NEBOSH IGC 1

Study notes

IGC1

List of Elements Page

ELEMENT1 - Foundations in health and safety

The key learning points that we would be discussing in the element are:

- Outline the scope and nature of occupational health and safety
- Explain the moral, social and economic reasons for maintaining and promoting good standards of health and safety in the workplace
- Explain the role of national governments and international bodies in formulating a framework for the regulation of health and safety.

1.1 The scope and nature of occupational health and safety

Occupational health and safety is relevant to all branches of industry, business and commerce including traditional industries, information technology companies, hospitals, care homes, schools, universities, leisure facilities and offices.

The purpose of this chapter is to introduce the foundations on which appropriate health and safety management systems may be built. Occupational health and safety affects all aspects of work. In a low hazard organization, health and safety may be supervised by a single competent manager. In a high hazard manufacturing plant, many different specialists, such as engineers (electrical, mechanical and civil), lawyers, medical doctors and nurses, trainers, work planners and supervisors, may be required to assist the professional health and safety practitioner in ensuring that there are satisfactory health and safety standards within the organization.

The UK Health and Safety Executive's (HSE) mission is to ensure that the risks to health and safety of workers are properly controlled. In terms of corporate responsibility, it is working to encourage organizations to:

- improve health and safety management systems to reduce injuries and ill-health
- demonstrate the importance of health and safety issues at board level
- report publicly on health and safety issues within their organization, including their performance against targets.

The HSE believes that effective management of health and safety:

- is vital to employee well-being
- has a role to play in enhancing the reputation of businesses and helping them achieve high-performance teams
- is financially beneficial to business

Table 1.1 Numbers of global work-related adverse events

Event	Average (daily)	Annually
Work-related deaths	5000	2 000 000
Work-related deaths of children	60	22 000
Work-related accidents	740 000	270 000 000
Work-related diseases	438 000	160 000 000
Hazardous substance deaths	1205	440 000
Asbestos-related deaths	274	100 000

1.1.1 The multi-disciplinary nature of health and safety; the barriers to good standards of health and safety

Workplace health and safety practice brings together knowledge from many different disciplines. Some health and safety topics are simple to understand; others are technical and require specialist knowledge. Sometimes the practical solution to a health and safety problem is straightforward; at other times the solution is complicated and demanding and requires the correct application of technical knowledge and thinking.

In order to fully understand a health and safety issue you need to be familiar with:

- The technical background to the issue and have the relevant knowledge.
- The standards that may apply to the workplace and to the specific health and safety issue under consideration.
- The possible strengths and weaknesses of the various options that is available to solve the problem.

The study of health and safety therefore involves many different subjects including the sciences (chemistry, physics and biology), engineering, psychology, sociology and the law.

The study of health and safety involves the study of many different subjects including the sciences (chemistry, physics and biology), engineering, psychology, sociology and the law.

New methods to deliver the competencies which employers and employees require need to be developed, taking into account the multidisciplinary nature of occupational health and safety provision and the considerable overlap which exists in the competencies of the professionals in the team.

Good management of the health of workpeople and workplaces requires the advice of competent occupational health professionals. For physicians, such training in occupational medicine should start with tuition at undergraduate level but various surveys have shown this aspect of their training to be either inadequate or non-existent. Therefore general practitioners and hospital doctors are ill equipped to deal with work related health issues seen in their patients.

For those who decide to train as occupational physicians, there is a need to ensure that the educational content of postgraduate teaching reflects the knowledge, skills and competencies needed to create a cadre of highly skilled doctors to aid good management in healthy enterprises for the 21st century. Although the professional bodies responsible for training here and in other European countries have drawn up lists of competencies for occupational physicians, the views of employers and employees on these competencies had not previously been canvassed. The results of the present study are an important contribution to that knowledge base and the findings need to be incorporated into future training programmes for occupational physicians.

The occupational physician is only one of the large multidisciplinary team required to provide advice and support. This study also confirms the low level of access to occupational health and safety support services particularly for smaller organizations. Expanding this provision as envisaged by Securing Health Together will require new approaches to the delivery of the wide range of competencies which workplaces and workpeople need.

The occupational physician may work as part of an integrated multidisciplinary occupational health and safety service, or may have access to multidisciplinary colleagues in such a way as to enable the giving of appropriate advice in related fields of health and safety. Thus the occupational physician cooperates with many professionals inside and outside medicine, within the broad disciplines of health and safety, especially with senior management, legislators and government.

Benefits of good health and safety

Addressing health and safety should not be seen as a regulatory burden: it offers significant opportunities. Benefits can include:

- reduced costs;
- reduced risks;
- lower employee absence and turnover rates;
- fewer accidents;
- lessened threat of legal action;
- improved standing among suppliers and partners;
- better reputation for corporate responsibility among investors, customers and communities;
- increased productivity, because employees are healthier, happier and better motivated.

Costs of poor health and safety at work

HSE statistics reveal the human and financial cost of failing to address health and safety. Each year:

- Millions of working days are lost due to work-related illness and injury.
- Thousands of people die from occupational diseases.
- Around a million workers self-report suffering from a work-related illness.
- Several hundred thousand workers are injured at work.
- A worker is fatally injured almost every working day.

Organisations can incur further costs - such as uninsured losses and loss of reputation.

Barriers to good standards of health & safety

There are many barriers to good standards of health and safety in a workplace:

Complexity - workplaces can be complicated, involving the co-ordination of many people performing many different activities. Finding a solution to a specific health and safety problem or issue can be complex, requiring extensive background knowledge and an awareness of the possible consequences of the various courses of action that are available.

Conflicting demands - there are often competing and conflicting demands placed upon people and organisations. A common conflict of interest is that between the need to supply a product or a service at an appropriate speed so as to make a profit, and the need to do so safely and without risk to people's health. Another conflict can be created by the need to comply with different types of standards at the same time, e.g. health and safety law as well as environmental protection law.

Behavioural issues - good health and safety practice often relies on the perfect behaviour of individuals, and people sometimes do not behave in this ideal way. The solution to a health and safety problem usually requires a worker to carry out their job in a particular way. For example, a worker on a construction site should wear a hard hat to protect themselves from falling objects. But people are not robots; they do not behave as they are supposed to all the time. Workers sometimes make mistakes (they do the wrong thing thinking that it is the right thing

to do). Sometimes they deliberately do the wrong thing (knowing that it is wrong, but doing it anyway). The fact that health and safety standards are affected by worker behaviour can be a significant barrier to maintaining good standards in a workplace.

1.1.2 Some Meanings and distinctions

Health - The protection of the bodies and minds of people from illness resulting from the materials, processes or procedures used in the workplace.

Safety - The protection of people from physical injury. The borderline between health and safety is ill-defined and the two words are normally used together to indicate concern for the physical and mental well-being of the individual at the place of work

Welfare - The provision of facilities to maintain the health and well-being of individuals at the workplace. Welfare facilities include washing and sanitation arrangements, the provision of drinking water, heating, lighting, accommodation for clothing, seating (when required by the work activity or for rest), eating and rest rooms. First-aid arrangements are also considered as welfare facilities.

Occupational or work related ill-health - This is concerned with those illnesses or physical and mental disorders that are either caused or triggered by workplace activities. Such conditions may be induced by the particular work activity of the individual or by activities of others in the workplace. They may be either physiological or psychological or a combination of both. The time interval between exposure and the onset of the illness may be short (e.g. asthma attacks) or long (e.g. deafness or cancer).

Environmental protection - These are the arrangements to cover those activities in the workplace which affect the environment (in the form of flora, fauna, water, air and soil) and, possibly, the health and safety of employees and others. Such activities include waste and effluent disposal and atmospheric pollution.

Accident - This is defined by the UK Health and Safety Executive (HSE) as 'any unplanned event that results in injury or ill-health of people, or damage or loss to property, plant, materials or the environment or a loss of a business opportunity'. Other authorities define an accident more narrowly by excluding events that do not involve injury or ill-health. This book will always use the HSE definition. It is important to note that work-related accidents may not always occur at the place of work. *Commuting accidents* occur during work-related travel (usually by road).

Near Miss - This is any incident that could have resulted in an accident. Knowledge of near misses is very important as research has shown that, approximately, for every 10 'near miss' events at a particular location in the workplace, a minor accident will occur.

Dangerous occurrence - This is a 'near miss' which could have led to serious injury or loss of life. Specified dangerous occurrences are always reportable to the enforcement

authorities. Examples include the collapse of a scaffold or a crane or the failure of any passenger carrying equipment.

Hazard and risk - A hazard is the *potential* of a substance, person, activity or process to cause harm. Hazards take many forms including, for example, chemicals, electricity and working from a ladder. A hazard can be ranked relative to other hazards or to a possible level of danger. A risk is the *likelihood of a* substance, activity or process to cause harm and its resulting severity. A risk can be reduced and the hazard can be eliminated or controlled by good management.

1.2 Moral, social and economic reasons for maintaining and promoting good standards of health and safety in the workplace

The reasons for establishing good occupational health and safety standards are frequently identified as moral, social (and/or legal) and economic. Each will be discussed in turn.

1.2.1 Moral reasons

The moral reasons are supported by the occupational accident and disease rates. The ILO estimates that globally some 2.2 million people have work-related accidents or contract work-related diseases every year. There are around 270 million occupational accidents and 160 million victims of work-related illnesses annually.

According to the ILO, deaths due to work-related accidents and illnesses represent 3.9 percent of all deaths and 15 percent of the world's population suffers a minor or major occupational accident or work-related disease in any one year. A large number of the unemployed - up to 30 percent - report that they suffer from an injury or disease dating from the time at which they were employed. The number of fatal occupational accidents, especially in Asia and Latin America, is increasing.

1.2.1.1 Accident rates

An employee should not have to risk injury or death at work, nor should others associated with the work environment. Accidents at work can lead to serious injury and even death. Although accident rates are discussed in greater detail in later chapters. A major accident is a serious accident typically involving a fracture of a limb or a 24-hour stay in a hospital. An 'over 3-day accident' is an accident which leads to more than 3

days absence from the workplace. Statistics are collected on all people who are injured at places of work, not just employees. A certain amount of caution must be used when quoting global workplace accident/incident data due to the significant level of under-reporting in many countries.

1.2.1.1 Disease rates

Work-related ill-health and occupational disease can lead to absence from work and, in some cases, to death. Such occurrences may also lead to costs to the State (such as Industrial Injuries Schemes) and to individual employers (sick pay and, possibly, compensation payments).

Diseases related to work cause the most deaths among workers. Of the 2.2 million work-related deaths a year, 1.7 million - or nearly four-fifths - are due to work related disease. The ILO has estimated there to be 160 million incidents of work-related disease each year. This estimate is reasonable for the 2.8 billion global work force, if non-recorded, part-time, child and other informal sector workers are taken into account.

Hazardous substances kill about 438 000 workers annually; asbestos alone claims 100 000 lives. Most of the other deaths are due to various forms of cancer. Another major killer is silicosis, which affects 37 per cent of miners in Latin America.

Table 1.2 Estimates of work-related occupational accidents and diseases for several countries in 2002

Country	Labour Force	ILO Estimate of Fatal Accidents (2002)	Fatal accidents per 100 000 (2002;
Australia	9 796 300	236	2.40
Brazil	83 000 000	11 304	13.62
Canada	16 200 000	899	5.55
China	737 000 000	73 595	9.99
EU	224 050 000	11 369	5.07
Egypt	19 200 000	3 884	20.23
India	443 000 000	48 176	10.87

Korea (South)	22 100 000	3148	14.24
Malaysia	9 600 000	1578	16.44
Nigeria	51600 000	9631	18.66
Philippines	33 300 000	6019	18.08
Russian Federation	63 600 000	6974	10.97
Saudi Arabia	5 800 000	1096	18.90
South Africa	11 300 000	2643	23.39
Trinidad and Tobago	572 000	92	16.08
UK	27 200 000	225	0.83
USA	141800 000	6821	4.81
World 2001	2 848 000 000	351 000	12.32
World 2003	2 941 000 000	358 000	12.17

Table 1.3 Distribution of fatal occupational injuries and incidence rates around the world (2001)

Region	Percentage share of fatal injuries	Fatal accidents per 100 000 workers
Established Market Economies	5	4.5
Former Socialist Economies	5	13.0
India	11	11.0

China	26	10.0
Other Asia and Islands	22	20.5
Sub-Saharan Africa	15	21.0
Latin-America and Caribbean	11	15.0
Middle Eastern Crescent	5	17.0
WORLD	100	

In the UK during 2007/08, there were an estimated 2.1 million people suffering from work-related illness, of whom 563 000 were new cases in that year. This led to 28 million working days lost, compared to 6 million due to workplace injury. Over the last 3 years, 5700 cases have been assessed for industrial injuries disablement benefit. The largest groups were vibration white finger, carpal tunnel syndrome and respiratory diseases. 8.8 million working days were lost due to musculoskeletal disorders causing each sufferer to have, on average, 21 days off work. 13.5 million working days were lost due to stress, depression and anxiety causing each sufferer to have, on average, 31 days off work. Recent research has shown that one in five people who are on sickness leave from work for 6 weeks will stay off work permanently, leaving paid employment. The WHO has estimated that 37% of low back pain, 16% of hearing loss, 13% of chronic obstructive pulmonary disease, 11 % of asthma, and 8% of injuries are related to workplace activities.

1.2.2 Social reasons

In all countries, employers owe a duty of care to each of their employees and others that might be affected by their undertaking, such as contractors and members of the public. This duty must not be assigned to others, even if a consultant is employed to advise on health and safety matters or if the employees are sub-contracted to work with another employer. This duty may be sub-divided into five groups. Employers must:

1. provide a safe place of work, including access and egress;
2. provide safe plant and equipment;
3. provide a safe system of work;
4. provide safe and competent fellow employees; and
5. provide adequate levels of supervision, information, instruction and training.

Occupational health and safety requirements may be reinforced in national civil law and/or criminal law as many countries accept that without the extra 'encouragement' of potential regulatory action or litigation, many organizations would not act upon their implied moral obligations.

Table 1.4 Global estimates of work-related fatalities caused by occupational accidents and work- related diseases for 2001

Region	Economically active population	Fatal occupational accidents	Fatal work-related diseases	Total work-related fatalities
Established Market Economies	419 732 002	**15 879**	281 364	**297 243**
Former Socialist Economies	183 089 714	**17416**	148194	**165 610**
India	443 860 000	**40133**	261 891	**302 024**
China	740 703 800	**90 295**	386 645	**476 940**
Other Asia and Islands	415 527 598	**76 886**	178 786	**255 672**
Sub-Saharan Africa	279 680 390	**53 292**	211 262	**264 554**
Latin-America and Caribbean	219 083 179	**39 372**	108195	**147 567**
Middle Eastern Crescent	135 220 721	**17 977**	120 725	**138 702**
World	**2 836 897 404**	**351 251**	**1 697 061**	**2 048 312**

1.2.3 Economic reasons

Poor occupational health and safety performance results in additional costs to both public and private sectors of the economy of a country.

1.2.3.1 Cost of accidents

Any accident or incidence of ill-health will cause both direct and indirect costs and incur an insured and an uninsured cost. It is important that all of these costs are taken into account when the full cost of an accident is calculated. In a study undertaken by the UK HSE, it was shown that indirect costs or hidden costs could be 36 times greater than direct costs of an accident. In other words, the direct costs of an accident or disease represent the tip of the iceberg when compared to the overall costs.

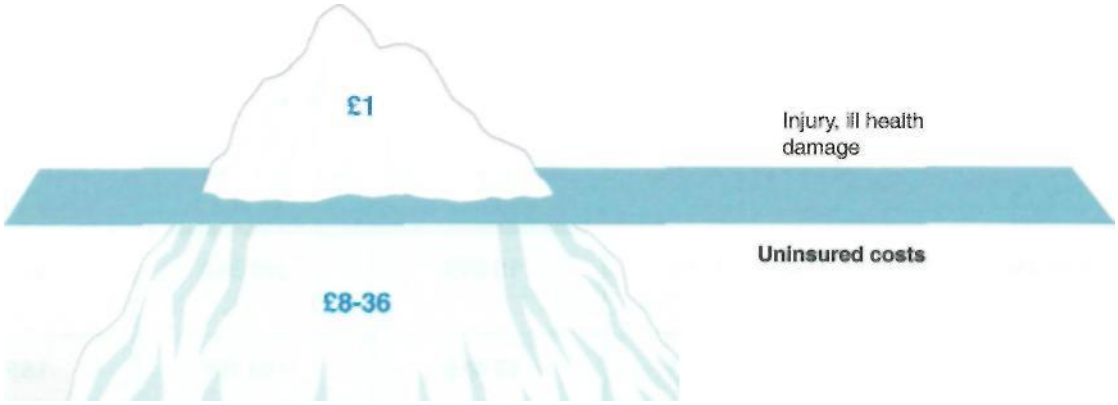

Figure - Insured and uninsured costs

1.2.3.2 Direct cost

These are costs which are directly related to the accident and may be insured or uninsured. Insured direct costs normally include:

- claims on employers and public liability insurance
- damage to buildings, equipment or vehicles
- any attributable production and/or general business loss
- the absence of employees

Uninsured direct costs include:

- fines resulting from prosecution by the enforcement authority
- sick pay
- some damage to product, equipment, vehicles or process not directly attributable to the accident (e.g. caused by replacement staff)
- increases in insurance premiums resulting from the accident
- any compensation not covered by the insurance policy due to an excess agreed between the employer and the insurance company
- legal representation following any compensation claim

1.2.3.3 Indirect cost

These are costs which may not be directly attributable to the accident but may result from a series of accidents.

Again these may be insured or uninsured. Insured indirect costs include:

- a cumulative business loss
- product or process liability claims
- recruitment of replacement staff

Uninsured indirect costs include:

- loss of goodwill and a poor corporate image
- accident investigation time and any subsequent remedial action required
- production delays
- extra overtime payments
- lost time for other employees, such as first-aid staff, who tend to the needs of the injured person
- the recruitment and training of replacement staff
- additional administration time incurred
- first-aid provision and training
- lower employee morale possibly leading to reduced productivity

Some of these items, such as business loss, may be uninsurable or too prohibitively expensive to insure. Therefore, insurance policies can never cover all of the costs of an accident or disease because either some items are not covered by the policy or the insurance excess is greater than the particular item cost.

1.2.3.4 Employers' liability insurance

In many countries, employers are required to take out employers' liability insurance to cover their liability in the event of accidents and work-related ill-health to employees and others who may be affected by their operations. This ensures that any employee, who successfully sues his/her employer following an accident, is assured of receiving compensation irrespective of the financial position of the employer.

Many countries have either fault or no-fault compensation schemes for workers involved in accidents. Knowledge of these schemes is important for those who work in more than one country.

1.2.3.5 Fault and no-fault injury compensation

In the UK, compensation for an injury following an accident is achieved by means of a successful legal action in a civil court. In such cases, injured employees sue their employer for negligence and the employer is found liable or at fault. This approach to compensation is adversarial, costly and can deter injured individuals of limited means from pursuing their claim. In a recent medical negligence claim in Ireland, costs were awarded against a couple who were acting on behalf of their disabled son, and they were faced with a bill for £3 million.

The spiralling cost of insurance premiums to cover the increasing level and number of compensation awards, despite the Woolfe reforms in the UK (see Chapter 8), has led to another debate on the introduction of a no-fault compensation system. It has been estimated that in medical negligence cases, it takes, on average, six years to settle a claim and only 10% of claimants ever see any compensation.

1.2.4 The need to provide a safe place of work, safe plant and equipment, safe system of work, training & supervision and competent workers.

As an employer, you are legally obliged to protect the health, safety and welfare of your workers and other people who could be adversely affected by work carried out by your business under the *Work Health and Safety Act 2012* (the OHSW Act).

You are responsible for providing:

- a safe and healthy working environment
- safe systems of work
- plant (eg, machinery and equipment) and substances in a safe condition
- adequate facilities
- adequate information, instruction and training.

The purpose of the OHSW Act is to prevent injuries and illness at work. Consult with your workers, particularly your injured workers, as they will be able to offer insight into workplace health and safety issues – and potential solutions.

As an employer, it is your responsibility to provide a safe work environment for all employees, free from any hazards and complying with all state and federal laws.

Health and safety in the workplace is about preventing work-related injury and disease, and designing an environment that promotes well-being for everyone at work.

Knowledge is the key ingredient in providing a safe work environment—if everyone knows the correct procedures then accidents and injuries can be kept to a minimum.

The following checklist is also available to help you provide a safe working environment:

- Have you developed, and do you have in place a work health and safety (WHS) policy with procedures that meet the work health and safety standards in your state or territory?
- Were your work health and safety policies developed in consultation with employees, both with and without disability?
- Did you organise a support person or interpreter for employees with disability if required?
- Have all employees been provided with information on your work health and safety policy and procedures, including new employees during their induction process?
- Have you provided access to information about safety procedures, including evacuation and other emergency procedures, to all employees, with regular information updates and training sessions?
- Do new employees receive training on all safety procedures, including evacuation and emergency procedures, and safe and correct work practices, including the use of tools, machinery and equipment?
- Do you conduct relevant training or refresher training on safe work practices, correct work methods and postures, use of tools, machinery and other equipment, including new equipment or machinery?
- Have you ensured that all safety information, including emergency procedures and your work health and safety policy, is available in appropriate formats for all employees, for example, enlarged font, audio and Braille?
- Are all reasonable adjustments implemented if required, for example, desk heights adjusted to accommodate a wheelchair, and screen reading software installed on computers for employees who are vision impaired?
- If you have an employee who is returning to work after an injury, have you reviewed the job procedures to see if modifications or adjustments are required?
- If you have an employee who is returning to work after an injury, have they been re-trained on all procedures, including safety and evacuation procedures?
- Do you have a process for consulting with all employees on work health and safety matters and enabling employees to report hazards?
- Is there adequate ventilation in each workspace and is the temperature in the workplace kept at a level that most people find comfortable, without making others particularly uncomfortable?
- Do you identify and control all foreseeable hazards that may cause injury to employees performing manual tasks (such as lifting, carrying, holding, pushing, pulling)?
- Are employees trained in keyboard skills and the use of ergonomic furniture to reduce the risk of occupational overuse syndrome?
- Do all of your workplaces provide access to First Aid facilities that meet the needs of that workplace, for example, First Aid kit, sick rooms and chemical showers?

- Has a qualified First Aid officer (that is, holds a current Senior First Aid Certificate) been designated for each workplace?

1.2.4.1 Safe plant and equipment

You will need to ensure that all plant and equipment (e.g. lift trucks, vehicles, gas appliances, machinery guarding, ladders, electrical equipment, lifting equipment, air receivers, ventilation plant) that requires maintenance (e.g. pre-shift checks, servicing, thorough examinations) is identified and that the maintenance is done.

It may be worthwhile using a logbook to record the maintenance checks.

When buying new or second-hand plant and equipment, you must check it meets health and safety standards before buying it.

Maintenance on plant and equipment is carried out to prevent problems arising, to put faults right, and to ensure equipment is working effectively.

Maintenance may be part of a planned programme or may have to be carried out at short notice after a breakdown. It always involves non-routine activities and can expose those involved (and others) to a range of risks.

Why is maintenance of plant and equipment important?

An effective maintenance programme will make plant and equipment more reliable. Fewer breakdowns will mean less dangerous contact with machinery is required, as well as having the cost benefits of better productivity and efficiency.
Additional hazards can occur when machinery becomes unreliable and develops faults. Maintenance allows these faults to be diagnosed early to manage any risks. However, maintenance needs to be correctly planned and carried out. Unsafe maintenance has caused many fatalities and serious injuries either during the maintenance or to those using the badly maintained or wrongly maintained/repaired equipment.
The Provision and Use of Work Equipment Regulations 1998 (PUWER) require work equipment and plant to be maintained so it remains safe and the maintenance operation is carried out safely.

What do I have to do?

If you are an employer and you provide equipment for use, from hand tools and ladders to electrical power tools and larger plant, you need to demonstrate that you have arrangements in place to make sure they are maintained in a safe condition.
Think about what hazards can occur:

- if tools break during use

- machinery starts up unexpectedly
- there is contact with materials that are normally enclosed within the machine, ie caused by leaks/breakage/ejection etc

Failing to correctly plan and communicate clear instructions and information before starting maintenance can lead to confusion and can cause accidents. This can be a particular problem if maintenance is during normal production work or where there are contractors who are unfamiliar with the site.

Plant and equipment must be made safe before maintenance starts.

Safe isolation

- Ensure moving plant has stopped and isolate electrical and other power supplies. Most maintenance should be carried out with the power off. If the work is near uninsulated, overhead electrical conductors, eg close to overhead travelling cranes, cut the power off first
- Lock off machines if there is a chance the power could be accidentally switched back on
- Isolate plant and pipelines containing pressured fluid, gas, steam or hazardous material. Lock off isolating valves

Other factors you need to consider

- Release any stored energy, such as compressed air or hydraulic pressure that could cause the machine to move or cycle.
- Support parts of plant that could fall, e.g. support the blades of down-stroking bale cutters and guillotines with blocks.
- Allow components that operate at high temperatures time to cool.
- Place mobile plant in neutral gear, apply the brake and chock the wheels.
- Safely clean out vessels containing flammable solids, liquids, gases or dusts, and check them before hot work is carried out to prevent explosions. You may need specialist help and advice to do this safely.
- Avoid entering tanks and vessels where possible. This can be very high-risk work. If required, get specialist help to ensure adequate precautions are taken.
- Clean and check vessels containing toxic materials before work starts.

Dos and don'ts of plant and equipment maintenance

Do…

- ensure maintenance is carried out by a competent person (someone who has the necessary skills, knowledge and experience to carry out the work safely)
- maintain plant and equipment regularly – use the manufacturer's maintenance instructions as a guide, particularly if there are safety-critical features
- have a procedure that allows workers to report damaged or faulty equipment
- provide the proper tools for the maintenance person

- schedule maintenance to minimise the risk to other workers and the maintenance person wherever possible
- make sure maintenance is done safely, that machines and moving parts are isolated or locked and that flammable/explosive/toxic materials are dealt with properly

Don't…

- ignore maintenance
- ignore reports of damaged or unsafe equipment
- use faulty or damaged equipment

1.2.4.2 Safe system of work

Part of the employer's general duty is to provide systems of work that are, so far as is reasonably practicable, safe and without risks to health. Components of a system include:

- the organisation and co-ordination of the work of those involved;
- training, instruction and supervision;
- layout of plant and appliances;
- methods to be used, and;
- general conditions of work.

The essence of the present legislation is that employers are expected to manage hazards with the same degree of attention and with the same allocation of resources and priorities as they manage other subjects such as quality control, industrial relations and budgetary matters. Furthermore, as part of management commitment to the principles, employers have a duty to establish and maintain, so far as is reasonably practicable, safe systems of work. Safe systems of work must be identified through the risk assessment process.

The following components of a safe system are identified for guidance:

1. Co-ordination of the work of different departments and activities.
2. Layout of plant and appliances for special tasks.
3. The method of using particular machines.
4. The method of carrying out particular processes.
5. The instruction of trainees and inexperienced employees in particular tasks beyond their normal experience.
6. The sequence in which the work is to be carried out.
7. The provision of warnings, notices, and the issue of special instructions in particular cases.
8. The procedure for introducing changes into normally accepted routines and practices, including explanations of why the changes are necessary.
9. A contingency plan to deal with foreseeable emergencies.
10. An auditing or monitoring regime to ensure the system is working safely.

These points are illustrative of what goes to make a system safe. With the provision of safe plant and equipment; general competence of the staff involved, including the supervisors in charge of the work; and; a safe place of work, including both the physical place of work, and its environments; attention to the ten components, listed above, will enable employers to meet their statutory duties.

The requirement to establish and maintain safe systems of work applies not only to routine activities, which are repeated every day; it also applies to tasks occurring infrequently at certain times such as during annual maintenance work. It also applies to single, one-off jobs, which happen only once in a lifetime. It will be clear that there is a different emphasis in each of the three categories given. In the first there may be problems of familiarity and the potentially hazardous complacency arising from it. In the last there needs to be emphasis on meticulous planning and constant close supervision by qualified, skilled and experienced staff.

In certain cases ensuring that systems of work are safe may be achieved with the help of permits-to-work. Such written permits formalise the progression through a particular operation. Most often the operations are those with a high risk. They require clearances at specific stages throughout the operation and a signed go-ahead that it is safe to continue from a named, specifically appointed person. Only when this is done is the next stage allowed to go ahead.

The principle of establishing and equally importantly, maintaining safe systems of work, is keenly regarded by enforcing authorities who see it as a direct reflection of managerial competence and commitment.

1.2.4.3 Training & supervision

Many young people are likely to be new to the workplace and in some cases will be facing unfamiliar risks from the job they will be doing and from their surroundings. They will need clear and sufficient instruction, training and supervision to enable them to work without putting themselves and other people at risk.

Young people are likely to need more supervision than adults. Good supervision will help an employer get a clear idea of the young person's capabilities and progress in the job and monitor the effectiveness of their training.

An employer will need to consider how much training is necessary. A proportionate approach is needed, for example a low-risk business would not be expected to have a need for lengthy technical training. Similarly, where a student is on a short-term work experience placement, induction and training needs should be tailored to the tasks they are going to be doing.

It is important that employers check young people have understood the instruction and training which will include, for example:

- the hazards and risks in the workplace
- the health and safety precautions that are in place

In workplaces where there are health and safety representatives, they can play a valuable role early on by:

- introducing the young person to the workplace
- helping with their ongoing training
- giving employers feedback about particular concerns

As employees, young people have a duty to take care of their own health and safety and that of others who may be affected by their actions.

This includes co-operating with their employer by listening carefully, following instructions, using any safety equipment that has been provided and taking part in relevant training.

1.2.4.4 Competent workers

A competent person is someone who has sufficient training and experience or knowledge and other qualities that allow them to assist you properly. The level of competence required will depend on the complexity of the situation and the particular help you need.

When getting help, you should give preference to those in your own organisation who have the appropriate level of competence (which can include the employer themselves) before looking for help from outside. You must consult health and safety representatives in good time on the arrangements for competent help.

1.3 The role of national governments and international bodies in formulating a framework for the regulation of health and safety

1.3.1 Employers' duties and responsibilities

The principal general duties of employers under the ILO Recommendation 164 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 instruction and training that takes into account the functions and capabilities of different categories of workers;
(c) to provide adequate supervision of work practices ensuring that proper use is made of relevant occupational health and safety measures;

(d) to institute suitable occupational health and safety management arrangements appropriate to the working environment, the size of the undertaking and the nature of its activities; and

(e) to provide, without any cost to the worker, adequate personal protective clothing and equipment which are reasonably necessary when workplace hazards cannot be otherwise prevented or controlled.

1.3.2 Workers' rights and responsibilities

1.3.2.1 Workers' rights

In 1998, ILO Member States adopted the *Declaration on Fundamental Principles and Rights at Work* and agreed to uphold a set of core labour standards. These are human rights and form basic workers' rights. The ILO is actively campaigning for improvements in the areas covered by the Declaration.

The Declaration covers four areas:

1. *Freedom of Association* - The right of workers and employers to form and join organizations of their choice is an integral part of a free and open society and is linked to the recognition of the right to collective bargaining.
   Forced Labour — The ILO is pressing for effective national laws and stronger enforcement mechanisms, such as legal sanctions and vigorous prosecution against those who exploit forced labourers.

3. *Discrimination* - Hundreds of millions of people suffer from discrimination in the world of work. Discrimination stifles opportunities, wasting the human talent needed for economic progress and accentuating social tensions and inequalities.
4. *Child Labour* - There are more than 200 million children working throughout the world, many full-time. They are deprived of adequate education, good health and basic freedoms. Of these, 126 million - or one in every 12 children worldwide - are exposed to hazardous forms of child labour, work that endangers their physical, mental or moral well-being.

The rights of workers are also contained in the ILO Code of Practice - *Ambient factors in the workplace.* The code specifies that workers and their representatives should have the right to:

(a) be consulted regarding any hazards or risks to health and safety from hazardous factors at the workplace;
(b) enquire into and receive information from the employer regarding any hazards or risks to health and safety from hazardous factors in the workplace. This information should be provided in forms and languages easily understood by the workers;
(c) take adequate precautions, in co-operation with their employer, to protect themselves and other workers against hazards or risks to their health and safety;
(d) request and be involved in the assessment of hazards and risks to health and safety by the employer and/or the competent authority, and in any subsequent control measures and investigations.
(e) be involved in the inception and development of workers' health surveillance, and participate in its implementation.
(f) be informed in a timely, objective and comprehensible manner:
(i) of the reasons for any examinations and investigations relating to the health hazards involved in their workplace;

(ii) individually of the results of medical examinations, including pre-assignment medical examinations, and of the subsequent assessment of health.

In accordance with national laws and regulations, workers should have the right:

(a) to bring to the attention of their representatives, employer or competent authority any hazards or risks to health and safety at the workplace

(b) to appeal to the competent authority if they consider that the measures taken and the means employed by the employer are inadequate for the purposes of ensuring health and safety at work;
(c) to remove themselves from a hazardous situation when they have good reason to believe that there is an imminent and serious risk to their health and safety and inform their supervisor immediately;
(d) in the case of a health condition, such as sensitization, to be transferred to alternative work that does not expose them to that hazard, if such work is available and if the workers concerned have the qualifications or can reasonably be trained for such alternative work;
(e) to compensation if the case referred to in (d) above results in loss of employment;
(f) to adequate medical treatment and compensation for occupational injuries and diseases resulting from hazards at the workplace;
(g) to refrain from using any equipment or process or substance which can reasonably be expected to be hazardous, if relevant information is not available to assess the hazards or risks to health and safety.

1.3.2.2 Workers responsibilities

Employees or workers have specific responsibilities under the ILO Convention 187, which are to:

(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 health and safety and those of others and with health and safety procedures;
(c) use safety devices and protective equipment correctly and not to 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; and
(e) report any accident or injury to health which arises in the course of or in connection with work.

1.3.3 Role of enforcement agencies

1.3.3.1 The legal framework

The framework for regulating health and safety will vary across the world, for example European countries use the EU framework, the Pacific Rim countries tend to use the USA framework, whereas the Caribbean countries follow the UK framework. The course provider should be able to describe the legal and regulatory framework appertaining to any particular country.

Most legislation is driven by a framework of Acts, Regulations and support material including Codes of Practice and Standards. Within Europe there is another layer of legislation known as Directives, above the Member States' own legislation. These are legally binding on each Member State. The US system of federal and individual state legislation is very similar.

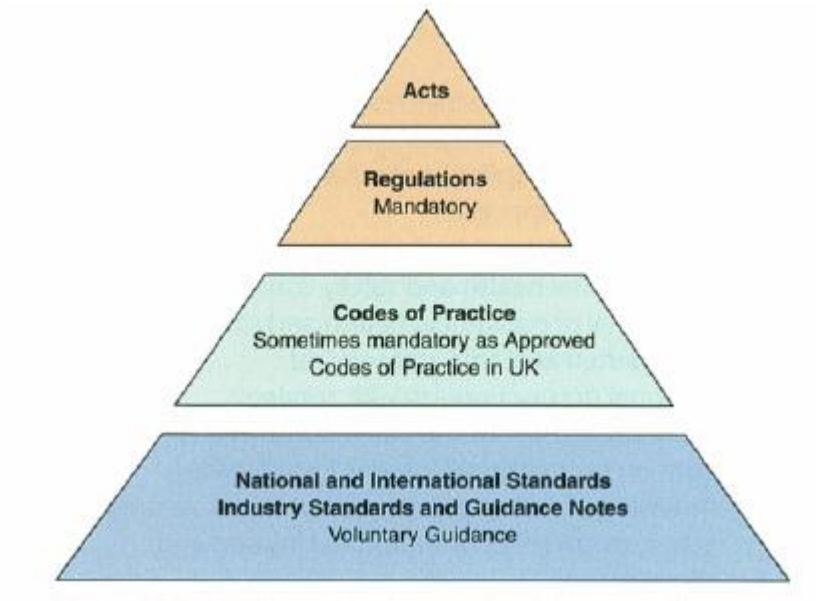

Figure - Typical health and safety legal framework

1.3.3.2 Regulatory authorities and safety management systems

The role of the national regulatory authority is crucial to the successful implementation of an occupational health and safety management system. In many parts of the world, such as south east Asia, formal adoption of a recognized management system is required with third party auditing by government-approved auditors. In the USA, organizations with approved management systems may be exempted from normal inspections by the Occupational Safety and Health Administration.

In the UK, there has been a movement from prescriptive legislation to risk assessment by the employer and this movement is now occurring in many parts of the world including the EU. A management system is an essential tool to achieve this movement and such a system is implied in the UK Management of Health and Safety at Work Regulations. Countries such as Canada, Australia, New Zealand and Norway have developed occupational health and safety management systems as an encouragement for such self-regulation. The ILO-OSH 2001 system has been adopted by Germany, Sweden, Japan, Finland, Korea, China, Mexico, Costa Rica, Brazil, Indonesia, Vietnam, Malaysia, India, Thailand, the Czech Republic, Poland and Russia.

1.3.4 International standards and conventions

The ILO is a specialized agency of the United Nations that seeks to promote social justice through establishing and safeguarding internationally recognized human and labour rights. It was founded in 1919 by the Treaty of Versailles at the end of the First World War.

The motivation behind the creation of such an organization was primarily humanitarian. Working conditions at the time were becoming unacceptable to a civilized society. Long hours, unsafe, unhygienic and dangerous conditions were common in low-paid manufacturing careers. Indeed, in the wake of the Russian Revolution, there was concern that such working conditions could lead to social unrest and even other revolutions. The ILO was created as a tripartite with governments, employers and workers represented on its governing body.

The main principles on which the ILO is based are:

1. labour is not a commodity;
2. freedom of expression and of association are essential to sustained progress;
3. poverty anywhere constitutes a danger to prosperity everywhere;
4. the 'war against want' is required to be carried out with unrelenting vigour within each nation, and by continuous and concerted international effort in which the representatives of workers and employers, enjoying equal status with those of governments, join with them in free discussion and democratic decision with a view to the promotion of the common welfare.

ILO Conventions and Recommendations

The international labour standards were developed for four reasons. The main motivation was to improve working conditions with respect to health and safety and career advancement. The second motivation was to reduce the potential for social unrest as industrialization progressed. Thirdly, the Member States want common standards so that no single country has a competitive advantage over another due to poor working conditions. Finally, the union of these countries creates the possibility of a lasting peace based on social justice.

International labour standards are adopted by the International Labour Conference. They take the form of Conventions and Recommendations. At the present time, there are 187 Conventions and 198 Recommendations, some of which date back to 1919. See Chapter 17 for more information on the background of the ILO Conventions and Recommendations.

International labour standards contain flexibility measures to take into account the different conditions and levels of development among Member States. However, a government that ratifies a Convention must comply with all of its articles. Standards reflect the different cultural and historical backgrounds of the Member States as well as their diverse legal systems and levels of economic development.

ILO occupational safety and health standards can be divided into four groups, and an example is given in each case:

1. Guiding policies for action — The Occupational Safety and Health Convention,

1985 (No. 155) and its accompanying Recommendation (No. 164) emphasize the need for preventative measures and a coherent national policy on occupational safety and health. They also stress employers' responsibilities and the rights and duties of workers.

2. Protection in given branches of economic activity — The Safety and Health in Construction Convention, 1988 (No. 167) and its accompanying Recommendation (No. 175) stipulate the basic principles and measures to promote safety and health of workers in construction.
3. Protection against specific risks — The Asbestos Convention, 1986 (No. 162) and its accompanying Recommendation (No. 172) gives managerial, technical and medical measures to protect workers against asbestos dust.
4. Measures of protection — Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143) aims to protect the safety and health of migrant workers.

The ILO also publishes Codes of Practice, guidance and manuals on health and safety matters. These are often used as reference material by either those responsible for drafting detailed Regulations or those who have responsibility for health and safety within an organization. They are more detailed than either Conventions or Recommendations and suggest practical solutions for the application of ILO standards. Codes of Practice indicate 'what should be done'. They are developed by tripartite meetings of experts and the final publication is approved by the ILO Governing Body.

For example, the construction industry has a Safety and Health in Construction Convention, 1988 (No. 167) that obliges signatory ILO Member States to comply with the construction standards laid out in the Convention - the Convention is a relatively brief statement of those standards. The accompanying Recommendation (No. 175) gives additional information on the Convention statements. The Code of Practice gives more detailed information than the Recommendation.

The ILO Codes of Practice and guidelines on health and safety matters that are relevant to the International General Certificate are:

- Safety and Health in Construction (ILO Code of Practice)
- Ambient factors in the Workplace (ILO Code of Practice)
- Safety in the Use of Chemicals at Work (ILO Code of Practice)
- Recording and Notification of Occupational Accidents and Diseases
- Ergonomic Checkpoints
- Work Organization and Ergonomics
- Occupational safety and health management systems

Important ILO Conventions (C) and Recommendations (R) in the field of occupational safety and health include:

- C 115 Radiation Protection and (R 114), 1960
- C 120 Hygiene (Commerce and Offices) and (R 120), 1964

- C 139 Occupational Cancer and (R 147), 1974
- C 148 Working Environment (Air, Pollution, Noise and Vibration) and (R 156), 1977
- C 155 Occupational Safety and Health and (R 164), 1981
- C 161 Occupational Health Services and (R 171), 1985
- C 162 Asbestos and (R 172), 1986
- C 167 Safety and Health in Construction and (R 175), 1988
- C 170 Chemicals and (R 177), 1990
- C 174 Prevention of Major Industrial Accidents and (R 181), 1993
- C 176 Safety and Health in Mines and (R 176), 1995
- C 184 Safety and Health in Agriculture and (R 192), 2001
- C 187 Promotional Framework for Occupational Safety and Health and (R 197), 2006
- R 97 Protection of Workers' Health Recommendation, 1953
- R 102 Welfare Facilities Recommendation, 1956
- R 31 List of Occupational Diseases Recommendation, 2002

1.3.5 The nature and sources of information on health and safety

When anybody, whether a health and safety professional, a manager or an employee, is confronted with a health and safety problem, they will need to consult various items of published information to ascertain the scale of the problem and its possible remedies. The sources of this information may be internal to the organization and/or external to it.

Internal sources, which should be available within the organization include:

- accident and ill-health records and investigation reports
- absentee records
- inspection and audit reports undertaken by the organization and by external organizations such as the HSE
- maintenance, risk assessment (including COSHH) and training records
- documents which provide information to workers
- any equipment examination or test reports

External sources, which are available outside the organization, are numerous and include:

- health and safety legislation
- HSE publications, such as Approved Codes of Practice, guidance documents, leaflets, journals, books and their website
- European and British Standards

- International Labour Organization (non- occupational Safety and Health Administration (USA)
- European Agency for Safety and Health (EU)
- WorkSafe (Western Australia)
- health and safety magazines and journals
- information published by trade associations, employer organizations and trade unions
- specialist technical and legal publications
- information and data from manufacturers and suppliers
- the internet and encyclopedias

Figure - Good standards prevent harm and save money