

# Health and Safety

## Key concepts and terms

- Frequency rate
- Health and safety audit
- Incidence rate
- Occupational hygiene
- Risk
- Severity rate
- Hazard
- Health and safety inspection
- Occupational health programme
- Occupational medicine
- Risk assessment

## Learning outcomes

On completing this chapter you should be able to define these key concepts. You should also know about:

- Managing health and safety at work
- Risk assessments
- Health and safety inspections
- Occupational health programmes
- Communicating the need for better health and safety practices
- Organizing health and safety
- Health and safety policies
- Health and safety audits
- Accident prevention
- Measuring health and safety performance
- Health and safety training

## Introduction

Health and safety policies and programmes are concerned with protecting employees – and other people affected by what the company produces and does – against the hazards arising from their employment or their links with the company.

Safety programmes deal with the prevention of accidents and with minimizing the resulting loss and damage to people and property. They relate more to systems of work than the working environment, but both health and safety programmes are concerned with protection against hazards, and their aims and methods are clearly interlinked.

Occupational health programmes deal with the prevention of ill-health arising from working conditions. They consist of two elements: 1) occupational medicine, which is a specialized branch of preventive medicine concerned with the diagnosis and prevention of health hazards at work and dealing with any ill-health or stress which has occurred in spite of preventive actions, and 2) occupational hygiene, which is the province of the chemist and the engineer or ergonomist engaged in the measurement and control of environmental hazards.

## Managing health and safety at work

It is estimated by the Royal Society for the Prevention of Accidents (2008) that every year in the UK we face the challenge of reducing about 350 fatalities at work, over 36 million days lost due to work-related accidents and ill-health. It has also been estimated by the Health and Safety Executive (2008) that, apart from the pain and misery caused to those directly or indirectly concerned, the total cost to British employers of work-related injury and illness is £6.5 billion a year.

The achievement of a healthy and safe place of work and the elimination to the maximum extent possible of hazards to health and safety is the responsibility of everyone employed in an organization, as well as those working there under contract. But the onus is on management to achieve and indeed go beyond the high standard in health and safety matters required by the legislation – the Health and Safety at Work, etc Act, 1974 and the various regulations laid down in the Codes of Practice.

The importance of healthy and safe policies and practices is, sadly, often underestimated by those concerned with managing businesses and by individual managers within those businesses. But it cannot be emphasized too strongly that the prevention of accidents and elimination of health and safety hazards is a prime responsibility of management and managers in order to minimize suffering and loss.

The achievement of the highest standards of health and safety in the workplace is the moral as well as the legal responsibility of employers – this is the overriding reason. Close and continuous attention to health and safety is important because ill-health and injuries caused by the

system of work or working conditions cause suffering and loss to individuals and their dependants. In addition, accidents and absences through ill-health or injuries result in losses and damage for the organization. This 'business' reason is much, much less significant than the 'human' reasons, but it is still a consideration, albeit a tangential one.

## Health and safety policies

Written health and safety policies are required to demonstrate that top management is concerned about the protection of the organization's employees from hazards at work and to indicate how this protection will be provided. They are, therefore, first a declaration of intent; second, a definition of the means by which that intent will be realized, and third, a statement of the guidelines that should be followed by everyone concerned – which means all employees – in implementing the policy.

The policy statement should consist of three parts:

1. the general policy statement;
2. the description of the organization for health and safety;
3. details of arrangements for implementing the policy.

### The general policy statement

The general policy statement should be a declaration of the intention of the employer to safeguard the health and safety of employees. It should emphasize these fundamental points:

- that the safety of employees and the public is of paramount importance;
- that safety takes precedence over expediency;
- that every effort will be made to involve all managers, team leaders and employees in the development and implementation of health and safety procedures;
- that health and safety legislation will be complied with in the spirit as well as the letter of the law.

### Organization

This section of the policy statement should describe the health and safety organization of the business through which high standards are set and achieved by people at all levels in the organization.

This statement should underline the ultimate responsibility of top management for the health and safety performance of the organization. It should then indicate how key

management personnel are held accountable for performance in their areas. The role of safety representatives and safety committees should be defined, and the duties of specialists such as the safety adviser and the medical officer should be summarized.

## Conducting risk assessments

### What is a risk assessment?

Risk assessments are concerned with the identification of hazards and the analysis of the risks attached to them. A hazard is anything that can cause harm (working on roofs, lifting heavy objects, chemicals, electricity, etc). A risk is the chance, large or small, of harm being actually done by the hazard.

The purpose of risk assessments is to initiate preventive action. They enable control measures to be devised on the basis of an understanding of the relative importance of risks. Risk assessments must be recorded if there are five or more employees.

There are two types of risk assessment. The first is quantitative risk assessment, which produces an objective probability estimate based upon risk information that is immediately applicable to the circumstances in which the risk occurs. The second is qualitative risk assessment, which is more subjective and is based on judgement backed by generalized data. Qualitative risk assessment is preferable if the specific data are available. Qualitative risk assessment may be acceptable if there is little or no specific data as long as the assessment is made systematically on the basis of an analysis of working conditions and hazards and informed judgement of the likelihood of harm actually being done.

Risk assessments seek to identify typical hazards – activities where accidents happen, such as those set out below.

#### *Typical hazards – activities where accidents happen*

- Receipt of raw materials, eg lifting, carrying.
- Stacking and storage, eg falling materials.
- Movement of people and materials, eg falls, collisions.
- Processing of raw materials, eg exposure to toxic substances.
- Maintenance of buildings, eg roof work, gutter cleaning.
- Maintenance of plant and machinery, eg lifting tackle, installation of equipment.

- Using electricity, eg using hand tools, extension leads.
- Operating machines, eg operating without sufficient clearance, or at an unsafe speed; not using safety devices.
- Failure to wear protective equipment, eg hats, boots, clothing.
- Distribution of products or materials, eg movement of vehicles.
- Dealing with emergencies, eg spillages, fires, explosions.
- Health hazards arising from the use of equipment or methods of working, eg VDUs, repetitive strain injuries from badly designed work stations or working practices.

Most accidents are caused by a few key activities. Assessors should concentrate initially on those that could cause serious harm. Operations such as roof work, maintenance and transport movement cause far more deaths and injuries each year than many mainstream activities.

When carrying out a risk assessment it is also necessary to consider who might be harmed. This does not mean only employees but also visitors, including cleaners and contractors, and the public when calling in to buy products or enlist services.

Hazards should be ranked according to their potential severity as a basis for producing one side of the risk equation. A simple three-point scale can be used such as 'low', 'moderate' and 'high'. A more complex severity rating scale has been proposed by Holt and Andrews (1993), as follows:

- Catastrophic – imminent danger exists, hazard capable of causing death and illness on a wide scale.
- Critical – hazard can result in serious illness, severe injury, property and equipment damage.
- Marginal – hazard can cause illness, injury, or equipment damage, but the results would not be expected to be serious.
- Negligible – hazard will not result in serious injury or illness, remote possibility of damage beyond minor first-aid case.

## Assessing the risk

When the hazards have been identified it is necessary to assess how high the risks are. This involves answering three questions:

1. What is the worst result?
2. How likely is it to happen?
3. How many people could be hurt if things go wrong?

A probability rating system can be used such as:

1. Probable – likely to occur immediately or shortly.
2. Reasonably probable – probably will occur in time.
3. Remote – may occur in time.
4. Extremely remote – unlikely to occur.

## Taking action

Risk assessment should lead to action. The type of action can be ranked in order of potential effectiveness in the form of the following ‘safety precedence sequence’.

### *Safety precedence sequence*

- Hazard elimination – use of alternatives, design improvements, change of process.
- Substitution – for example, replacement of a chemical with one that is less risky.
- Use of barriers – removing the hazard from the worker or removing the worker from the hazard.
- Use of procedures – limitation of exposure, dilution of exposure, safe systems of work (these depend on human response).
- Use of warning systems – signs, instructions, labels (these also depend on human response).
- Use of personal protective clothing – this depends on human response and is used only when all other options have been exhausted.

## Monitoring and evaluation

Risk assessment is not completed when action has been initiated. It is essential to monitor the hazard and evaluate the effectiveness of the action in eliminating it or at least reducing it to an acceptable level.

## Health and safety audits

Risk assessments identify specific hazards and quantify the risks attached to them. Health and safety audits provide for a much more comprehensive review of all aspects of health and safety policies, procedures and practices programmes. As described by Saunders (1992):

*A safety audit will examine the whole organization in order to test whether it is meeting its safety aims and objectives. It will examine hierarchies, safety planning processes, decision making, delegation, policy making and implementation as well as all areas of safety programme planning.*

### Who carries out a health and safety audit?

Safety audits can be conducted by safety advisers and/or HR specialists, but the more managers, employees and trade union representatives are involved the better. Audits are often carried out under the auspices of a health and safety committee with its members taking an active part in conducting them.

Managers can also be held responsible for conducting audits within their departments and, even better, individual members of these departments can be trained to carry out audits in particular areas. The conduct of an audit will be facilitated if checklists are prepared and a simple form used to record results.

Some organizations also use outside agencies such as the British Safety Institute to conduct independent audits.

### What is covered by a health and safety audit?

A health and safety audit should cover the following.

#### 1. Policies

- Do health and safety policies meet legal requirements?
- Are senior managers committed to health and safety?
- How committed are other managers, team leaders and supervisors to health and safety?
- Is there a health and safety committee? If not, why not?
- How effective is the committee in getting things done?

## 2. Procedures

How effectively do the procedures:

- Support the implementation of health and safety policies?
- Communicate the need for good health and safety practices?
- Provide for systematic risk assessments?
- Ensure that accidents are investigated thoroughly?
- Record data on health and safety that is used to evaluate performance and initiate action?
- Ensure that health and safety considerations are given proper weight when designing systems of work or manufacturing and operational processes (including the design of equipment and work stations, the specification for the product or service, and the use of materials)?
- Provide safety training, especially induction training and training when jobs or working methods are changed?

## 3. Safety practices

- To what extent do health and safety practices in all areas of the organization conform to the general requirements of the Health and Safety at Work Act and the specific requirements of the various regulations and Codes of Practice?
- What risk assessments have been carried out? What were these findings? What actions were taken?
- What is the health and safety performance of the organization as shown by the performance indicators? Is the trend positive or negative? If the latter, what is being done about it?
- How thoroughly are accidents investigated? What steps have been taken to prevent their recurrence?
- What is the evidence that managers and supervisors are really concerned about health and safety?

## What should be done with the audit?

The audit should cover the questions above but its purpose is to generate action. Those conducting the audit will have to assess priorities and costs and draw up action programmes for approval by the board.

## Health and safety inspections

Health and safety inspections are designed to examine a specific area of the organization – an operational department or a manufacturing process – in order to locate and define any faults in the system, equipment, plant or machines, or any operational errors that might be a danger to health or the source of accidents. Health and safety inspections should be carried out on a regular and systematic basis by line managers and supervisors with the advice and help of health and safety advisers. The steps to be taken in carrying out health and safety inspections are as follows:

1. Allocate the responsibility for conducting the inspection.
2. Define the points to be covered in the form of a checklist.
3. Divide the department or plant into areas and list the points to which attention needs to be given in each area.
4. Define the frequency with which inspections should be carried out – daily in critical areas.
5. Use the checklists as the basis for the inspection.
6. Carry out sample or spot checks on a random basis.
7. Carry out special investigations as necessary to deal with special problems such as operating machinery without guards to increase throughput.
8. Set up a reporting system (a form should be used for recording the results of inspections).
9. Set up a system for monitoring that safety inspections are being conducted properly and on schedule and that corrective action has been taken where necessary.

## Accident prevention

The prevention of accidents is achieved by the following actions.

### *Accident prevention actions*

- Identify the causes of accidents and the conditions under which they are most likely to occur.
- Take account of safety factors at the design stage – building safety into the system.

- Design safety equipment and protective devices and provide protective clothing.
- Carry out regular risk assessments audits, inspections and checks and take action to eliminate risks.
- Investigate all accidents resulting in damage or harm to establish the cause and to initiate corrective action.
- Maintain good records and statistics in order to identify problem areas and unsatisfactory trends.
- Conduct a continuous programme of education and training on safe working habits and methods of avoiding accidents.
- Encourage approaches to leadership and motivation that do not place excessive demands on people.

## Occupational health programmes

Occupational health programmes are designed to minimize the impact of work-related illnesses arising from work. It is estimated by the Royal Society for the Prevention of Accidents (2008) that every year in the UK 30 million working days are lost because of work-related illness. Two million people say they suffer from an illness they believe was caused by their work. Muscular disorders, including repetitive strain injury (RSI) and back pain are by far the most commonly reported illnesses, with 1.2 million affected, and the numbers are rising. The next biggest problem is stress, which 500,000 people say is so bad that it is making them ill. These are large and disturbing figures and they show that high priority must be given to creating and maintaining programmes for the improvement of occupational health.

The control of occupational health and hygiene problems can be achieved by taking the following actions.

### *The control of occupational health and hygiene problems*

- Eliminate the hazard at source through design and process engineering.
- Isolate hazardous processes and substances so that workers do not come into contact with them.
- Change the processes or substances used to promote better protection or eliminate the risk.

- Provide protective equipment, but only if changes to the design, process or specification cannot completely remove the hazard.
- Train workers to avoid risk.
- Maintain plant and equipment to eliminate the possibility of harmful emissions, controlling the use of toxic substances and eliminating radiation hazards.
- Adopt good housekeeping practices to keep premises and machinery clean and free from toxic substances.
- Conduct regular inspections to ensure that potential health risks are identified in good time.
- Carry out pre-employment medical examinations and regular checks on those exposed to risk.
- Ensure that ergonomic considerations (ie, those concerning the design and use of equipment, machines, processes and workstations) are taken into account in design specifications, establishing work routines and training – this is particularly important as a means of minimizing the incidence of RSI.
- Maintain preventive medicine programmes that develop health standards for each job and involve regular audits of potential health hazards and regular examinations for anyone at risk.

Particular attention needs to be exercised on the control of noise, fatigue and stress. The management and control of stress, as considered in Chapter 59, should be regarded as a major part of any occupational health programme.

## Measuring health and safety performance

It is essential to measure health and safety performance as a means of identifying in good time where actions are necessary. Account should be taken not only of current and recent figures but also trends. The most common measures are:

- The frequency rate: number of injuries/number of hours worked  $\times$  100,000.
- The incidence rate: number of injuries/average number employed during the period  $\times$  1,000.
- The severity rate – the days lost through accidents or occupational health problems per 1 million hours worked.

Some organizations adopt a 'total loss control' approach, which covers the cost of accidents to the business under such headings as pay to people off work, damage to plant or equipment and loss of production. A cost severity rate can then be calculated, which is the total cost of accident per million hours worked.

## Communicating the need for better health and safety practices

It is necessary to deliver the message that health and safety is important, as long as this supplements rather than replaces other initiatives. The following steps can be taken to increase the effectiveness of safety messages.

### *Communicating effectively on health and safety*

- Avoid negatives – successful safety propaganda should contain positive messages, not warnings of the unpleasant consequences of actions.
- Expose correctly – address the message to the right people at the point of danger.
- Use attention-getting techniques carefully – lurid images may only be remembered for what they are, not for the message they are trying to convey.
- Maximize comprehension – messages should be simple and specific.
- Messages must be believable – they should address real issues and be perceived as being delivered by people (ie managers) who believe in what they say and are doing something about it.
- Messages must point the way to action – the most effective messages call for positive actions that can be achieved by the receivers and will offer them a tangible benefit.

### Approaches to briefing staff on the importance of health and safety

Advice to a group of staff on the importance of health and safety in the workplace must be based on a thorough understanding of the organization's health and safety policies and procedures and an appreciation of the particular factors affecting the health and safety of the group of people concerned. The latter can be based on information provided by risk assessments, safety audits and accident reports. But the advice must be positive – why health and safety is

important and how accidents can be prevented. The advice should not be over-weighted by awful warnings.

The points to be made include:

- A review of the health and safety policies of the organization with explanations of the reasoning behind them and a positive statement of management's belief that health and safety is a major consideration because: 1) it directly affects the well-being of all concerned, and 2) it can, and does, minimize suffering and loss.
- A review of the procedures used by the organization for the business as a whole and in the particular area to assess risks and audit safety position.
- An explanation of the roles of the members of the group in carrying out their work safely and giving full consideration to the safety of others.
- A reiteration of the statement that one of the core values of the organization is the maintenance of safe systems of work and the promotion of safe working practices.

## Health and safety training

Health and safety training is a key part of the preventative programme. It should start as part of the induction course. It should also take place following a transfer to a new job or a change in working methods. Safety training spells out the rules and provides information on potential hazards and how to avoid them. Further refresher training should be provided and special courses laid on to deal with new aspects of health and safety or areas in which safety problems have emerged.

## Organizing health and safety

Health and safety concerns everyone in an establishment, although the main responsibility lies with management in general and individual managers in particular. Specific roles as summarized below should be defined:

- *Management* develops and implements health and safety policies and ensures that procedures for carrying out risk assessments, safety audits and inspections are implemented. Importantly, management has the duty of monitoring and evaluating health and safety performance and taking corrective action as necessary.
- *Managers* can exert the greater influence on health and safety. They are in immediate control and it is up to them to keep a constant watch for unsafe conditions or practices and to take immediate action. They are also directly responsible for ensuring that employees are conscious of health and safety hazards and do not take risks.

- *Employees* should be aware of what constitutes safe working practices as they affect them and their fellow workers. While management and managers have the duty to communicate and train, individuals also have the duty to take account of what they have heard and learnt in the ways they carry out their work.
- *Health and safety advisers* advise on policies and procedures and on healthy and safe methods of working. They conduct risk assessments and safety audits and investigations into accidents in conjunction with managers and health and safety representatives, maintain statistics and report on trends and necessary actions.
- *Health and safety representatives* deal with health and safety issues in their areas and are members of health and safety committees.
- *Medical advisers* have two functions: preventive and clinical. The preventive function is most important, especially on occupational health matters. The clinical function is to deal with industrial accidents and diseases and to advise on the steps necessary to recover from injury or illness arising from work. They do not usurp the role of the family doctor in non-work-related illnesses.
- *Safety committees* consisting of health and safety representatives advise on health and safety policies and procedures, help in conducting risk assessments and safety audits, and make suggestions on improving health and safety performance.

## Health and safety – key learning points

### **Managing health and safety at work**

The achievement of a healthy and safe place of work and the elimination to the maximum extent possible of hazards to health and safety is the responsibility of everyone employed in an organization, as well as those working there under contract. But the onus is on management to achieve and indeed go beyond the high standard in health and safety matters required by the legislation – the Health and Safety at Work, etc Act, 1974 and the various regulations laid down in the Codes of Practice.

### **Health and safety policies**

Written health and safety policies are required to demonstrate that top management

is concerned about the protection of the organization's employees from hazards at work and to indicate how this protection will be provided.

### **Risk assessments**

Risk assessments are concerned with the identification of hazards and the analysis of the risks attached to them. The purpose is to initiate preventive action.

### **Health and safety audits**

Health and safety audits provide for a much more comprehensive review of all aspects of health and safety policies, procedures and practices programmes.

## Health and safety – key learning points (continued)

### Health and safety inspections

Health and safety inspections should be carried out on a regular and systematic basis by line managers and supervisors with the advice and help of health and safety advisers.

### Accident prevention

- Identify the causes of accidents.
- Take account of safety factors at the design stage.
- Design safety equipment and protective devices and provide protective clothing.
- Carry out regular risk assessments audits and inspections and take action to eliminate risks.
- Investigate all accidents.
- Maintain good records and statistics in order to identify problem areas and unsatisfactory trends.
- Conduct a continuous programme of education and training on safe working habits.

### Occupational health programmes

- Eliminate the hazard at source through design and process engineering.
- Isolate hazardous processes and substances so that workers do not come into contact with them.
- Change the processes or substances used to promote better protection or eliminate the risk.

- Provide protective equipment, but only if changes to the design, process or specification cannot completely remove the hazard.
- Train workers to avoid risk.

### Measuring health and safety performance

This is important as a guide to action, using the standard measures of frequency, incidence and severity rate.

### Communicating the need for better health and safety practices

It is necessary to deliver the message that health and safety is important, as long as this supplements rather than replaces other initiatives.

### Health and safety training

Health and safety training is a key part of the preventative programme. It should start as part of the induction course. It should also take place following a transfer to a new job or a change in working methods.

### Organizing health and safety

Health and safety concerns everyone in an establishment, although the main responsibility lies with management in general and individual managers in particular. The following roles should be defined: managers and employees, health and safety advisers, medical advisers and the health and safety committee.

## Questions

1. What are health and safety and occupational health programmes?
2. What is the purpose of health and safety policies?
3. What is the distinction between risk assessments, health and safety audits and health and safety inspections?
4. What steps need to be taken to prevent accidents?
5. How are occupational health problems controlled?

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