermediate handlers. Careful consideration must be given, therefore, to the most appropriate type of information storage and display system.

Some senior staff believe that the only effective way to pass information is by word of mouth. They think they are the only really effective communicators in the organisation, but this can mean that they find themselves with no time to make decisions because all their time is taken up ensuring that the decisions they have made have been passed on to all concerned.



Vertical communication within a department

– Upwards

Communication upwards is equally important in any organisation – ideas, suggestions for improvements, and opinions on existing systems, communications and techniques are all important for management to consider and use.

Office and shop-floor workers are in direct contact with the actual work carried out and can often see ways to improve processes and production. The regular flow of such ideas has been of considerable value to organisations in reducing costs, cutting production times, introducing improved layouts and in creating an atmosphere of co-operation and goodwill between employees and management.

Research has shown that it is in the upward flow of information that the greatest shortcomings exist, especially in recent years, with the use of management information systems and the selection and processing of the 'vital' information managers need to have.

Whereas downwards communications are usually 'directives', i.e. they initiate action by subordinates, upward ones are usually 'non-directive', i.e. they report results or give information, but are not necessarily intended to prompt action.

Although the amount of downwards communication is usually greater than that going up, managers should encourage an increase in the flow upwards, although much depends on the time the manager has available to deal with the upwards communications.

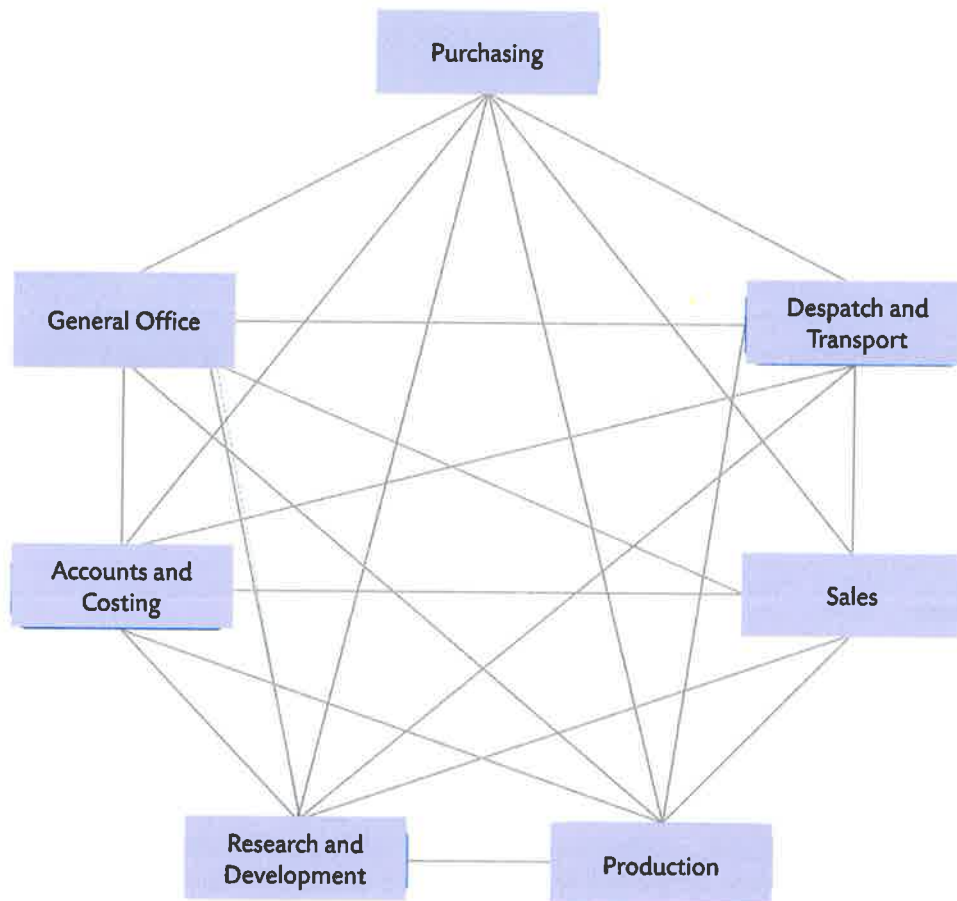
• Horizontal Communication

Information is also channelled horizontally, both within a department and between departments.

We give information to and receive it from colleagues in our own department and we have contacts with our opposite numbers in other departments. These communications are of the greatest value in administration, particularly in affecting co-ordination (see the following figure).

Remember that information flow is subject to variation in speed and quantity; activity will vary according to the time of day, the day of the week, and the month or quarter.

The characteristic of feedback is vital in effective communications. It should inform the sender of information that their message has been understood and acted upon, hopefully in the expected manner, bringing about the planned objective.



Internal communications – horizontal

- **Inward and Outward Communication**

- **Inward**

Here, we see the effect of all the personal face-to-face calls on people at all levels in the organisation: the incoming telephone calls and emails from people of all kinds making contact with various members of staff, and postal correspondence arriving daily in the post room.

- **Outward**

The amount of communication outwards from any organisation is sometimes grossly miscalculated. Outgoing communications are both formal and informal, both explicit and implicit.

In this same category, we can include the behaviour of responsible members of staff when they are off company premises; their behaviour and expressed attitudes may be seen as reflecting those of their organisation.

Outward communications also include the various kinds of advertising and promotional devices the organisation uses.

Contribution of Human Failure and Human Factors to Incidents

No study of human error will be complete without some consideration of major incidents. In each case, you need to consider the part played by human error. An investigation usually apportions blame, but although some blame will be attached to those who are directly involved, the majority of the blame is usually placed on those in responsible management positions. Safety professionals usually carry some responsibility as well.

Kegworth Air Disaster

A Boeing 737 airliner had taken off on a routine flight from London to Belfast. There had previously been a problem with vibration in the right-hand engine, and the maintenance log showed that this had been attended to. The pilot had read the maintenance log before take-off. The air-conditioning on a 737 is driven mainly from the right-hand engine. During the flight, the pilot detected vibration and an excess of smoke and fumes, and he throttled back the right-hand engine. This stopped the smoke and vibration. This seems to have been just a coincidence but seems to have confirmed in the pilot's mind that he had dealt with the problem. The right engine was shut down. There is some suggestion that a warning light showed that there was a fire in the right-hand engine. The pilot obtained permission to land at East Midlands Airport near Nottingham and Derby. It was then found that the wrong engine had stopped: the problem was in the opposite side engine which had suffered a turbine blade detachment. The pilot would have had little difficulty landing the plane with one engine, but now had to attempt to land it on one faulty engine. They crash-landed 900 metres short of the runway on the M1 motorway near the village of Kegworth. There were fatalities and injuries.



The key factors leading to the disaster included:

- The crew did not deal with the initial engine problem in accordance with what training they had.
- Other crew on board observed the flames from the left-hand engine but did not inform the flight crew.

Piper Alpha North Sea Oil-Rig Explosion

On 6 July 1988, there was a disastrous fire on the Piper Alpha oil rig in the North Sea; 167 men were killed and many who survived were injured and traumatised.

The rig was operated by Occidental Petroleum (Caledonian) Limited. Piper Alpha was part of a linked operation involving four rigs. The operation involved gas, compressed gases and crude oil. The various operations on Piper Alpha were in modules which were stacked on top of each other. The helicopter landing pad was on the highest level, and on top of the main accommodation module.

There were 226 men on the platform; 62 were working the night shift, and the majority of the others were in the accommodation modules.

- At 22:00 hours, there was an explosion followed by a fireball that started from the west end of B-module. This was quickly followed by a series of smaller explosions. The emergency systems, including fire water systems, failed to operate. Three Mayday calls were sent out, and the personnel assembled on D deck. The radio system and the lighting then failed.



167 men were killed in the Piper Alpha explosion

- At 22:20 hours, there was a rupture of the gas riser of the Tartan supply (another rig – but the pipeline was connected to Piper Alpha), followed by another major explosion, with ignition of gas and crude oil.
- At 22:50 there was a further explosion with a collapse of much of the structure.

There was a mass of photographic evidence taken from the other rigs and ships in the area, but some problems in fixing the exact time of each. The enquiry was very thorough, but unable to come up with clear conclusions. Gas detection equipment was working, but some water systems had been turned off, and some welding operations were in progress. The report criticised the platform design, and the lack of safety systems. It called for major changes in disaster planning and auditing.

The key factors leading to the disaster included:

- Failure in the permit-to-work system.
- Design failure in that the rig containment wall was fire-resistant but not blast-resistant.
- Other rigs did not shut down and continued to feed into Piper Alpha, fuelling the fire.
- Inadequate emergency procedure for rig evacuation.

Herald of Free Enterprise

The Herald of Free Enterprise sailed from Zeebrugge harbour for Dover with both inner and outer bow doors open. Water flooded in, causing the ferry to capsize. The Assistant Bosun was responsible for closing the doors but had fallen asleep. The Captain assumed that the doors were closed unless told otherwise. There was pressure on ferries to sail as quickly as possible.

The key factors leading to the disaster included:

- Design failings, in that roll-on, roll-off ferries were inherently unsafe and top-heavy.
- Reduction in the complement of officers, with long working schedules.
- No automatic monitoring of critical areas such as the bow doors.
- Poor emergency procedures, particularly provision of lifejackets.

Ladbroke Grove (Paddington Rail Disaster)

On 5 October 1999, a local passenger train passed a red signal and continued into the path of a high-speed train. The ensuing collision and subsequent fire resulted in the deaths of 31 people, with many injured.

A joint investigation by the Health and Safety Executive (HSE) and British Railway Police identified a number of significant problems associated with the signalling system.

Among these was the positioning of a particular signal that was exceptionally difficult to read in comparison with other signals. It was also suggested that the driver's perception could have been affected by the sun reflecting on the signal lenses.

Additionally, there was some debate about whether the Automatic Warning System (AWS) could have given misleading warnings which led to them being disregarded.

One of the main conclusions was that the misinterpretation of the information presented by the signal was a significant factor. The competence of the driver was not questioned as they had been fully trained, although they were relatively inexperienced.

Three Mile Island (USA)

Three Mile Island nuclear power plant is near Middletown, in Pennsylvania, USA. In March 1979, the reactor core went into meltdown, but there were only small releases of radioactivity and no deaths/injuries. The reactor was a Pressurised Water Reactor (PWR), which is a very common design throughout the world (other than in the former Soviet Union). In this design, the primary coolant water is kept pressurised so that it does not boil. The primary coolant water passes the heat onto a secondary water system (via a heat exchanger), which is allowed to boil – the steam driving a turbine to generate electricity.



To summarise, the incident started with a failure of the secondary circuit – which prevented heat removal. This caused the reactor to shut down and the pressure in the primary circuit to increase. This in turn triggered the opening of a pressure relief valve which, unfortunately, stuck open instead of closing again when the pressure had reduced. As it happened, the signals on the operating consoles indicated that the valve had shut (the lamp was triggered by the circuit signal to the valve rather than the actual valve position). The continued escape of the coolant through the valve allowed the core to overheat.

Coupled with this was the confusing instrumentation available to the operators. There was no coolant level indicator – instead it was inferred from levels elsewhere in the system (but these levels had actually been raised by bubbles of steam). Alarms began to sound but, at that stage, the nature of the unfolding incident was not recognised as a ‘loss of coolant’ incident. Immediate actions included reducing the coolant flow in the core (their training had emphasised the danger of too much coolant and, of course, they believed, from the instrumentation, that the pressure relief valve was shut); this made things worse. If they had done nothing, the plant would have cooled down on its own. Instead, the core continued to overheat and the fuel began to melt.

Factors that led to the accident:

- Operators were under considerable stress – many alarms were going. They had incorrectly diagnosed what they thought was the problem and stuck to a course of action, despite apparently overwhelming evidence to the contrary.
- Operator training was inadequate. Operators of complex plant cannot just be given a series of instructions to follow. Things are bound to go wrong outside of this. They also need to understand the principles of the process, and be trained in diagnosing problems (both foreseen and unforeseen) and in the use of diagnostic aids.
- The crucial indicator (of the status of the pressure relief valve) was wrong. This did not look at the status of the relief valve directly – it should have done.

Initiatives for Improving Individual Human Reliability in the Workplace

Human reliability may be improved by:

- Motivation and reinforcement.
- Incentive and reward schemes.
- Increasing job satisfaction.
- Appraisal schemes.
- Selecting appropriate individuals for the job:
 - Matching skills and aptitudes.

- Training and competence assessment.
- Ensuring fitness for work.
- Health surveillance.
- Support for ill health, including stress-related illness.

Motivation and Reinforcement

People are motivated by different things, for example some will be motivated by financial rewards, some by the opportunity to develop and some by the allocation of responsibility or status. The reinforcement theory of motivation states that the consequences to individuals drive their behaviour – we are likely to repeat something that we were rewarded for and are less likely to do something that resulted in a punishment, known in the past as the “carrot and stick” approach to management. This is highly simplified however, because not all positive reinforcement will work on all people and our responses to punishment may not be permanent.

Positive reinforcement in the simplest terms is “giving people something they want” – this could be a financial reward as a bonus or an incentive, but equally it could be thanks or praise. We will look at the challenges with incentive and reward schemes in the next section. The temptation can be to use high cost rewards – certainly they work initially, but if people don’t truly believe it is better to follow a procedure and they are just doing it because if they do they may get a bonus, then the behaviour is likely to evaporate should a bonus not be given as it wasn’t ingrained as a habit. Often it is better to give low “cost” high “value” rewards, such as recognition, praise and thanks or small tokens – employees are encouraged to develop the safety habit, they feel good that it was noted and are much more likely to keep that behaviour going. This is the basis of behavioural safety which we touched upon earlier. Stop noting that people are doing the right thing, and that good behaviour will potentially stop too (we call this “extinction”).



Conversely, negative reinforcement works by catching someone doing something wrong and punishing them for it – it is the method used by police forces and it is not unheard of for the phrase “safety police” to be used in the workplace for the same reason: someone was breaking a rule, they were caught and punished. However just as crimes still occur, people will still break the rules because the negative reinforcement is only given if people are caught. The reinforcement theory of motivation relies on a lot of feedback being given!

Workplace Incentive and Reward Schemes

DEFINITION

INCENTIVE

An incentive is really an inducement that provides a motive for someone to do something, usually in the form of some sort of reward for achieving a particular goal or milestone.

(Note that the words ‘incentive’ and ‘reward’ in this context are routinely used interchangeably.)

Workplace incentive or reward schemes can be a good way of motivating employees to focus on the job and conform to the organisational goals. The incentive encourages employees to work harder in order to receive a payment or benefit. For example, achieving a set target or exceeding that target may mean that individuals receive a financial bonus or a prize. The scheme may operate on an individual basis or as a team effort, in which case the incentive would be for the team to achieve the target. The incentive scheme may be set up so that a winning team or individual is identified every month, for example, and the winner is given a prize. This type of incentive motivates individuals to work harder but also motivates teamwork.

Some pay schemes work by paying a very low actual salary but having bonus payments which are paid when targets are met, e.g. sales jobs. The motivation to sell more is clearly through the financial gain.

Piecemeal work, where workers are paid per work unit completed (e.g. for each sheep sheared) encourages individuals to work quickly so that they can earn more money. This may have implications with respect to safety as the workers are not encouraged to necessarily consider safety as their first priority.

Incentive schemes aimed at improving safety are more difficult as they may need to monitor the results over a reasonable time period, such as one year. Incentive schemes can often lose their momentum and their effectiveness over time. For this reason, it is important to either keep the time periods short or continue to keep the momentum high.

Incentive schemes for safety may relate to obtaining improved 'scores' during routine audits or inspections. This type of incentive would be aimed at ensuring all members of the workforce made their work area as safe as possible and that work was carried out in a safe manner.

Avoid incentives aimed at reducing accidents specifically (i.e. where measurement would be a decrease in accident rates), as this may result in under-reporting of accidents in order to obtain the incentive.

Job Satisfaction

For some people, job satisfaction is all that they require to be motivated. Job satisfaction is also very individual to each person:

- Some people are satisfied with a good working environment and regular rest breaks.
- Other people require challenging, stimulating work where they receive positive feedback.

One motivation theorist, Frederick Herzberg, identified particular motivating factors which, when present, increase satisfaction from work and provide motivation toward superior effort and performance.

These include recognition, responsibility, achievement, advancement, and the work itself, and are distinct from other factors that increase dissatisfaction when absent, but when present do not result in positive satisfaction and motivation. Herzberg termed these 'hygiene' factors. They include type of supervision, salary/wages, working conditions, company policies, rules, etc.



Some workers need more challenging work than others

Appraisal Schemes

DEFINITION

APPRAISAL SCHEME

A formal means of placing value on achievement or effort and is generally carried out on an annual basis. The results may be used to determine the level of a pay rise or a promotion.

Appraisal schemes usually involve the employee filling in a self-appraisal form which is discussed at an interview with their manager. A report is produced at the end of the interview with a copy being provided to the employee and to a senior manager, and a copy placed in the employee's personal file.

The self-appraisal form may request information about what the employee feels they have accomplished in the past year and their high and low points. It may also ask what areas the employee is dissatisfied with and what improvements they would like to see. The form may also ask about the employee's aspirations for the coming year.

In this way, the employee is given an opportunity to identify what areas of their job they are satisfied with and what areas they are dissatisfied with. They may also come up with ideas to improve their job or to improve themselves, such as additional training. This scheme gives the manager an opportunity to discuss with the employee their thoughts on the employee's progress, and give praise and encouragement where required.

Some appraisal schemes give the employee the opportunity to comment on their manager. This needs to be anonymous if there is a chance of reprisal.

Appraisal schemes are an excellent way of finding out what problems exist within a workplace and, therefore, give the opportunity for improvement. They also provide a measure of the safety culture within an organisation. More importantly, they allow the employee to comment on their own progress and to voice their opinions. Employees in appraisal schemes will often feel more motivated than those not in such a scheme, particularly where hard work and improvements are rewarded.

Selection of Individuals

Matching Skills and Aptitudes

An employer may wish to select only those workers who will conform to their safety standards – either existing workers for new or different tasks, or prospective employees. This selection process is often by interview (at least in part) and sometimes involves aptitude tests.

Be aware that selection in this way may not lead to large improvements in reliability because people may behave differently once they have the job.

Some of the best selection techniques involve competency-based interviewing which identifies the skills, talents and abilities required by the job and may assess:

- Effectiveness of communication (verbal and written).
- Problem-solving ability.
- Ability to use technology.
- Whether they provide input or views on safety issues.
- Whether they follow safety instructions.
- Teamwork.

Training and Competence Assessment

On-the-Job Training

On-the-job training provides trainees with experience which is a combination of work-based knowledge and skills development. As the trainee gains experience, the range and complexity of tasks that they can undertake without detailed guidance increases. The process of learning can be improved by:

- Demonstration.
- Coaching (carrying out tasks with guidance).
- Projects.

The instructor assesses the competence of the trainee as their skill level increases.



This training is effective, providing the trainee is shown the correct way of carrying out the task; bad habits can develop from the start if the trainee is placed with someone who does not follow the correct procedures.

Off-the-Job Training

Off-the-job training is carried out away from the work environment in a number of ways:

- Lectures: one-way communication in which all the talking is done by the lecturer. It is a good way of teaching a large number of students simultaneously. The limitations are:
 - There is a very low rate of retention. Adequate back-up notes are essential.
 - Students may not understand the presentation and be unable to seek clarification.
- Seminars: where discussion is encouraged and students can learn from the instructor and from each other. The number of students who can usefully take part at one seminar is a limiting factor.
- Programmed instruction: provided through a combination of distance-learning or open-learning packs, computer or audio-visual programmes with no direct involvement of an instructor. However, many distance learning packages do have access to tutors for advice or assistance through email or telephone contact.

Fitness for Work

Some jobs, often called 'safety critical', involve activities that require a person's full, unimpaired control of their physical and mental capabilities. For example, a tower crane operator will need:

- To be able to climb safely up the mast to the cab.
- Good eyesight.
- To not suffer from any condition that might make them prone to lose consciousness.

In such circumstances, the employer would require a full medical assessment of the prospective employee by an occupational health professional. Although the results of the assessment are confidential to the worker and the safety professional, the employer can expect to be given a general report specifying whether the prospective employee is:

- Fit for work.
- Fit for work with restrictions.
- Temporarily unable to meet the fitness standard.
- Unable to meet the fitness standard for work to carry out specific jobs.



Good eyesight is essential for a crane operator

MORE...

You will find further information on psychosocial and organisational factors in the ILO Encyclopedia, specifically in *Part V: Psychosocial and Organizational Factors*, at:

www.iloencyclopaedia.org/part-v-77965/psychosocial-and-organizational-factors

STUDY QUESTIONS

18. According to Rasmussen's model, what are the three levels of behaviour?
19. Explain the term 'ergonomics' and discuss how the poor application of ergonomics might lead to injury and occupational ill health.
20. What features are present in an ergonomically designed crane cab control system?
21. What effects might shift-work have on an individual's performance?
22. Outline the differences between formal and informal groups within an organisation.
23. How did human error contribute to the Piper Alpha disaster?
24. Identify four different methods by which employees can be motivated.

(Suggested Answers are at the end.)



Summary

2.1: Organisational Structures

In this section, we have identified:

- In a **formal** organisation, the organisation's structure is based on relationships from the chief executive down. This hierarchical structure is represented by the company organisation chart, or organogram.
- The **informal** organisation is represented by individual and group behaviour, and depends on the quality of personal relationships.

The organisation can be viewed as a **system**; different parts of an organisational system are functionally interrelated – change in one part affects other parts of the organisation.

Conflict may arise as a result of individual goals not being consistent with those of the organisation.

2.2: Leadership

In this section, we have defined the following:

Safety leadership is *"the process of influencing the activities of an individual or a group in efforts toward goal achievement in a given situation"*.

Types of safety leadership include:

- Transformational.
- Transactional.
- Authentic.
- Resonant.

2.3: Consultation

In this section, we have outlined:

- The role of consultation within the workplace and the principles established in ILO Convention **C155, Article 20** and ILO recommendation **R164**.
- Consultation may be compromised by peer group pressure, tokenism and areas of conflict.

2.4: Health and Safety Culture & Behavioural Change Programmes

In this section we have looked at:

Health and safety culture may be defined as a system of shared values and beliefs about the importance of health and safety in the workplace.

Health and safety climate is an assessment of people's attitudes and perceptions at a given time.

A **positive** health and safety culture can be promoted by various factors, such as: the commitment of management, a high business profile, provision of information, involvement and consultation, training, promotion of ownership and the use of targets.



A **negative** health and safety culture can also be affected by various factors, such as: organisational change, lack of confidence in an organisation's objectives and methods, uncertainty and inconsistent management decisions.

A **change in attitudes** can be achieved by planning and communication, and should be introduced using a gradualist approach. Action to promote such a change can be direct or indirect.

Behavioural change programmes endeavour to change individual worker behaviour by positively reinforcing desired behaviour and deterring undesired behaviour:

- Specific observable behaviour to be changed is identified and then measured.
- The cues that encourage the behaviour and resulting consequences are identified.
- Safe behaviour is encouraged/rewarded.
- Unsafe behaviour is challenged.

Such programmes rely on:

- Observations by supervisors and other workers.
- Providing prompt feedback to improve behaviour.

2.5: Traditional and Proactive Safety Management

In this section, we have looked at:

- **Traditional Safety** ('Safety I') where there is a focus on reactive responses to incidents and learning from past errors and mistakes. The solutions are often compliance based and result in the monitoring of negative outcomes, such as days since the last lost-time accident, number of days lost, etc. In this outlook people are seen as a problem to control.
- **Proactive Safety** ('Safety II' or 'Safety Differently') as outlined by Hollnagel and Dekker considers that safety is the presence of positives, not the absence of negatives. There is a belief that by devolving responsibility to workers and removing unnecessary bureaucracy, and by allowing or trusting workers to make sensible decisions, they will take care of their own safety and that of others. People are seen as a solution to be utilised rather than a problem, and by asking workers "what do you need?" and listening to the workforce, consensus can be reached as to how best to work safely. Finally, in 'Safety II' the positives are measured rather than the negatives, as it is understood that past safety successes and low-incident rates are no guarantee of future safety performance.

The **four varieties of human work** ('work as imagined', 'prescribed', 'disclosed' and 'as done'), and we looked at the way that 'work as done' can be used to identify risks that would otherwise be missed.

Low likelihood and high consequence events that are often missed in traditional safety approaches, how worker resilience can help to recover from adverse events, and how performance variation can be monitored and seen as a way to develop processes through sharing of information.

The limitations of Traditional and Proactive Safety approaches: Traditional Safety is reactive and can be seen as authoritarian as it is seen as compliance driven. By comparison, Proactive Safety can't foresee all events; the predicted situations may in reality never occur and therefore the resources used to "prevent" them are in effect wasted.

Proactive Safety is based upon predictions which could be flawed, and in many cases organisations may find the approach to be difficult to implement as it is not a common approach, and therefore management may struggle to adapt to this way of thinking.

The effects of Proactive Safety management on culture.



2.6: Risk Perception

In this section, we have looked at:

In relation to **human sensory receptors**:

- Each of our senses works in the same way by sending signals to the brain.
- We tend to screen out things we are not interested in.
- Sensory defects increase with age and ill health.

When perceiving danger:

- **Perceptual set** is dangerous because we assume both the danger and the solution without seeing the real issues.
- Our perception of hazards can be **distorted**.
- **Errors of perception** can be caused by physical factors, such as fatigue and stress.

2.7: Human Failures and Factors & Improving Human Reliability

In this section we have looked at how human failures and factors can contribute to incidents and how human reliability can be improved. We have outlined:

HSG48 identifies two types of human failure: errors (accidental) and violations (deliberate):

- Errors are actions or decisions which were not intended, involved a deviation from an accepted standard, and which led to an undesirable outcome.
- Errors can be characterised as: slips, lapses and mistakes.
- There are three types of violation: routine, situational and exceptional.

Rasmussen's model of skill-, rule- and knowledge-based behaviour states that:

- **Skill-based behaviour** describes a situation where a person is carrying out an operation without the need for any conscious thought.
- **Rule-based behaviour** is at the next level – a situation where the operator has rules which they can apply to deal with a specific situation.
- **Knowledge-based behaviour** is for situations where there are no tried rules or routines or the necessary skills. Trial and error may be the only method available.

The **design** of the work environment can have an effect on human reliability. The following are some issues to consider:

- Displays should be arranged so they can be scanned with minimum effort.
- Consistency is important in the action of control devices.
- Factors such as noise, dust, smell, vibration, temperature, lighting levels and humidity all contribute to a worker's ability to concentrate.

The **ergonomist's** skills include:

- **Anthropometry** – a study of human measurements, such as shape, size, and range of joint movements.
- **Physiology** – a study of the calorific requirements of work (how much energy is needed) and body functions, the reception of stimuli, processing and response.



Human performance can deteriorate due to **poor design** of workstations, such as those that are too low, or too high. Work that involves repetitive movements can lead to **upper limb disorders**.

Task analysis is a process that identifies and examines tasks performed by humans as they interact with systems. By breaking the task down into each step, the cause of an injury may become apparent, and the analysis may identify a better way of completing the task.

Physical stressors affect how comfortable a person is and their ability to concentrate and may even make them feel unwell. These include: extremes of heat, humidity, noise, vibration, poor lighting, restricted workspace, etc.

Fatigue can be defined as 'weariness after exertion' or can occur after repeated periods of stress. Severe fatigue can lead to poorer performance on tasks requiring attention, decision-making or high levels of skill.

Weaknesses in the safety management system increase the probability of human failure. These include failures in:

- Policy.
- Planning.
- Setting of standards.
- Information.
- Responsibilities.
- Monitoring.

Groups, both formal and informal, within an organisation affect the control of risks.

Communication mechanisms within an organisation vary in their complexity, reliability and formality.

Communication between and within groups is important. It can be:

- Horizontal or vertical.
- Inward and outward.

In many **major disasters**, such as the *Herald of Free Enterprise*, human error has been shown as a major contributory factor.

The way in which work is organised for individuals with respect to **shift patterns, means of payment** and **patterns of employment** can have an important effect on the way they carry out their job.

ID1 Learning Outcome 3

NEBOSH International Diploma for Occupational Health and Safety Management Professionals



Learning Outcome 3

Once you've read this learning outcome, you will be able to:

- Assess, develop and maintain individual and organisational health and safety competence.

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Competence, Training, Information and Supervision

IN THIS SECTION...

- Understand how providing information, instruction, training and supervision helps to develop and maintain a competent workforce.

The Meaning of Competence

Competence can be defined as the ability to undertake responsibilities and perform activities to a recognised standard on a regular basis. It is a combination of skills, experience and knowledge.

The Difference Between Training and Competence

Training is an important component of establishing competency but is not sufficient on its own. For example, consolidation of knowledge and skills through training is a key part of developing competency.

MORE...

Information on human factors, including training and competence, is available at:

www.hse.gov.uk/humanfactors/topics/competence.htm

You will also find various links there to further sources of useful information on this topic.

The Circumstances when Training is Likely to be Required

It is an important requirement of some national legislation to ensure that all persons who use work equipment receive adequate health and safety training in how to use work equipment, the risks associated with such use, and the precautions that need to be taken.

The requirements for adequate training will vary according to the job or activity and the work equipment, but in general it will be necessary to:

- Evaluate the existing competence of employees to operate the work equipment in use.
- Evaluate the competence employees will need to manage or supervise the use of work equipment.
- Train the employee to make up any shortfall between their existing competence and that required.

Circumstances when training is likely to be required include at induction, where there are changes in work activities, where new equipment or technology is introduced, where the system of work changes, and when refresher training is necessary.



Workers who use machinery and equipment must be adequately trained

Induction

Training needs are likely to be greatest on recruitment. Recruitment and placement procedures should ensure that employees have the necessary abilities to do their jobs safely or can acquire them through training. New recruits need basic induction training on how to work safely, as well as arrangements for first-aid, fire, and evacuation.

Changes in Work Activities

Additional training is required if the risks to which people are exposed change due to a change in their work activities. Consequently, people changing jobs or taking on extra responsibilities need to know about any new health and safety implications.

Introduction of New Technology or New Equipment

The risks to which people are exposed may change due to the introduction of new technology or new equipment. Again, persons employing new processes or new work equipment also need to know about the health and safety implications of such changes.

Changes in Systems of Work

Even if work activities and work equipment remain unchanged, it is likely that the monitoring of health and safety standards and revision of risk assessments will result in improvements to systems of work which will need to be implemented through revised training of the relevant workforce.

Refresher Training

Refresher training should be provided, if necessary, because skills decline if they are not used regularly. A key example of this is people who deputise for others on occasions, who will probably need more frequent refresher training than those who do the work regularly.

The Groups of People Having Specific Training Needs

- **Supervisors**

In addition to the requirement to train users of work equipment, the employer also has a responsibility to ensure that any employees who supervise or manage the use of work equipment receive adequate health and safety training in how to use the work equipment, the risks associated with such use, and the precautions that need to be taken.

- **Young and Vulnerable Persons**

Training and proper supervision of young people is particularly important because of their relative immaturity and unfamiliarity with the working environment. Induction training is of particular importance since all employees should be competent to use work equipment safely regardless of their age.

There may be national legislation relating to young people which sets out specific requirements for their training. For example, in the UK, the **Management of Health and Safety at Work Regulations 1999 (MHSWR)** contain specific requirements relating to the employment of young people (under the age of 18), requiring employers to assess risks to young people before they start work, taking into account their inexperience, lack of awareness of potential risks and their immaturity.

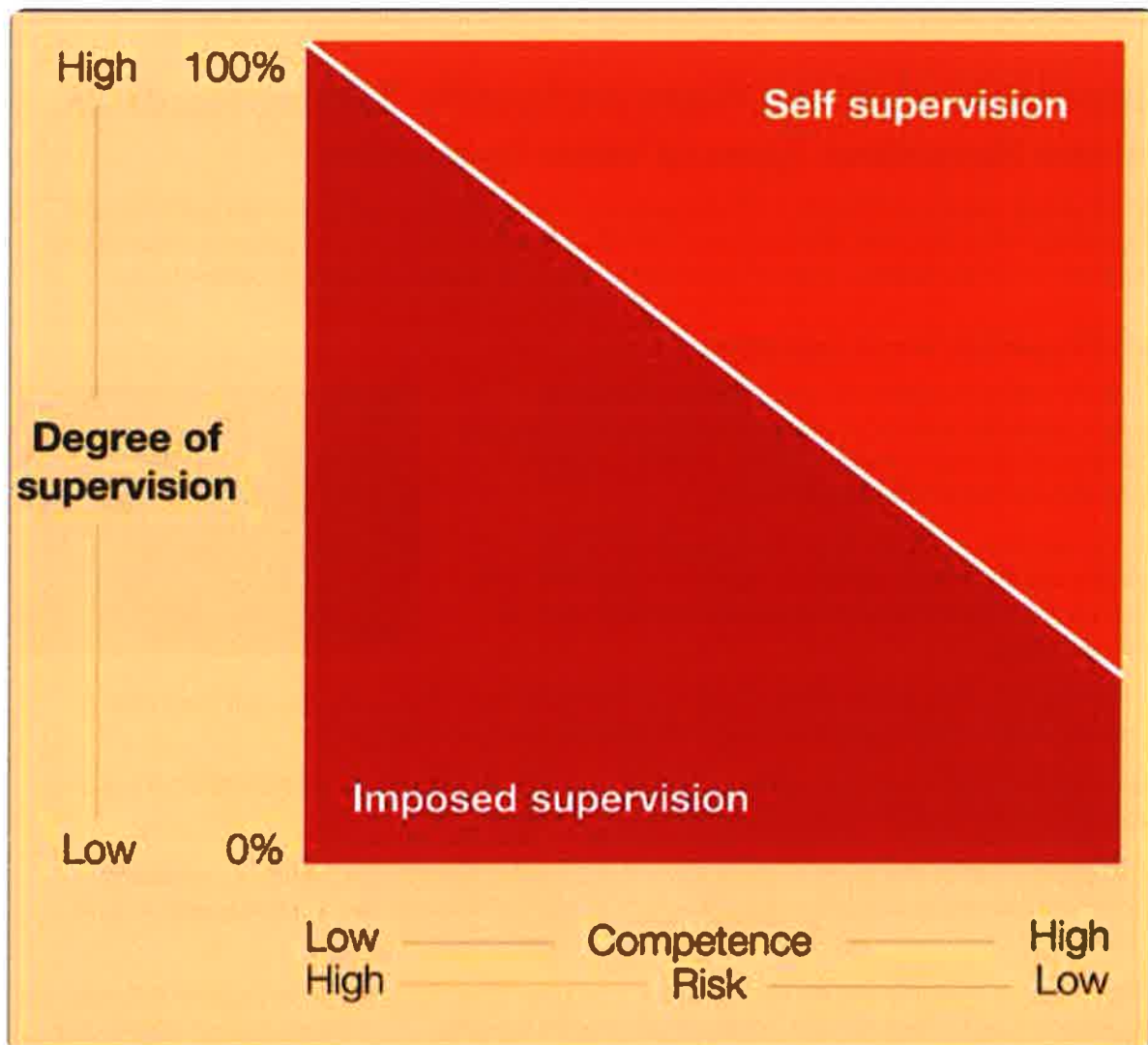


The Need for Training to be Carried Out Upwards in the Organisation

Much emphasis is placed upon the training of workers, however there also needs to be training for managers and directors to ensure that they are competent in fulfilling their health and safety roles and are aware of their responsibilities. Courses such as IOSH Managing Safely provide a good grounding in health and safety for managers and supervisors, whilst the NEBOSH Certificate in Health and Safety Leadership Excellence can provide a more strategic overview for senior managers and directors. Continuing professional development is also required for health and safety professionals seeking chartered membership of organisations, such as IOSH, so it is clear that development shouldn't be limited to the workforce.

The Relationship Between Competence and Supervision

The relationship between competence, external (imposed) supervision, and self-supervision is illustrated in the following diagram taken from the previous version of *HSG65 (Successful Health and Safety Management)*:



Levels of supervision

Source: *HSG65 Successful health and safety management (2nd ed.)*, HSE, 1997 (now superseded)

MORE...

The current version of *HSG65* (third edition, 2013) adopts a Plan, Do, Check, Act approach and makes reference to extensive HSE guidance on competence, which is available to read at:

www.hse.gov.uk/managing/competence.htm

Further information can be found in *HSG65 Managing for Health and Safety*; you can download this from:

www.hse.gov.uk/pubns/priced/hsg65.pdf

In deciding on the appropriate level of supervision for particular tasks, the level will depend on the risks involved, as well as the competence of employees to identify and handle those risks. Consequently, external supervision will be needed if employees are new to a job, undergoing training or doing jobs which present special risks. Some supervision of fully competent individuals will always be needed to ensure that standards are being met consistently.

Circumstances Where There are Specific Training Needs for Certain Hazardous Types of Work Equipment

We have already noted how important it is that all persons who use work equipment receive adequate health and safety training in how to use that work equipment, the risks associated with such use, and the precautions that need to be taken. For certain hazardous types of work equipment there are specific training needs outlined below.

Self-Propelled Work Equipment

As with the training required for all work equipment, the training standard required for operators of self-propelled work equipment should be adequate in ensuring the health and safety of other workers and anyone else who may be affected by the work.

The Approved Code of Practice (ACoP) and guidance to the UK **Provision and Use of Work Equipment Regulations (PUWER), (L22)**, specifically imposes minimum training obligations in relation to driver training and states:

“You should ensure that self-propelled work equipment, including any attachments or towed equipment, is only driven by workers who have received appropriate training in the safe driving of such work equipment.”

There is a further ACoP and guidance for those using lift trucks: **(L117)**. This supports the **PUWER** ACoP in dealing specifically with the training for rider-operated lift trucks and states that:

“Employers should not allow anyone to operate, even on a very occasional basis, lift trucks... who has not satisfactorily completed basic training and testing as described in this ACoP, except for those undergoing such training under adequate supervision.”

L117 also requires those providing the training to have undergone appropriate training in instructional techniques and skills assessment, and to have sufficient industrial experience and knowledge of working environments to put their instruction in context.



Those providing the training are also required:

- to have undergone appropriate training in instructional techniques and skills assessment; and,
- to have sufficient industrial experience and knowledge of working environments to put their instruction in context.

Chainsaws

Chainsaws are potentially dangerous machines which can cause major injury if used by untrained people. Anyone who uses a chainsaw at work should have received adequate training and be competent in using a chainsaw for that type of work. The training should include:

- Dangers arising from the chainsaw itself.
- Dangers arising from the task for which the chainsaw is to be used.
- The precautions to control these dangers, including relevant legal requirements.



Chainsaw

Woodworking Machines

The risks associated with the use of woodworking machinery are high since it relies on high-speed sharp cutters to do the job which, in many cases, are exposed to enable the machining process to take place. Additionally, many machines are still hand-fed.

Machine operators, those who assist in the machining process, and those who set, clean, or maintain woodworking machinery should be provided with training.

All training schemes should include the following elements:

- **General:** instruction in the safety skills and knowledge common to woodworking processes.
- **Machine specific:** practical instruction in the safe operation of the machine, including in particular:
 - The **dangers** arising from the machine and any limitations as to its use.
 - The main **causes of accidents** and relevant **safe working practices**, including the correct use of guards, protection devices, appliances and the use of the manual brake where fitted.
- **Familiarisation:** on-the-job training under close supervision.

Power Presses



Power press

Power presses are among the most dangerous machines used in industry. Amputation or serious injury can result from accidents caused by trapping between the tools of a power press and the guarding mechanisms are subject to continuous wear.

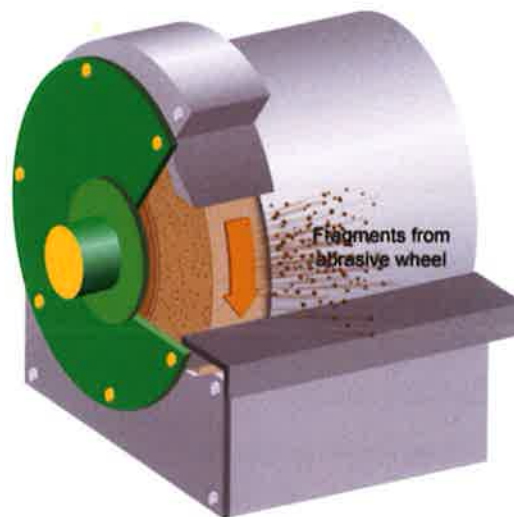
Persons appointed to inspect power presses require training which includes suitable and sufficient practical instruction in relation to each type of power press and guard and/or protection device used.

Press operators are most likely to need training when they are recruited. However, training is also required:

- If the risks to which people are exposed change.
- If new equipment or technology is introduced.
- If the system of work changes.

Training is also required for people who supervise or manage the use of power presses. Such training should include the safe operation of the press and the risks posed to the person carrying out the work (e.g. the press operator, setter or appointed person), as well as the quality of the inspection and test carried out by the appointed person.

Abrasive Wheels



Abrasive wheel

One of the main risks associated with the use of abrasive wheels is injury resulting from breakage. Accident statistics indicate that nearly half of all accidents involving abrasive wheels are due to an unsafe system of work or operator error. Consequently, training is required both in the use and in the mounting of abrasive wheels.

Any training programme should cover at least the following:

- Hazards and risks arising from the use of abrasive wheels and the precautions to be observed.
- Methods of marking abrasive wheels with their type, size and maximum operating speed.
- How to store, handle and transport abrasive wheels.
- How to inspect and test abrasive wheels for damage.
- The functions of all the components used with abrasive wheels such as flanges, blotters, bushes, nuts.
- How to assemble abrasive wheels correctly to make sure they are properly balanced and fit to use.
- The proper method of dressing an abrasive wheel.
- The correct adjustment of the work rests on pedestal or bench grinding machines.
- The use of suitable personal protective equipment, e.g. eye protection.

The Scope of Information Required for the Safe Use and Operation of Work Equipment

The employer has to ensure that all persons who use work equipment, and also those who supervise or manage it, have adequate health and safety information, or if necessary, written instructions on the use of the work equipment.

This information should cover:

- All health and safety aspects arising from the use of the work equipment, including conditions under which the work equipment may be used. For example, some work equipment is designed for use in harsh or wet conditions, the majority is not and this information should be provided to workers tasked with using it.
- Any foreseeable abnormal situations that could arise, such as blockages in feed hoppers or leaks from hydraulic systems, and the action that should be taken in response. This would include provision for breakdown, and maintenance issues should be considered.
- The methods to deal with them.
- Any additional information obtained from experience of using the work equipment.

Consequently, the employer has to make available all relevant health and safety information and, where appropriate, written instructions on the safe use and operation of machinery to their workforce. Workers should have easy access to such information and instructions and be able to understand them.

Such written instructions can include:

- Information provided by manufacturers or suppliers of work equipment, such as instruction sheets or manuals, instruction placards, warning labels and training manuals.
- In-house instructions.
- Instructions from training courses.

The Methods by Which Information and Instructions Regarding the Operation and Use of Work Equipment can be Easily Understood by Those Concerned

Information and instructions should be easily understood by those concerned. Written instructions should be available to the people directly using the work equipment and also other appropriate people such as maintenance staff.

Supervisors and managers also need access to the information and written instructions. The amount of detailed health and safety information they will need to have immediately available for day-to-day running of production lines will vary, but it is important that they know what information is available and where it can be found.



Providing information for the safe use and operation of machinery



Information can be verbal where this is considered sufficient, but where there are complicated or unusual circumstances, the information should be in writing. Other factors that need to be taken into consideration include:

- the degree of skill of the workers involved;
- their experience and training;
- the degree of supervision; and
- the complexity and length of the particular job.

The information and written instructions should:

- Be easy to understand.
- Be in clear English and/or other languages if appropriate for the people using them.
- Be set out in logical order with illustrations where appropriate.
- Use standard symbols where appropriate.

Special arrangements may be needed for employees with language difficulties or with disabilities which could make it difficult for them to receive or understand the information or instructions.

TOPIC FOCUS

Warnings

It may be necessary for work equipment to incorporate warnings or warning devices for reasons of health and safety. If so, these warnings should be unambiguous, easily perceived and easily understood.

Examples include:

- Notices such as:
 - Positive instructions (e.g. 'hard hats must be worn').
 - Prohibitions (e.g. 'not to be operated by people under 18 years').
 - Restrictions (e.g. 'do not heat above 60°C').
- Warning devices which are:
 - Audible (e.g. reversing alarms on construction vehicles).
 - Visible (e.g. a light on a control panel indicating that a fan on a microbiological cabinet has broken down or a blockage has occurred on a particular machine).
 - An indication of imminent danger (e.g. a machine about to start) or development of a fault condition (e.g. pump failure or conveyor blockage indicator on a control panel).
 - The continued presence of a potential hazard (e.g. hotplate or laser on).

The Requirements for Training Lift Truck Operators

Operator training should include three stages:

1. Basic Training

This includes the basic skills and knowledge required for safe operation of the type of lift truck and attachments which the driver will use. This should be training off-the-job.

2. Specific Job Training

This should cover knowledge of the workplace, any special requirements of the work to be undertaken and the use of specific attachments. Again it should be training off-the-job and is often combined or integrated with basic training. The training should include controls of the lift truck to be used; routine inspections of the truck, which should be carried out by the operator; use of the truck in various locations such as gangways, loading bays, slopes and rough terrain; problems of working in poor weather; site rules such as one-way systems, speed limits, work near overhead lines and excavations; and work to be undertaken, such as loading particular vehicles and using working platforms on forks.

3. Familiarisation Training

This is training on-the-job where the driver operates the truck using the skills learnt, under close supervision and under normal working conditions.



MORE...

Further information and guidance on lift trucks can be obtained from the following HSE publications:

INDG457 Use lift trucks safely: Advice for operators, which covers operating, people, loads and slopes, and is available at:

www.hse.gov.uk/pubns/indg457.pdf

L117 Rider-operated lift trucks: Operator training and safe use: Approved Code of Practice and guidance, which includes information on legal requirements, operator training, lift-truck features, safe use, how to protect pedestrians and guidance on maintenance and thorough examination, and is available at:

www.hse.gov.uk/pubns/priced/l117.pdf

INDG462 Lift-truck training: Advice for employers, which explains who should be trained, who to consult, training content, authorisation and assessment, refresher and conversion training, record keeping and how to choose an instructor, and is available at:

www.hse.gov.uk/pubns/indg462.pdf

STUDY QUESTIONS

1. Explain the difference between competency and training.
2. Outline the main circumstances when training is likely to be required.
3. Explain the relationship between competence, external (imposed) and self-supervision.
4. Explain why woodworking machine operators require specific training and what such training should include.
5. The employer has to ensure that all persons who use machinery, and also those who supervise or manage it, have adequate health and safety information, or if necessary, written instructions on the use of the work equipment. What should this information cover?
6. Outline, with examples, the types of warnings or warning devices that might be needed for health and safety purposes in relation to work equipment.

(Suggested Answers are at the end.)

High Reliability Organisations (HRO)

IN THIS SECTION...

- Recognise the characteristics of and what can be learnt from the High Reliability Organisations (HROs).

What is a HRO?

The concept of high reliability organisations (HRO) has been around for some time. The HSE report *High Reliability Organisations: A Review of the Literature (RR899)* sought to evaluate the existing literature around HROs, and defined HROs in many ways, such as:

- They are hyper complex systems, comprising a number of interdependent processes and systems which are tightly coupled together.
- HROs have a potential for catastrophic consequences in the event that there is a failure with far reaching consequences.
- Whilst the system components are interdependent, the interaction between the system components is unpredictable and/or invisible.

Containment of unexpected events:

- Deference to expertise
- Redundancy
- Oscillation between hierarchical and flat/decentralised structures
- Training and competence
- Procedures for 'unexpected' events

Just culture:

- Encouragement to report without fear of blame
- Individual accountability
- Ability to abandon work on safety grounds
- Open discussion of errors

Problem anticipation:

- Preoccupation with failure
- Reluctance to simplify
- Sensitivity to operations

Learning Orientation:

- Continuous technical training
- Open communication
- Root Cause Analysis of accidents/incidents
- Procedures reviewed in line with knowledge base

Definition:

- Tight coupling
- Catastrophic consequences
- Interactive complexity

Mindful Leadership:

- Bottom-up communication of bad news
- Proactive audits
- Management by exception
- Safety-production balance
- Engagement with front-line staff
- Investment of resources



MORE...

The HSE's *High Reliability Organisations: A Review of the Literature* report can be obtained in full from:

www.hse.gov.uk/research/rrpdf/rr899.pdf

Characteristics of a HRO

RR899 identifies the following characteristics of an HRO:

Containment of Unexpected Events

HROs are able to contain unexpected events through:

- Using people with expertise and skill to make safety critical decisions regardless of rank in emergency situations. This may require the movement between traditional, hierarchical structures and a flatter structure in emergencies.
- Having back-up systems (redundancy) which can take over in the event of a failure and the ability to cross check critical decisions.
- Investing in the training and competence of staff who could be involved in the decision making.
- Developing well-defined procedures for unexpected events.

Effective Problem Anticipation

- HROs are seen as being preoccupied with failure, in that they take even minor (or seemingly trivial) warnings as an indication that a problem could be occurring.
- When problems arise, the organisation refuses to simplify and rely upon “operator error” as the cause, but seeks to find the true nature of the failure.
- Being sensitive to the organisation’s operations by engaging effectively with front-line staff.

Just Culture

We have already explored the concept of “just culture” in Learning Outcome 2, but RR899 identifies:

- In a just culture organisation, people can report incidents without fear of blame.
- People feel personally accountable for their safety and the safety performance of the organisation.
- Staff are empowered to stop work on safety grounds if they feel it is appropriate.
- Errors are discussed openly and there is an effective follow up of corrective actions as a result of safety incidents.



Learning Orientation Through Continuous Technical Training

- There is a continual drive to carry out technical training.
- There is open and effective communication of the findings of safety investigations, e.g. following on from incidents.
- The organisation carries out rigorous root cause analysis after any accidents or incidents.
- Updating procedures to reflect the knowledge of the organisation.

Mindful Leadership

- Ensuring that any messages which could be perceived as “bad news” are communicated to the workforce in a “bottom up” manner.
- Proactively engaging in audits to test the system, especially after incidents.
- Managing by exception – allowing teams to manage situations themselves, and only stepping in if action is needed. In this approach, managers make strategic decisions but leave the operational management to their teams.
- Engaging with the workforce and front-line staff through site visits.
- Investing in safety resources and managing the balance between productivity and safety.

Lessons That Other Organisations Can Learn From HROs

There are some elements of the HRO philosophy which can be utilised in other organisations, however the practices can't be considered appropriate in all situations. Some studies have suggested that principles such as redundancy can result in complacency in mainstream organisations, which could in fact be detrimental. There are fundamental questions over the transferability of some processes to mainstream organisations. More significantly however, there may be questions as to the financial benefit (cost vs. reward) of adopting such philosophies, especially for smaller, lower risk organisations. Whilst perhaps seen as desirable, it may unfortunately not make “sense” in all circumstances to adopt the HRO principles wholeheartedly, though elements, of course, could be highly beneficial.

STUDY QUESTIONS

7. What are the five characteristics of HROs?
8. What do we mean by ‘effective problem anticipation’?

(Suggested Answers are at the end.)



Summary

3.1: Competence, Training, Information and Supervision

In this section, we have:

- Defined training and competence and considered the circumstances where training will be required:
 - Induction.
 - Changes in work activities.
 - Introduction of new technology or equipment.
 - Changes in systems of work.
 - Refresher training.
- Considered the groups of people in a workplace who have specific training needs, in particular supervisors and young and vulnerable people.
- Identified the relationship between competence and supervision (external and self-supervision).
- Outlined the circumstances where specific training needs are required for hazardous work equipment.
- Examined the information required for the safe use and operation of work equipment, which should cover health and safety aspects arising from the use of the work equipment, any limitations on its uses, difficulties that could arise and the methods to deal with them.
- Noted that information and instructions regarding the operation and use of work equipment must be readily comprehensible to those concerned.
- Outlined the requirements for lifting truck operators.

3.2: High Reliability Organisations

In this section, we have looked at:

The HSE defined HROs in many ways, such as:

- They are hyper complex systems, comprising a number of interdependent processes and systems which are tightly coupled together.
- HROs have a potential for catastrophic consequences in the event that there is a failure with far reaching consequences.
- Whilst the system components are interdependent, the interaction between the system components is unpredictable and/or invisible.
- The main characteristics of HROs are:
 - Containment of unexpected events.
 - Effective problem anticipations.
 - Just Culture.
 - Learning through continuous technical training.
 - Mindful leadership.
- The lessons that other organisations can learn from HROs.

Suggested Answers - Part 1



No Peeking!

Once you have worked your way through the study questions in this book, use the suggested answers on the following pages to find out where you went wrong (and what you got right), and as a resource to improve your knowledge and question-answering technique.



Learning Outcome 1

Question 1

The main limitation of using legislation as a means of ensuring acceptable standards is that there is little incentive to go beyond minimum legal requirements. The government has to employ enforcement officers and introduce sanctions which may be imposed by the courts.

Question 2

Prescriptive legislation has clearly defined requirements which are more easily understood by the dutyholder and enforced by the regulator. It does not need a higher level of expertise to understand what action is required, and provides a uniform standard to be met by all dutyholders.

However, it is inflexible and so, depending on the circumstances, may lead to an excessively high or low standard. In addition, it does not take account of the circumstances of the dutyholder and may require frequent revision to allow for advances in knowledge and technology.

Goal-setting legislation allows more flexibility in compliance because it is related to the actual risk present in the individual workplace. It is less likely to need frequent revision and can apply to a much wider range of workplaces.

It is, however, much more difficult to enforce because what is 'adequate' or 'reasonably practicable' are much more subjective and so open to argument, possibly requiring the intervention of a court to provide a judicial interpretation. Dutyholders will also need a higher level of competence in order to interpret such requirements.

Question 3

The two main no-fault compensation schemes are **employers** and **government** schemes. In employer schemes, employers pay premiums to insurance companies who pay compensation to the injured worker. In government schemes, the government or a government agency provides the benefits.

Question 4

The two categories of compensatory damages are **special** and **general** damages.

Special damages can be relatively easily quantified because they relate to known expenditure up until the trial. They include:

- Loss of earnings due to the accident or ill health before the trial.
- Legal costs.
- Medical costs to date.
- Building costs, if property has had to be adapted to meet the needs of the injured person.
- Necessary travel costs associated with the case.

General damages include future expenditure and issues which cannot be precisely quantified. They include:

- Loss of future earnings as a result of the incapacity.
- Future medical costs.
- Pain and suffering before and after the trial.
- Loss of quality of life (e.g. loss of mobility, inability to engage in sports which had been pursued before the loss).
- Loss of future opportunity (e.g. reduced likelihood of being able to secure suitable employment).



Question 5

Punitive damages are awarded to punish and deter the defendant and other similar persons from such conduct that harmed the claimant. They are awarded by reference to the defendant's behaviour and aim to deter similar conduct in the future and to signify disapproval.

Question 6

Enforcement ensures that dutyholders:

- Deal immediately with serious risks.
- Comply with the law.
- Are held to account if they fail in their responsibilities.

Question 7

Consistency is not a simple matter due to factors including:

- The degree of risk.
- The attitude and competence of management.
- History of incidents.
- Previous enforcement action.

Question 8

The main role of the ILO is to promote rights at work, encourage decent employment opportunities including good health and safety standards, enhance social protection and strengthen dialogue in handling work-related issues.

Question 9

A **convention** is an agreement in international law which has to be ratified by member states. A **recommendation**, as the name suggests, does not require ratification by member states.

Question 10

An ILO **code of practice** contains practical recommendations intended for all those with a responsibility for occupational safety and health in both the public and private sectors. A code of practice is not a legally binding instrument and is not intended to replace the provisions of national laws or regulations, or accepted standards.



Question 11

Roles and responsibilities of **national governments** imposed by **Occupational Safety and Health Recommendation (R164) 1984** are:

- “(a) issue or approve regulations, codes of practice.... on occupational safety and health and the working environment, account being taken of the links ... between safety and health, ... and hours of work and rest breaks ...;*
- (b) review legislative enactments concerning occupational safety and health and the working environment,... in the light of experience and advances in science and technology;*
- (c) undertake or promote studies and research to identify hazards and find means of overcoming them;*
- (d) provide information and advice, in an appropriate manner, to employers and workers and promote or facilitate co-operation between them and their organisations, with a view to eliminating hazards or reducing them as far as practicable; where appropriate, a special training programme for migrant workers in their mother tongue should be provided;*
- (e) provide specific measures to prevent catastrophes, and to co-ordinate and make coherent the actions to be taken at different levels, particularly in industrial zones where undertakings with high potential risks for workers and the surrounding population are situated;*
- (f) secure good liaison with the International Labour Occupational Safety and Health Hazard Alert System set up within the framework of the International Labour Organisation;*
- (g) provide appropriate measures for handicapped workers.”*

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Question 12

Roles and responsibilities of **enterprises** imposed by **Occupational Safety and Health Recommendation (R164) 1981** are:

- “(a) to provide and maintain workplaces, machinery and equipment, and use work methods, which are as safe and without risk to health as is reasonably practicable;*
- (b) to give necessary instructions and training, taking account of the functions and capacities of different categories of workers;*
- (c) to provide adequate supervision of work, of work practices and of application and use of occupational safety and health measures;*
- (d) to institute organisational arrangements regarding occupational safety and health and the working environment adapted to the size of the undertaking and the nature of its activities;*
- (e) to provide, without any cost to the worker, adequate personal protective clothing and equipment which are reasonably necessary when hazards cannot be otherwise prevented or controlled;*
- (f) to ensure that work organisation, particularly with respect to hours of work and rest breaks, does not adversely affect occupational safety and health;*
- (g) to take all reasonably practicable measures with a view to eliminating excessive physical and mental fatigue;*
- (h) to undertake studies and research or otherwise keep abreast of the scientific and technical knowledge necessary to comply with the foregoing clauses.”*

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Question 13

Roles and responsibilities of **workers** imposed by **Occupational Safety and Health Recommendation (R164) 1981** are:

- “(a) take reasonable care for their own safety and that of other persons who may be affected by their acts or omissions at work;*
- (b) comply with instructions given for their own safety and health and those of others and with safety and health procedures;*
- (c) use safety devices and protective equipment correctly and do not render them inoperative;*
- (d) report forthwith to their immediate supervisor any situation which they have reason to believe could present a hazard and which they cannot themselves correct;*
- (e) report any accident or injury to health which arises in the course of or in connection with work.”*

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Question 14

Employers' bodies represent the interests of employers. In the UK the main body is the Confederation of British Industry (CBI). The CBI helps create and sustain the conditions in which businesses in the UK can compete and prosper for the benefit of all. The CBI is the main lobbying organisation for UK business on national and international issues, including health and safety practices and standards.

Question 15

A trade union is an organisation of workers who have formed together to achieve common goals in key areas such as wages, hours and working conditions. The trade union negotiates with the employer on behalf of its members. This may include the negotiation of workplace safety and health issues and policies. In the UK, unions may appoint safety representatives from among the workers who may investigate accidents, conduct inspections and sit on a safety committee.

Question 16

The media can influence health and safety by:

- Making health and safety guidance easily accessible with minimal cost. Agencies such as OSHA (USA) and the HSE (UK) produce guidance for all categories of dutyholders in all types of employment. This is available in hard copy and more commonly in electronic format that can be downloaded. This allows duty holders who have limited expertise to access relevant information and so comply with legal requirements.
- Publicising good and bad health and safety performance (e.g. TV and radio may publicise major accidents, prosecutions and public inquiries). Major disasters may be publicly discussed not only in the country in which they occurred but internationally. Incidents with lesser consequences may be publicised within the area in which they occurred. Such publicity increases the awareness of occupational health and safety issues and reminds duty holders of the possible consequences of failing to pay attention to these issues.
- Assisting in educating members of the professional body and promoting good health and safety standards by publishing professional journals (e.g. Institution of Occupational Safety and Health (UK)).
- Enabling anyone with an internet connection access to a huge range of information (good and bad) which would otherwise be much less accessible.



Question 17

In the UK a number of **good neighbour schemes** have been established to encourage larger organisations to help smaller businesses and contractors with health and safety expertise. Small businesses do not have access to the same health and safety expertise, so if a large organisation can provide advice to a smaller one, then the smaller business will benefit and the larger organisation will be able to demonstrate its public responsibility.

Schemes have also been established between organisations of similar size. They might involve sharing expertise and equipment such as a noise meter. It is much less costly to share such resources and all members of the scheme will benefit.

Question 18

Self-regulation is the process whereby an organisation monitors its own adherence to health and safety standards, rather than having an outside agency, such as a governmental body, monitoring and enforcing them. The benefit to the organisation is that it can set and maintain its own standards without external interference. If problems arise, it can more easily keep its own internal affairs private. It also avoids the significant national expense of establishing an enforcement agency.

Self-regulation of health and safety within a legal framework was one of the recommendations of the Robens Committee which was established in 1970 in the UK to *“review the provision made for the safety and health of persons in the course of their employment and to consider whether any changes are needed...”*.

Question 19

The functions of the board of an organisation which ensure the effective governance of health and safety include:

- A demonstration of commitment to occupational health and safety and an appreciation that it is as important as other business objectives.
- Health and safety is reviewed at board level.
- Those in the organisation at all levels have access to and receive competent advice.
- All staff including board members are trained and competent in their health and safety responsibilities.
- The workforce, in particular health and safety representatives, are adequately consulted and that their concerns reach the right level within the organisation including, where necessary, the board.
- Systems are in place to make sure that health and safety risks are assessed and suitable control measures introduced and maintained.
- There is an awareness of what activities take place in the organisation, including those of contractors.
- Regular information is received regarding matters such as accident reports and cases of work-related ill health.
- Targets are set which allow the organisation to improve standards and to benchmark its performance against others within the same business sector.
- Changes in working arrangements that have significant implications are brought to the attention of the board.



Question 20

The legal reasons for ensuring that third parties are covered by health and safety management systems are that **C155 (Article 17)** and accompanying **R164 (Article 11)** state:

“Whenever two or more undertakings engage in activities simultaneously at one workplace, they should collaborate in applying the provisions regarding occupational safety and health and the working environment, without prejudice to the responsibility of each undertaking for the health and safety of its employees. In appropriate cases, the competent authority or authorities should prescribe general procedures for this collaboration.”

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The implication is that account is taken of third parties who happen to be working on the same premises. This invariably will involve the exchange of information (on hazards, etc.) as well as the co-ordination of emergency arrangements and sharing of procedures.

Question 21

There are two main economic implications of neglect of OHS in the workplace, which are:

- Accidents resulting from poor health and safety management result in huge financial losses to everyone concerned. Poor health and safety management is often itself caused by a lack of economic resources available for health and safety purposes both at national and workplace levels.
- It is not difficult to compare the costs of preventing accidents with the costs arising from them (compensation, lost production, increased insurance premiums, overtime, legal fees, fines, etc.). Prevention of accidents and ill health is an investment which attracts enormous dividends both for the individual employer and the national economy as a whole.

Question 22

The role of the loss adjuster is to assess the claim initially and confirm that the claim is, in fact, covered by the policy. Their role throughout the process is to confirm the amount that should be paid in settlement.



Learning Outcome 2

Question 1

The **formal** structure is represented by the company organisation chart, the distribution of legitimate authority, written management rules and procedures, job descriptions, etc. The **informal** structure is represented by individual and group behaviour.

Question 2

Internal influences include financial status, production targets, trades unions, and organisational goals and safety culture.

Question 3

External influences include the bodies that are involved in framing legislation and those agencies responsible for its enforcement. Other organisations that may exert an influence on health and safety in the workplace include the courts through their decisions, trade unions by promoting the health and safety of their members, insurance companies by influencing company control measures, professional organisations and various pressure and campaign groups. Public opinion also has a significant influence.

Question 4

(a) **Transformational:**

- People will follow a person who inspires them.
- A person with vision and passion can achieve great things.
- The way to get things done is by injecting enthusiasm and energy.

(b) **Transactional:**

- People are motivated by reward and punishment.
- Social systems work best with a clear chain of command.
- When people have agreed to do a job, a part of the deal is that they pass all authority to their manager.
- The prime purpose of a subordinate is to do what their manager tells them to do.

(c) **Resonant:**

- Leading with the understanding of the emotional state of the organisation.
- If the leaders are positive and enthusiastic this will be amplified through the business.
- There are four types of resonant leadership: visionary, coaching, affiliative, and democratic.

Question 5

Article 20 of Convention **C155** states that co-operation between management and workers and/or their representatives within the undertaking shall be an essential element of organisational and other measures taken in pursuance of **Articles 16** to **19** of this Convention.



Question 6

The four stages of consultation as outlined by the HSE publication *HSG263* are:

1. Get started: Prepare
2. Get organised: Plan
3. Get it done: consult and involve
4. Get it right: keep improving

Question 7

The external bodies that health and safety professionals may need to liaise with are (any four of the following):

- Local government enforcement agencies.
- Architects and consultants.
- The fire department.
- Contractors.
- Insurance companies.
- Clients and customers.
- The public.
- Equipment suppliers.
- The media.
- The police.
- Medical professionals.
- Hospital staff.

Question 8

A definition of 'safety culture' should centre on a description of the attitudes, values and beliefs which members of an organisation hold in relation to health and safety, and which, when taken together, produce an organisational culture that can be positive or negative.

Question 9

The most common way to assess safety climate is by using a tool which includes a questionnaire survey asking workers the extent to which they agree or disagree with a number of statements which reflect the management of health and safety.

Question 10

Management commitment can be demonstrated by (any three from):

- Managers being seen and involved with the work and correcting health and safety deficiencies.
- Providing resources to carry out jobs safely.
- Ensuring that all personnel are competent.
- Enforcing the company safety rules, and complying with them personally.
- Managers matching their actions to their words.



Question 11

A positive health and safety culture is characterised by:

- Management commitment and leadership.
- High business profile to health and safety.
- Provision of information.
- Involvement and consultation.
- Training.
- Promotion of ownership.
- Setting and meeting targets.

Question 12

The following are needed to effect cultural change:

- Good planning and communication.
- Strong leadership.
- A step-by-step approach.
- Action to promote change.
- Strong worker engagement.
- Ownership at all levels.
- Training and performance measurements.
- Feedback.
- Changes to the working environment.
- Building trust in the workforce.

Question 13

The steps of a behavioural change programme relating to safety are:

Step 1: Identify the specific observable behaviour that needs changing, e.g. to increase the wearing of hearing protectors in a high-noise environment.

Step 2: Measure the level of the desired behaviour by observation.

Step 3: Identify the cues (or triggers) that cause the behaviour and the consequences (or pay offs) (good and bad) that may result from the behaviour.

Step 4: Train workers to observe and record the safety critical behaviour.

Step 5: Praise/reward safe behaviour and challenge unsafe behaviour.

Step 6: Feedback safe/unsafe behaviour levels regularly to the workforce.



Question 14

Rather than centralised control, 'Safety II' looks to devolve responsibility for safety to the teams, by decentralising control and giving them some autonomy over how the safety performance is improved. In 'Safety II', people are the solution not the problem.

Question 15

The four varieties of work are:

1. Work as imagined.
2. Work as described.
3. Work as disclosed.
4. Work as done.

Question 16

Human sensory receptors react to danger in the following ways:

- **Sight** – observation of a warning sign.
- **Hearing** – sound of an audible alarm.
- **Taste** – recognition of a toxic substance in food.
- **Smell** – identification of a hazardous gas release.
- **Touch** – identification of a hot surface.

Question 17

Perceptual set: sometimes called a 'mindset'. A person has a problem and immediately perceives not only the problem, but the answer. They then set about solving the problem as they have perceived it. Further evidence may become available, which shows that their original perception was faulty, but they fail to see alternative causes and solutions. This is a basic cause or factor in many accidents and disasters.

Perceptual distortion: the perception of a hazard may be faulty because it gets distorted. Things that are to someone's advantage always tend to seem more right than those that are to their disadvantage. Management generally tend to have a different perception of hazard from that of workers, and when it affects work rates, physical effort or bonus payments, the worker also suffers from perceptual distortion.

Question 18

The three levels of behaviour in Rasmussen's model are:

- **Skill-based** - the person carries out the operation in automatic mode. Errors occur if there are problems such as machine variation or environmental changes.
- **Rule-based** - the operator is multi-skilled and has a wide selection of well-tried routines which can be used. Errors occur if the wrong alternative is selected or if there is some error in remembering or performing a routine.
- **Knowledge-based** - a person copes with an unknown situation where there are no tried rules or routines. Trial and error is the only method.



Question 19

Ergonomics is the study of the relationship between workers and their environment, ensuring a good 'fit' between people and the things they use. Essentially, it involves 'fitting the task to the worker' rather than 'fitting the worker to the task'. The order of operations and work practices can be modified so that each person is working to full efficiency. Poorly designed work equipment and unsafe practices may result in injury and occupational ill health. These may include:

- Equipment not suited to body size.
- Operator not able to readily see and hear all that they need to.
- Lack of understanding of the information that is presented to the employee.
- Equipment or system causing discomfort if used for any length of time.

Question 20

The following features are present in an ergonomically designed crane cab control system:

- The controls are within easy reach of the driver and are moved in a straight line to allow ease and delicacy of control.
- The seat is adjustable so that the driver has a good view of the operations.
- The environment of the cab protects the driver from dust and fumes, etc.

Question 21

Shift-work can be very demanding on an individual and can affect their performance in the following ways:

- **Fatigue and stress:** poorer performance on tasks requiring attention, decision-making or high levels of skill.
- **Sleep loss and sleep debt:** lower levels of alertness, and reduced levels of productivity and attention.
- **Health problems:** asthma, allergic reactions and respiratory problems tend to be worse at night, and so it is likely that performance will be affected where an individual's health is affected.
- **Social life/family life:** work performance may be affected if the individual is unhappy at home due to the constraints of shift work.
- **Natural circadian rhythm:** when working nights, the body still reduces body temperature in the early hours of the morning, reduces blood pressure and stops digestion which can lead to an individual feeling sleepy and less alert.

Question 22

Formal groups are established to achieve set goals, aims and objectives. They have clearly defined rules, structures and channels of communication.

Informal groups superimpose on the organisation an informal structure of communication links and functional working groups. These cross all the barriers of management status and can be based on family relationships, out-of-work activities, experience or expertise.

Question 23

There were many human errors that contributed to the severity of the Piper Alpha incident, including poor hazard analysis, deficiencies in the permit-to-work system, inadequate training in the use of permits and emergency response procedures, and a perceived lack of command by the offshore installation manager on the Tartan rig.



Question 24

Ways that employees could be motivated include:

- **Workplace incentive schemes:** encourage employees to work harder in order to receive a payment or benefit.
- **Reward schemes:** offer a reward for improvement or reaching a target in a particular area.
- **Job satisfaction:** some people only require job satisfaction to be motivated. Job satisfaction is very individual to each person.
- **Appraisal schemes:** a formal means of placing value on achievement or effort. It is generally carried out on an annual basis and the results may be used to determine the level of a pay rise or a promotion.

Learning Outcome 3

Question 1

Competence can be defined as the ability to undertake responsibilities and perform activities to a recognised standard on a regular basis. It is a combination of skills, experience and knowledge.

Training is an important component of establishing competence but is not sufficient on its own. For example, consolidation of knowledge and skills through training is a key part of developing competence.

Question 2

Circumstances when training is likely to be required include:

- On joining an organisation (induction).
- On promotion (particularly into a managerial or supervisory role).
- Changes in or taking on new work activities.
- If the risks to which people are exposed change due to a change in their working tasks.
- Introduction of new technology or new equipment into the workplace.
- Changes in systems of work.
- Refresher training for routine or specialist roles.

Question 3

Where an activity is carried out by highly competent staff and the degree of risk is low, then self-supervision will be adequate. However, where competence levels are low and the work activity involves a significant level of risk, then close supervision will be required to ensure that the work is carried out safely. Some supervision of fully competent individuals will always be needed to ensure that standards are being met consistently.

Question 4

Woodworking machine operators require specific training because the risks associated with the use of woodworking machinery are high. The machines rely on high-speed sharp cutters to do the job and in many cases those cutters are exposed to enable the machining process to take place. Additionally, many machines are still hand-fed.

All training schemes should include the following elements:

- General - instruction in the safety skills and knowledge common to woodworking processes.
- Machine-specific - practical instruction in the safe operation of the machine, including in particular:
 - The dangers arising from the machine and any limitations as to its use.
 - The main causes of accidents and relevant safe working practices, including the correct use of guards, protection devices, appliances and the use of the manual brake where fitted.
- Familiarisation - on-the-job training under close supervision.

Question 5

This information provided by the employer for the work equipment should cover:

- All health and safety aspects arising from the use of the work equipment.
- Any limitations on these uses.
- Any foreseeable difficulties that could arise.
- The methods to deal with them.
- Any additional information obtained from experience of using the work equipment.

Question 6

Types of warnings or warning devices that might be needed in relation to work equipment include:

- Notices such as:
 - Positive instructions (e.g. 'hard hats must be worn').
 - Prohibitions (e.g. 'not to be operated by people under 18 years').
 - Restrictions (e.g. 'do not heat above 60°C').
- Warning devices which are:
 - Audible (e.g. reversing alarms on construction vehicles).
 - Visible (e.g. a light on a control panel that a fan on a microbiological cabinet has broken down or a blockage has occurred on a particular machine).
 - An indication of imminent danger (e.g. a machine about to start) or development of a fault condition (e.g. pump failure or conveyor blockage indicator on a control panel).
 - The continued presence of a potential hazard (e.g. hotplate or laser on).

Question 7

The five characteristics of HROs are:

1. Containment of unexpected events.
2. Effective problem anticipations.
3. Just culture.
4. Learning through continuous technical training.
5. Mindful leadership.

Question 8

By 'effective problem anticipation' we mean taking even minor (or seemingly trivial) warnings as an indication that a problem could be occurring and by engaging with front line staff to understand the organisation's operation. When problems do occur, the organisation doesn't accept 'operator error' as a cause but seeks to find out why that occurred.

This study text provides learners with all the information they need to successfully complete Unit ID1: Know - Workplace Health and Safety Principles (INT) of the International Diploma for Occupational Health and Safety Management Professionals.

Written by health and safety experts in collaboration with education professionals, it follows the structure and content of the NEBOSH syllabus. Each section covers in full the Learning Objectives required by the syllabus, using plain language and practical examples to reinforce understanding.

This study text is updated regularly to reflect changes to legislation, syllabus amendments, and reviewing learner performance in the NEBOSH examination.

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