Unit 1: Health, safety and environmental management in context

Lecture Objectives

a. Explain the importance of HSE in industry describe the benefits to employers and employees
b. Define the elements of an effective HSE program at the workplace and discuss the reasons why a company would implement such a program
c. Define and list the components of Environmental management systems
d. Outline ways in which HSE standards are maintained by describing types of legislative instruments- law, act, bill, regulation, guidelines, giving an overview of: OSH Act- general duties of employer and employee and fines; EMA Act, rules and requirements of CEC and EIA; ISO and other applicable Standards, International protocols and agreements.
e. Give an overview of major safety disasters and occupational health fatalities recorded - locally, regionally and internationally and consequent law amendments etc., (Tutorial).

1. A) The importance of HSE in industry

Reasons why a company would incur time, effort and spend money to establish a safety system

— Moral Reasons - Company actually cares about employees, contractors and visitors and will pay for their safety.

— Image reasons – company wants to look good in the eyes of the public and potential customers.

— Legal reasons – company has to comply with the Occupational safety and health Act of Trinidad and Tobago as amended. Also specific activities must be carried out in compliance with International standards and codes of practice.
— **To prevent accidents** - companies want to prevent accidents by extension incurred costs due to loss time and workmen’s compensation.

— **To control insurance costs** – accidents cause companies to be seen as more risky and hence having to pay higher insurance premium rates.

— **Competitive factors** - competitors are building safety into their systems and operations and are therefore appearing more attractive to risk managing, large companies (clients).

— **Client requirements** – this is very much the reason why small and medium sized companies in the oil and gas as well as petrochemical industries are establishing safety systems. They cannot bid to become contractors for major companies (clients) unless they, the potential contractor has an established safety system.

— **Trade requirements** – Internationally, companies want to do business with other companies who manage risk. Therefore a company with an internationally certified management system such as ISO 18001 would be more marketable internationally.

— **Pressure from Non Governmental Organisations (NGO’s), Trade unions, Neighbours** – The typical example was the intention to establish an Aluminum smelter in Claxton Bay. The residents protested as was done in Chatam because they are concerned about their health and safety. Similarly, communities protest to construction dust, woodworking shops and auto body spray painting in neighborhoods due to the hazards from dust and fumes respectively.
1. **B ) Elements of an effective Health and Safety Management System**

Most of the key elements required for effective health and safety management are very similar to those required for good quality, finance and general business management. Commercially successful organizations usually have good health and safety management systems in place. The principles of good and effective management provide a sound basis for the improvement of health and safety performance (see Figure 1.3). HSE, in HSG 65, have identified five key elements involved in a successful health and safety management system.

![Figure 1-1 Key elements of successful health and safety management](image-url)
The five elements are:

1. **Policy** – a clear health and safety policy contributes to business efficiency and continuous improvement throughout the operation. The demonstration of senior management involvement provides evidence to all stakeholders that responsibilities to people and the environment are taken seriously. The policy should state the intentions of the organization in terms of clear aims, objectives and targets.

2. **Organizing** – A well defined health and safety organization offering a shared understanding of the organization’s values and beliefs, at all levels of the organization is an essential component of a positive health and safety culture. An effective organization will be noted for good staff involvement and participation; high quality communications; the promotion of competency; and the empowerment and commitment of all employees to make informed contributions.

3. **Planning and implementing** – A clear health and safety plan involves the setting and implementation of performance standards, targets and procedures through an effective health and safety management system. The plan is based on risk assessment methods to decide on priorities and set objectives for the effective control or elimination hazards and the reduction of risks. Measuring success requires the establishment of practical plans and performance targets against which achievements can be identified.

4. **Measuring performance** – This includes both active (sometimes called proactive) and reactive monitoring to see how effectively the health and safety management system is working. Active monitoring involves looking at the premises, plant and substances plus the people, procedures and systems. Reactive monitoring discovers through investigation of accidents and incidents why controls have failed. It is also important to measure the organization against its own long term goals and objectives.
5. **Reviewing performance** – The results of monitoring and independent audits should be systematically reviewed to evaluate the performance of the management system against the objectives and targets established by the health and safety policy. It is at the review stage that the objectives and targets set in the health and safety policy may be changed. Comparisons should be made with internal performance indicators and the external performance indicators of similar organizations with exemplary practices and high standards.

6. **Auditing** – An independent and structured audit of all parts of the health and safety management system reinforces the review process. Such audits may be internal and external. The audit assesses compliance with the health and safety management arrangements and procedures. If the audit is to be really effective, it must assess both the compliance with stated procedures and the performance in the workplace. It will identify weaknesses in the health and safety policy and procedures and identify unrealistic or inadequate standards and targets. The conclusions from an audit of an organization’s health and safety performance should be included in the annual report for discussion at Board meetings. This is considered best corporate practice.

**Reasons why a company would implement a HSMS?**

Ask any group of people why health and safety is important they will usually come up with the same four reasons, often in the same order. The safety and well-being of themselves and others is generally at the top of the list. The reason is obvious. No one would want to see a friend, colleague or employee killed or seriously injured.

Most people would dread of having to explain what went wrong to a grieving family. in a short sighted or ill conceived belief that they are saving time, effort or money.

And yet, unless there is a real understanding of risk it will be trivialised and controls will be bypassed or ignored completely in a short sighted or ill conceived belief that they are saving time, effort or money.

The financial consequences of an incident, together with the business interruption it can cause, impose huge burdens on a business. Some of those costs are identified below.
THE HIDDEN COSTS of ACCIDENTS

DIRECT COST

- Medical
- Compensation

INDIRECT AND HIDDEN COSTS OF ACCIDENTS

- Time lost from work by injured
- Loss in earning power
- Economic loss to injured’s family
- Lost time by fellow workmen
- Loss of efficiency due to break-up of crew
- Lost time by supervision
- Cost of breaking in new man
- Damage to tools and equipment
- Time damaged equipment is out of service
- Spoiled work
- Loss of production
- Spoilage—fire, water, chemical, explosives, etc.
- Failure to fill orders
- Overhead cost (while work was disrupted)
- Miscellaneous — There are at least 100 other items of cost that appear one or more times with every accident

Like the iceberg — Hidden costs of accidents are not visible on the surface but are there just the same.

The Workmen's Compensation Board
Province of Alberta
There are of course, legal imperatives for ensuring that health and safety obligations are met. These are enshrined in a large number of Acts and Regulations, often supported by Approved Codes of Practice. An organisation or individual found in breach of the law is liable to prosecution. Depending on the circumstances, penalties may involve prison sentences (in the case of an individual) or very large fines.

The enforcement action need not be the result of an accident. A visiting HSE Inspector who believes that the operation involves a risk of serious personal injury may issue a Prohibition Notice requiring the work to cease and the company would incur all the consequential loss that would entail.

Criminal Law is not the only legal driver. As a claims culture becomes more prevalent in society, civil claims for damages are becoming more commonplace and are far more likely to be the reason an organisation becomes involved with solicitors and makes a court appearance. Even if their Employers or Public Liability Insurance covers any award for damages, there will still be significant uninsured costs and disruption caused by the need to respond to the claim.

Image is a less tangible, but none the less important driver for a good health and safety performance. Vast sums can be spent in developing and protecting a brand. If the brand is associated with reliability, quality, or service to the public, a good health and safety performance is an essential part of that brand image. Once damaged, the reputation or image can take years to recover.
1. C) Components of an environmental management systems

What is environmental management?

What do we mean by the words ‘environment’ and ‘environmental management’?
The word ‘environment’ is used in different ways. We talk of the ‘home environment’, the
‘work environment’, the ‘social environment’. We use the word to describe our physical
surroundings, made up of air, trees, grass. It is this latter use that is the subject of this book.
Our concern must be for the world as a whole, its ‘air, water, land, natural resources, flora,
fauna, humans, and their inter-relations’, to quote from ISO 14001.
By ‘environmental management’ we mean keeping control of our activities so that we do
what we can to conserve these physical resources and to avoid polluting them.

The clauses of ISO 14001

The following synopsis of ISO 14001 gives a quick understanding of the range of standard’s
requirements. It is no substitute for looking at the full text of the standard. The requirements for
environmental management systems are set out in Clause 4 of the Standard under six main
headings:
1  General requirements
2  Environmental policy
3  Planning
4  Implementation and operations
5  Checking and corrective action
6  Management review

These are then when necessary divided into sub-clauses.

1  General requirements
There must be a documented environmental management system (EMS) that meets all the following requirements.

2 Environmental policy

There must be an environmental policy that is consistent with any group or sector policy, is relevant to the organisation’s activities, commits to prevent pollution and observe relevant legislation, has a commitment to continual improvement and setting environmental objectives and targets, and states how it is made available to all employees and publicly.

3 Planning

3.1 Environmental aspects

Environmental aspects shall be identified both for normal operating conditions, for reasonably foreseeable deviations and for emergencies. This is usually documented in a Register of Environmental Aspects.

3.2 Legal and other requirements

Relevant legislative, regulatory and other environmental requirements must be identified. This is usually documented in a Register of Environmental Legislation which must be kept up to date.

3.3 Objectives and targets
Environmental improvement objectives and targets must be set, consistent with the policy.

3.4 Environmental management programme

Programmes must be set for the achievement of the objectives and targets, and responsibilities must be designated.

4 Implementation and operation

4.1 Structure and responsibility

Responsibilities must be defined. Adequate human resources with appropriate skills must be provided. There must be a management representative with the authority to ensure the EMS is implemented and to make sure that performance is reported upon to management.

4.2 Training, awareness and competence

All employees must be aware of the environmental objectives, have appropriate job training in relevant environmental procedures and know the consequences of departing from the procedures.

4.3 Communication

There must be a system for receiving and responding to communications regarding environmental aspects, from both external and internal sources.

4.4 Environmental management system and documentation

There must be a documented description of the environmental management system, which brings together the policy, objectives and targets, and responsibilities. It must point to all the associated documentation (e.g. the Registers, Operating Procedures, including emergency plans).
4.5 Document control
There must be a system for document control.

4.6 Operational control

Documented procedures and Work Instructions must be prepared where they are needed to ensure compliance with the requirements of the EMS. These should also relate to goods and services with significant environmental aspects, and be communicated to suppliers and contractors. For example, when contractors are working on site, whether in a long-term or short-term capacity, they need to be aware of, and observe, the local environmental rules and procedures. Assessors are paying particular attention to the control of contractors, simply because experience has shown that they can be the cause of a significant number of environmental incidents. Going one stage further, although not a specific requirement of ISO 14001, good environmental practice suggests that enquiries should be made about the environmental status or performance of key suppliers and subcontractors.

4.7 Emergency preparedness and response

Reasonably foreseeable and emergency situations must be identified and appropriate procedures implemented. They must be reviewed, especially if they have ever been called into action, and tested periodically.

5 Checking and corrective action

5.1 Monitoring and measurement

There must be procedures for monitoring activities which impact on the environment. Any monitoring equipment must be calibrated.

5.2 Nonconformance and corrective and preventive action
There must be a system for handling noncompliances, with investigation and corrective actions.

5.3 Environmental management records

Records must be kept and archiving requirements specified.

5.4 Environmental management system audit

The EMS must be audited regularly to ensure the system is operating effectively. There must be an audit programme and a reporting and follow-up system.

6 Management review

Management must periodically review the environmental policy, objectives and the EMS to ensure they are still effective and relevant to the organisation’s needs in the light of changing circumstances.

The structure of the documented environmental management system

The structure of the final documented EMS will be as shown in the figure below.
d) Overview of Occupational Safety and Health Act (as amended)

**Key Features of the New Legislation**

**Widens the categories of workers**
- OSHA covers most workers in all aspects of work undertaken in an industrial establishment

✔ Industrial Establishment – “factory, shop, office, place of work or other premises but does not include – premises occupied for residential purposes only; or other categories of establishment exempted by the Minister in accordance with this Act.”
Promotes voluntary compliance

- A shift to stronger self-governance by employers and workers and a more regulatory role by Government

Identifies a broad range of responsibilities for a number of Agents

- Duties are outlined for:
  - Employers
  - Suppliers
  - Employees
  - Self Employed
  - Occupiers
  - Designers
  - Manufacturers
  - Importers

Promotes consultations between employers and workers organization on occupational safety and health issues

- For establishments with 25 employees or more
- Employers to establish a joint (trade union/employee and employer) Safety and Health Committee to review health and safety measures and investigate matters considered to be unsafe or a risk to health at the industrial establishment
- OSH policy to be developed jointly by employers/occupiers and workers’ representatives

Empowers inspectors to take enforcement and legal actions

Inspectors can:

- Enter, inspect, examine and take samples from any industrial establishment
- Serve prohibition or improvement notices
- Initiate legal proceedings against persons in breach of the Act

Establishes two entities for the administration of Occupational Safety and Health

Parts XII and XIII provides for the establishment of:

- The Occupational Safety and Health Authority which was established in October 2006
- The Occupational Safety and Health Agency established in August 2007
**Summary of Legislation**

* General Duties - Employers 1

To ensure so far as reasonably practicable, the Health Safety and Welfare of all employees:

- Safe plant and systems of work.
- Safe use, handling, storage, transportation of equipment, machinery, articles, substances
- Provision of any required information, instruction, training and supervision.
- Safe place of work, safe access, egress.
- Safe work Environment, welfare facilities.
- Prepare a written safety & Health policy together with organization and arrangements if more than 25 employees.

**Breach of Duties - Employer**

- Breaches of pregnancy provisions determined in Industrial Court.
- Contravention of provisions of the act is a safety & health offence subject to the jurisdiction of the Industrial Court.
- Aggrieved parties may seek redress in the Industrial Court.

**Duties of Employees**

- Take reasonable care for safety and health of self and others who may be affected.
➢ Cooperate with employer in terms of compliance with employer’s duties.

➢ Not under the influence of any intoxication.

➢ Report to employer breaches of Act, regulations.

➢ Use correctly PPE/protective devices.

➢ Not interfere with or misuse H, S & W items.

➢ NOT UNDERTAKE ANY WILLFUL ACTS CAUSING DEATH OR CRITICAL INJURY

FINES IN CASE OF DEATH & INJURY

➢ Sub-section 86(1) …fine of one hundred thousand dollars, or an amount equivalent to three years pay of that person which ever is greater – the whole or part may be applied for the benefit of the victim or of his estate or otherwise as the Court may decide.

➢ Failure to comply with Section 10(1) is a safety and health offence and will be determined in the Industrial Court.

➢ For willful acts causing death or critical injury S10 (2), employee is liable to a fine of $10,000 on summary conviction.

Certificate of Environmental Clearance Rules, 2001

The Certificate of Environmental Clearance Rules 2001 were generated from the Environmental Management Act Chapter 35:05. These Rules guide the assessment of small and large-scale developmental projects which may have both positive and negative environmental effects.

The Certificate of Environmental Clearance (Designated Activities) Order, 2001, as amended defines the forty-four (44) activities which require a CEC. During the assessment of these applications, the Authority takes into consideration foreseeable impacts which may arise out of any new or significantly modified construction, process, works or other activity as outlined by
At the preliminary phase of the assessment of the proposed project, if potential significant environmental and human health impacts have been identified, the applicant may be asked to conduct an Environmental Impact Assessment (EIA).

**Requirements of CEC**

The following information shall be supplied by the applicant in support of his application:

(a) the purpose and objectives of the activity;

(b) a description of the site and the areas likely to be affected by the proposed activity;

(c) The size and scale of the activity including capacity, throughput, land space and covered areas;
(d) A description of the activity explaining—

i. the types of processes and equipment or machinery to be involved;
ii. the type, quantity and sources of input materials;
iii. the quantity and destination of any by-products, including any waste;
iv. the modes of transportation that will be used to carry out the proposed activity and the potential effects of such transportation;
v. the volume of intermediate and final products; and
vi. the frequency or rate of extraction with respect to use of natural resources;

(e) The expected life of the activity;

(f) The proposed schedule of actions from preparatory work to start-up and operation;

(g) Such maps, plans, diagrams, photographs, charts and other illustrative or graphic material as may facilitate understanding of the information presented and the nature of the site.

Requirements for EIA

An EIA required by the Authority under section 35(4) of the Act shall be carried out by persons with expertise and experience in the specific areas for which information is required and may, where appropriate include the following information:

(a) a non-technical summary of the findings of the assessment comprising the key issues, a brief evaluation of the potential effects and hazards of the proposed activity and the measures and recommendations proposed for addressing the findings of the evaluation;

(b) a description of the existing ecological and other characteristics and conditions of the site and areas likely to be affected by the proposed activity, with relevant information about the land use requirements during the various phases of the activity;
(c) Illustrative materials where appropriate, including maps and photographs;

(d) A description of the activity giving adequate and concise information on—
(i) The characteristics of the processes and methods proposed;
(ii) The design, size, scale and capacity;
(iii) Equipment and machinery to be involved;
(iv) Source, nature and quantity of materials to be used;
(v) Rates of extraction; and
(vi) The estimated type and quantities of expected emissions, residues, wastes, noise, light, vibrations, heat, and radiation to air, water and soil during the various phases of the activity;

(e) An identification and assessment of the main effects that the activity is likely to have on the components of the environment, including:
(i) human beings;
(ii) Fauna;
(iii) Flora
(iv) Soil;
(v) Water—surface and ground;
(vi) Air;
(vii) The coast and sea;
(viii) Weather and climate;
(ix) The landscape;
(x) The interaction between any of the foregoing;
(xi) Material assets;
(xii) The cultural heritage;

(f) An evaluation of the alternatives to the activity, giving consideration to concerns of environment, alternative sites, designs, approaches and processes;

(g) An account of the assessment of the methods used and the level of uncertainty of any predictions;
(h) An account of the measures proposed to avoid, reduce, mitigate or remedy any of the significant adverse effects identified;

(i) an identification of the potential hazards and an assessment of the level of risk that may be caused by the proposed activity and an account of the measures envisaged to address any environmental emergencies that may result from the activity;

(j) A description of the programme proposed for monitoring actual impacts and the effects of the mitigation measures at the various stages of the activity;

(k) The data and methods used to obtain the information in paragraph (e).