SAFETY, HEALTH AND ENVIRONMENTAL MANAGEMENT
SYLLABUS

Convention And Recommendation Concerning Occupational Health And Safety

Safety and Health in Construction
Safety and Health in Construction Convention, Industrial Safety and Hazard Management in Construction Industry.

Prevention of major industrial accidents
Accident prevention and preparedness, What Are the Causes of Industrial Accidents?

The Factories Act, 1948

Social Security Legislation

Safety, Health and Environment related Legislation

Environment Protection Legislation
The legal and regulatory framework for environmental protection in India, Legislation for environmental protection in India, Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981

Chemical Accidents
The Hazard, Factors of Vulnerability, Main causes of Mortality and Morbidity

Suggested Readings:
Safety, Health and Environmental Concepts for the process industry, Michael Speegle, Cengage Learning
LESSON 1 – CONVENTION AND RECOMMENDATION CONCERNING OCCUPATIONAL HEALTH AND SAFETY

Learning Objectives

- To define Occupational safety and health.
- To explain the objectives of Occupational safety and health.
- To explain the various convention related to safety.
- To explain the role of ILO in these convention.

1.1 Occupational safety and health

The ILO Constitution sets forth the principle that workers should be protected from sickness, disease and injury arising from their employment. Yet for millions of workers the reality is very different. Some two million people die every year from work-related accidents and diseases. An estimated 160 million people suffer from work-related diseases, and there are an estimated 270 million fatal and non-fatal work-related accidents per year. The suffering caused by such accidents and illnesses to workers and their families is incalculable. In economic terms, the ILO has estimated that 4% of the world's annual GDP is lost as a consequence of occupational diseases and accidents. Employers face costly early retirements, loss of skilled staff, absenteeism, and high insurance premiums due to work-related accidents and diseases. Yet many of these tragedies are preventable through the implementation of sound prevention, reporting and inspection practices. ILO standards on occupational safety and health provide essential tools for governments, employers, and workers to establish such practices and to provide for maximum safety at work. In 2003 the ILO adopted an global strategy to improve occupational safety and health which included the introduction of a preventive safety and health culture, the promotion and development of relevant instruments, and technical assistance.

1.2 Fundamental principles of occupational safety and health

1.2.1 Preamble

The General Conference of the International Labour Organisation,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Sixty-seventh Session on 3 June 1981, and

Having decided upon the adoption of certain proposals with regard to safety and health and the working environment, which is the sixth item on the agenda of the session, and

Having determined that these proposals shall take the form of an international Convention,
adopts this twenty-second day of June of the year one thousand nine hundred and eighty-one the following Convention, which may be cited as the Occupational Safety and Health Convention, 1981:

1.2.2 PART I. SCOPE AND DEFINITIONS

1. This Convention applies to all branches of economic activity.

2. A Member ratifying this Convention may, after consultation at the earliest possible stage with the representative organisations of employers and workers concerned, exclude from its application, in part or in whole, particular branches of economic activity, such as maritime shipping or fishing, in respect of which special problems of a substantial nature arise.

3. Each Member which ratifies this Convention shall list, in the first report on the application of the Convention submitted under Article 22 of the Constitution of the International Labour Organisation, any branches which may have been excluded in pursuance of paragraph 2 of this Article, giving the reasons for such exclusion and describing the measures taken to give adequate protection to workers in excluded branches, and shall indicate in subsequent reports any progress towards wider application.

Article 2

1. This Convention applies to all workers in the branches of economic activity covered.

2. A Member ratifying this Convention may, after consultation at the earliest possible stage with the representative organisations of employers and workers concerned, exclude from its application, in part or in whole, limited categories of workers in respect of which there are particular difficulties.

3. Each Member which ratifies this Convention shall list, in the first report on the application of the Convention submitted under Article 22 of the Constitution of the International Labour Organisation, any limited categories of workers which may have been excluded in pursuance of paragraph 2 of this Article, giving the reasons for such exclusion, and shall indicate in subsequent reports any progress towards wider application.

Article 3

For the purpose of this Convention--

(a) the term branches of economic activity covers all branches in which workers are employed, including the public service;

(b) the term workers covers all employed persons, including public employees;

(c) the term workplace covers all places where workers need to be or to go by reason of their work and which are under the direct or indirect control of the employer;

(d) the term regulations covers all provisions given force of law by the competent authority or authorities;
The term **health**, in relation to work, indicates not merely the absence of disease or infirmity; it also includes the physical and mental elements affecting health which are directly related to safety and hygiene at work.

### 1.2.3 PART II. PRINCIPLES OF NATIONAL POLICY

1. Each Member shall, in the light of national conditions and practice, and in consultation with the most representative organizations of employers and workers, formulate, implement and periodically review a coherent national policy on occupational safety, occupational health and the working environment.

2. The aim of the policy shall be to prevent accidents and injury to health arising out of, linked with or occurring in the course of work, by minimizing, so far as is reasonably practicable, the causes of hazards inherent in the working environment.

**Article 5**

The policy referred to in Article 4 of this Convention shall take account of the following main spheres of action in so far as they affect occupational safety and health and the working environment:

(a) Design, testing, choice, substitution, installation, arrangement, use and maintenance of the material elements of work (workplaces, working environment, tools, machinery and equipment, chemical, physical and biological substances and agents, work processes);

(b) Relationships between the material elements of work and the persons who carry out or supervise the work, and adaptation of machinery, equipment, working time, organization of work and work processes to the physical and mental capacities of the workers;

(c) Training, including necessary further training, qualifications and motivations of persons involved, in one capacity or another, in the achievement of adequate levels of safety and health;

(d) Communication and co-operation at the levels of the working group and the undertaking and at all other appropriate levels up to and including the national level;

(e) The protection of workers and their representatives from disciplinary measures as a result of actions properly taken by them in conformity with the policy referred to in Article 4 of this Convention.

**Article 6**

The formulation of the policy referred to in Article 4 of this Convention shall indicate the respective functions and responsibilities in respect of occupational safety and health and the working environment of public authorities, employers, workers and others, taking account both of the complementary character of such responsibilities and of national conditions and practice.

**Article 7**

The situation regarding occupational safety and health and the working environment shall be reviewed at appropriate intervals, either over-all or in respect of particular areas, with a view to identifying major
problems, evolving effective methods for dealing with them and priorities of action, and evaluating results.

1.4 PART III. ACTION AT THE NATIONAL LEVEL

Article 8

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

Article 9

1. The enforcement of laws and regulations concerning occupational safety and health and the working environment shall be secured by an adequate and appropriate system of inspection.

2. The enforcement system shall provide for adequate penalties for violations of the laws and regulations.

Article 10

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

Article 11

To give effect to the policy referred to in Article 4 of this Convention, the competent authority or authorities shall ensure that the following functions are progressively carried out:

(a) the determination, where the nature and degree of hazards so require, of conditions governing the design, construction and layout of undertakings, the commencement of their operations, major alterations affecting them and changes in their purposes, the safety of technical equipment used at work, as well as the application of procedures defined by the competent authorities;

(b) the determination of work processes and of substances and agents the exposure to which is to be prohibited, limited or made subject to authorisation or control by the competent authority or authorities; health hazards due to the simultaneous exposure to several substances or agents shall be taken into consideration;

(c) the establishment and application of procedures for the notification of occupational accidents and diseases, by employers and, when appropriate, insurance institutions and others directly concerned, and the production of annual statistics on occupational accidents and diseases;

(d) the holding of inquiries, where cases of occupational accidents, occupational diseases or any other injuries to health which arise in the course of or in connection with work appear to reflect situations which are serious;
(e) the publication, annually, of information on measures taken in pursuance of the policy referred to in Article 4 of this Convention and on occupational accidents, occupational diseases and other injuries to health which arise in the course of or in connection with work;

(f) the introduction or extension of systems, taking into account national conditions and possibilities, to examine chemical, physical and biological agents in respect of the risk to the health of workers.

**Article 12**

Measures shall be taken, in accordance with national law and practice, with a view to ensuring that those who design, manufacture, import, provide or transfer machinery, equipment or substances for occupational use--

(a) satisfy themselves that, so far as is reasonably practicable, the machinery, equipment or substance does not entail dangers for the safety and health of those using it correctly;

(b) make available information concerning the correct installation and use of machinery and equipment and the correct use of substances, and information on hazards of machinery and equipment and dangerous properties of chemical substances and physical and biological agents or products, as well as instructions on how known hazards are to be avoided;

(c) undertake studies and research or otherwise keep abreast of the scientific and technical knowledge necessary to comply with subparagraphs (a) and (b) of this Article.

**Article 13**

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

**Article 14**

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

**Article 15**

1. With a view to ensuring the coherence of the policy referred to in Article 4 of this Convention and of measures for its application, each Member shall, after consultation at the earliest possible stage with the most representative organisations of employers and workers, and with other bodies as appropriate, make arrangements appropriate to national conditions and practice to ensure the necessary co-ordination between various authorities and bodies called upon to give effect to Parts II and III of this Convention.

2. Whenever circumstances so require and national conditions and practice permit, these arrangements shall include the establishment of a central body.
1.2.4 PART IV. ACTION AT THE LEVEL OF THE UNDERTAKING

Article 16

1. Employers shall be required to ensure that, so far as is reasonably practicable, the workplaces, machinery, equipment and processes under their control are safe and without risk to health.

2. Employers shall be required to ensure that, so far as is reasonably practicable, the chemical, physical and biological substances and agents under their control are without risk to health when the appropriate measures of protection are taken.

3. Employers shall be required to provide, where necessary, adequate protective clothing and protective equipment to prevent, so far as is reasonably practicable, risk of accidents or of adverse effects on health.

Article 17

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

Article 18

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

Article 19

There shall be arrangements at the level of the undertaking under which--

(a) workers, in the course of performing their work, co-operate in the fulfilment by their employer of the obligations placed upon him;

(b) representatives of workers in the undertaking co-operate with the employer in the field of occupational safety and health;

(c) representatives of workers in an undertaking are given adequate information on measures taken by the employer to secure occupational safety and health and may consult their representative organisations about such information provided they do not disclose commercial secrets;

(d) workers and their representatives in the undertaking are given appropriate training in occupational safety and health;

(e) workers or their representatives and, as the case may be, their representative organisations in an undertaking, in accordance with national law and practice, are enabled to enquire into, and are consulted by the employer on, all aspects of occupational safety and health associated with their work; for this purpose technical advisers may, by mutual agreement, be brought in from outside the undertaking;
(f) a worker reports forthwith to his immediate supervisor any situation which he has reasonable justification to believe presents an imminent and serious danger to his life or health; until the employer has taken remedial action, if necessary, the employer cannot require workers to return to a work situation where there is continuing imminent and serious danger to life or health.

**Article 20**

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

**Article 21**

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

**1.2.5 PART V. FINAL PROVISIONS**

**Article 22**

This Convention does not revise any international labor Conventions or Recommendations.

**Article 23**

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

**Article 24**

1. This Convention shall be binding only upon those Members of the International Labor Organization whose ratifications have been registered with the Director-General.

2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.

3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification has been registered.

**Article 25**

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labor Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.

2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter,
may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.

**Article 26**

1. The Director-General of the International Labor Office shall notify all Members of the International Labor Organization of the registration of all ratifications and denunciations communicated to him by the Members of the Organization.

2. When notifying the Members of the Organization of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organization to the date upon which the Convention will come into force.

**Article 27**

The Director-General of the International Labor Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and acts of denunciation registered by him in accordance with the provisions of the preceding Articles.

**Article 28**

At such times as it may consider necessary the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

**Article 29**

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides:

   (a) The ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 25 above, if and when the new revising Convention shall have come into force;

   (b) As from the date when the new revising Convention comes into force this Convention shall cease to be open to ratification by the Members.

2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

**Article 30**

The English and French versions of the text of this Convention are equally authoritative.

**1.3 Occupational Health Services Convention, 1985**
1.3.1 Preamble

The General Conference of the International Labour Organisation,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Seventy-first Session on 7 June 1985, and

Noting that the protection of the worker against sickness, disease and injury arising out of his employment is one of the tasks assigned to the International Labour Organisation under its Constitution,

Noting the relevant international labour Conventions and Recommendations, and in particular the Protection of Workers' Health Recommendation, 1953, the Occupational Health Services Recommendation, 1959, the Workers' Representatives Convention, 1971, and the Occupational Safety and Health Convention and Recommendation, 1981, which establish the principles of national policy and action at the national level,

Having decided upon the adoption of certain proposals with regard to occupational health services, which is the fourth item on the agenda of the session, and

Having determined that these proposals shall take the form of an international Convention;

adopts this twenty-sixth day of June of the year one thousand nine hundred and eighty-five the following Convention, which may be cited as the Occupational Health Services Convention, 1985:

1.3.2 PART I. PRINCIPLES OF NATIONAL POLICY

Article 1

For the purpose of this Convention-

(a) the term occupational health services means services entrusted with essentially preventive functions and responsible for advising the employer, the workers and their representatives in the undertaking on-

(i) the requirements for establishing and maintaining a safe and healthy working environment which will facilitate optimal physical and mental health in relation to work;

(ii) the adaptation of work to the capabilities of workers in the light of their state of physical and mental health;

(b) the term workers' representatives in the undertaking means persons who are recognised as such under national law or practice.

Article 2

In the light of national conditions and practice and in consultation with the most representative organisations of employers and workers, where they exist, each Member shall formulate, implement and periodically review a coherent national policy on occupational health services.
Article 3

1. Each Member undertakes to develop progressively occupational health services for all workers, including those in the public sector and the members of production co-operatives, in all branches of economic activity and all undertakings. The provision made should be adequate and appropriate to the specific risks of the undertakings.

2. If occupational health services cannot be immediately established for all undertakings, each Member concerned shall draw up plans for the establishment of such services in consultation with the most representative organisations of employers and workers, where they exist.

3. Each Member concerned shall indicate, in the first report on the application of the Convention submitted under article 22 of the Constitution of the International Labour Organisation, the plans drawn up pursuant to paragraph 2 of this Article, and indicate in subsequent reports any progress in their application.

Article 4

The competent authority shall consult the most representative organisations of employers and workers, where they exist, on the measures to be taken to give effect to the provisions of this Convention.

1.3.4 PART II. FUNCTIONS

Article 5

Without prejudice to the responsibility of each employer for the health and safety of the workers in his employment, and with due regard to the necessity for the workers to participate in matters of occupational health and safety, occupational health services shall have such of the following functions as are adequate and appropriate to the occupational risks of the undertaking:

(a) identification and assessment of the risks from health hazards in the workplace;

(b) surveillance of the factors in the working environment and working practices which may affect workers' health, including sanitary installations, canteens and housing where these facilities are provided by the employer;

(c) advice on planning and organisation of work, including the design of workplaces, on the choice, maintenance and condition of machinery and other equipment and on substances used in work;

(d) participation in the development of programmes for the improvement of working practices as well as testing and evaluation of health aspects of new equipment;

(e) advice on occupational health, safety and hygiene and on ergonomics and individual and collective protective equipment;

(f) surveillance of workers' health in relation to work;

(g) promoting the adaptation of work to the worker;
(h) contribution to measures of vocational rehabilitation;

(i) collaboration in providing information, training and education in the fields of occupational health and hygiene and ergonomics;

(j) organising of first aid and emergency treatment;

(k) participation in analysis of occupational accidents and occupational diseases.

1.3.5 PART III. ORGANISATION

Article 6

Provision shall be made for the establishment of occupational health services-

(a) by laws or regulations; or

(b) by collective agreements or as otherwise agreed upon by the employers and workers concerned; or

(c) in any other manner approved by the competent authority after consultation with the representative organisations of employers and workers concerned.

Article 7

1. Occupational health services may be organised as a service for a single undertaking or as a service common to a number of undertakings, as appropriate.

2. In accordance with national conditions and practice, occupational health services may be organised by-

(a) the undertakings or groups of undertakings concerned;

(b) public authorities or official services;

(c) social security institutions;

(d) any other bodies authorised by the competent authority;

(e) a combination of any of the above.

Article 8

The employer, the workers and their representatives, where they exist, shall cooperate and participate in the implementation of the organisational and other measures relating to occupational health services on an equitable basis.
1.3.6 PART IV. CONDITIONS OF OPERATION

Article 9

1. In accordance with national law and practice, occupational health services should be multidisciplinary. The composition of the personnel shall be determined by the nature of the duties to be performed.

2. Occupational health services shall carry out their functions in co-operation with the other services in the undertaking.

3. Measures shall be taken, in accordance with national law and practice, to ensure adequate co-operation and co-ordination between occupational health services and, as appropriate, other bodies concerned with the provision of health services.

Article 10

The personnel providing occupational health services shall enjoy full professional independence from employers, workers, and their representatives, where they exist, in relation to the functions listed in Article 5.

Article 11

The competent authority shall determine the qualifications required for the personnel providing occupational health services, according to the nature of the duties to be performed and in accordance with national law and practice.

Article 12

The surveillance of workers' health in relation to work shall involve no loss of earnings for them, shall be free of charge and shall take place as far as possible during working hours.

Article 13

All workers shall be informed of health hazards involved in their work.

Article 14

Occupational health services shall be informed by the employer and workers of any known factors and any suspected factors in the working environment which may affect the workers' health.

Article 15

Occupational health services shall be informed of occurrences of ill health amongst workers and absence from work for health reasons, in order to be able to identify whether there is any relation between the reasons for ill health or absence and any health hazards which may be present at the workplace. Personnel providing occupational health services shall not be required by the employer to verify the reasons for absence from work.
PART V. GENERAL PROVISIONS

Article 16

National laws or regulations shall designate the authority or authorities responsible both for supervising the operation of and for advising occupational health services once they have been established.

Article 17

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 18

1. This Convention shall be binding only upon those Members of the International Labour Organisation whose ratifications have been registered with the Director-General.

2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.

3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification has been registered.

Article 19

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.

2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.

Article 20

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organisation of the registration of all ratifications and denunciations communicated to him by the Members of the Organisation.

2. When notifying the Members of the Organisation of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organisation to the date upon which the Convention will come into force.
Article 21

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and acts of denunciation registered by him in accordance with the provisions of the preceding Articles.

Article 22

At such times as it may consider necessary the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

Article 23

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides-

   (a) the ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 19 above, if and when the new revising Convention shall have come into force;

   (b) as from the date when the new revising Convention comes into force this Convention shall cease to be open to ratification by the Members.

2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

1.4 Promotional Framework for Occupational Safety and Health Convention, 2006

1.4.1 Preamble

The General Conference of the International Labour Organization,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Ninety-fifth Session on 31 May 2006,

Recognizing the global magnitude of occupational injuries, diseases and deaths, and the need for further action to reduce them, and

Recalling that the protection of workers against sickness, disease and injury arising out of employment is among the objectives of the International Labour Organization as set out in its Constitution, and

Recognizing that occupational injuries, diseases and deaths have a negative effect on productivity and on economic and social development, and
Noting paragraph III(g) of the Declaration of Philadelphia, which provides that the International Labour Organization has the solemn obligation to further among the nations of the world programmes which will achieve adequate protection for the life and health of workers in all occupations, and

Mindful of the ILO Declaration on Fundamental Principles and Rights at Work and its Follow-Up, 1998, and

Noting the Occupational Safety and Health Convention, 1981 (No. 155), the Occupational Safety and Health Recommendation, 1981 (No. 164), and other instruments of the International Labour Organization relevant to the promotional framework for occupational safety and health, and

Recalling that the promotion of occupational safety and health is part of the International Labour Organization's agenda of decent work for all, and

Recalling the Conclusions concerning ILO standards-related activities in the area of occupational safety and health - a global strategy, adopted by the International Labour Conference at its 91st Session (2003), in particular relating to ensuring that priority be given to occupational safety and health in national agendas, and

Stressing the importance of the continuous promotion of a national preventative safety and health culture, and

Having decided upon the adoption of certain proposals with regard to occupational safety and health, which is the fourth item on the agenda of the session, and

Having determined that these proposals shall take the form of an international Convention;

adopts this fifteenth day of June of the year two thousand and six the following Convention, which may be cited as the Promotional Framework for Occupational Safety and Health Convention, 2006.

1.4.2 DEFINITIONS

Article 1

For the purpose of this Convention:

(a) the term national policy refers to the national policy on occupational safety and health and the working environment developed in accordance with the principles of Article 4 of the Occupational Safety and Health Convention, 1981 (No. 155);

(b) the term national system for occupational safety and health or national system refers to the infrastructure which provides the main framework for implementing the national policy and national programmes on occupational safety and health;

(c) the term national programme on occupational safety and health or national programme refers to any national programme that includes objectives to be achieved in a predetermined time frame, priorities and means of action formulated to improve occupational safety and health, and means to assess progress;
(d) the term *a national preventative safety and health culture* refers to a culture in which the right to a safe and healthy working environment is respected at all levels, where government, employers and workers actively participate in securing a safe and healthy working environment through a system of defined rights, responsibilities and duties, and where the principle of prevention is accorded the highest priority.

1.4.3 OBJECTIVE

Article 2

1. Each Member which ratifies this Convention shall promote continuous improvement of occupational safety and health to prevent occupational injuries, diseases and deaths, by the development, in consultation with the most representative organizations of employers and workers, of a national policy, national system and national programme.

2. Each Member shall take active steps towards achieving progressively a safe and healthy working environment through a national system and national programmes on occupational safety and health by taking into account the principles set out in instruments of the International Labour Organization (ILO) relevant to the promotional framework for occupational safety and health.

3. Each Member, in consultation with the most representative organizations of employers and workers, shall periodically consider what measures could be taken to ratify relevant occupational safety and health Conventions of the ILO.

1.4.4 NATIONAL POLICY

Article 3

1. Each Member shall promote a safe and healthy working environment by formulating a national policy.

2. Each Member shall promote and advance, at all relevant levels, the right of workers to a safe and healthy working environment.

3. In formulating its national policy, each Member, in light of national conditions and practice and in consultation with the most representative organizations of employers and workers, shall promote basic principles such as assessing occupational risks or hazards; combating occupational risks or hazards at source; and developing a national preventative safety and health culture that includes information, consultation and training.

1.4.5 NATIONAL SYSTEM

Article 4

1. Each Member shall establish, maintain, progressively develop and periodically review a national system for occupational safety and health, in consultation with the most representative organizations of employers and workers.

2. The national system for occupational safety and health shall include among others:
(a) laws and regulations, collective agreements where appropriate, and any other relevant instruments on occupational safety and health;

(b) an authority or body, or authorities or bodies, responsible for occupational safety and health, designated in accordance with national law and practice;

(c) mechanisms for ensuring compliance with national laws and regulations, including systems of inspection; and

(d) arrangements to promote, at the level of the undertaking, cooperation between management, workers and their representatives as an essential element of workplace-related prevention measures.

3. The national system for occupational safety and health shall include, where appropriate:

(a) a national tripartite advisory body, or bodies, addressing occupational safety and health issues;

(b) information and advisory services on occupational safety and health;

(c) the provision of occupational safety and health training;

(d) occupational health services in accordance with national law and practice;

(e) research on occupational safety and health;

(f) a mechanism for the collection and analysis of data on occupational injuries and diseases, taking into account relevant ILO instruments;

(g) provisions for collaboration with relevant insurance or social security schemes covering occupational injuries and diseases; and

(h) support mechanisms for a progressive improvement of occupational safety and health conditions in micro-enterprises, in small and medium-sized enterprises and in the informal economy.

1.4.6 NATIONAL PROGRAMME

Article 5

1. Each Member shall formulate, implement, monitor, evaluate and periodically review a national programme on occupational safety and health in consultation with the most representative organizations of employers and workers.

2. The national programme shall:

(a) promote the development of a national preventative safety and health culture;
(b) contribute to the protection of workers by eliminating or minimizing, so far as is reasonably practicable, work-related hazards and risks, in accordance with national law and practice, in order to prevent occupational injuries, diseases and deaths and promote safety and health in the workplace;

(c) be formulated and reviewed on the basis of analysis of the national situation regarding occupational safety and health, including analysis of the national system for occupational safety and health;

(d) include objectives, targets and indicators of progress; and

(e) be supported, where possible, by other complementary national programmes and plans which will assist in achieving progressively a safe and healthy working environment.

3. The national programme shall be widely publicized and, to the extent possible, endorsed and launched by the highest national authorities.

1.4.7 FINAL PROVISIONS

Article 6

This Convention does not revise any international labour Conventions or Recommendations.

Article 7

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 8

1. This Convention shall be binding only upon those Members of the International Labour Organization whose ratifications have been registered with the Director-General of the International Labour Office.

2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.

3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification is registered.

Article 9

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.

2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of
denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention within the first year of each new period of ten years under the terms provided for in this Article.

Article 10

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organization of the registration of all ratifications and denunciations that have been communicated by the Members of the Organization.

2. When notifying the Members of the Organization of the registration of the second ratification that has been communicated, the Director-General shall draw the attention of the Members of the Organization to the date upon which the Convention will come into force.

Article 11

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and denunciations that have been registered.

Article 12

At such times as it may consider necessary, the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision.

Article 13

1. Should the Conference adopt a new Convention revising this Convention, then, unless the new Convention otherwise provides:

   (a) the ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 9 above, if and when the new revising Convention shall have come into force;

   (b) as from the date when the new revising Convention comes into force, this Convention shall cease to be open to ratification by the Members.

2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

1.5 Health and safety in particular branches of economic activity Hygiene (Commerce and Offices) Convention, 1964

1.5.1 Preamble

The General Conference of the International Labour Organisation,
Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Sixty-fifth Session on 6 June 1979, and

Noting the terms of existing international labour Conventions and Recommendations which are relevant and, in particular, the Marking of Weight (Packages Transported by Vessels) Convention, 1929, the Guarding of Machinery Convention, 1963, and the Working Environment (Air Pollution, Noise and Vibration) Convention, 1977, and

Having decided upon the adoption of certain proposals with regard to the revision of the Protection against Accidents (Dockers) Convention (Revised), 1932 (No. 32), which is the fourth item on the agenda of the session, and

Considering that these proposals must take the form of an international Convention,

adopts this twenty-fifth day of June of the year one thousand nine hundred and seventy-nine the following Convention, which may be cited as the Occupational Safety and Health (Dock Work) Convention, 1979:

1.5.2 PART I. SCOPE AND DEFINITIONS

Article 1

For the purpose of this Convention, the term dock work covers all and any part of the work of loading or unloading any ship as well as any work incidental thereto; the definition of such work shall be established by national law or practice. The organisations of employers and workers concerned shall be consulted on or otherwise participate in the establishment and revision of this definition.

Article 2

1. A Member may grant exemptions from or permit exceptions to the provisions of this Convention in respect of dock work at any place where the traffic is irregular and confined to small ships, as well as in respect of dock work in relation to fishing vessels or specified categories thereof, on condition that-

   (a) safe working conditions are maintained; and

   (b) the competent authority, after consultation with the organisations of employers and workers concerned, is satisfied that it is reasonable in all the circumstances that there be such exemptions or exceptions.

2. Particular requirements of Part III of this Convention may be varied if the competent authority is satisfied, after consultation with the organisations of employers and workers concerned, that the variations provide corresponding advantages and that the over-all protection afforded is not inferior to that which would result from the full application of the provisions of this Convention.

3. Any exemptions or exceptions made under paragraph 1 of this Article and any significant variations made under paragraph 2 of this Article, as well as the reasons therefor, shall be indicated in the reports on the application of the Convention submitted in pursuance of Article 22 of the Constitution of the International Labour Organisation.
Article 3

For the purpose of this Convention--

(a) the term **worker** means any person engaged in dock work;

(b) the term **competent person** means a person possessing the knowledge and experience required for the performance of a specific duty or duties and acceptable as such to the competent authority;

(c) the term **responsible person** means a person appointed by the employer, the master of the ship or the owner of the gear, as the case may be, to be responsible for the performance of a specific duty or duties and who has sufficient knowledge and experience and the requisite authority for the proper performance of the duty or duties;

(d) the term **authorised person** means a person authorised by the employer, the master of the ship or a responsible person to undertake a specific task or tasks and possessing the necessary technical knowledge and experience;

(e) the term **lifting appliance** covers all stationary or mobile cargo-handling appliances, including shore-based power-operated ramps, used on shore or on board ship for suspending, raising or lowering loads or moving them from one position to another while suspended or supported;

(f) the term **loose gear** covers any gear by means of which a load can be attached to a lifting appliance but which does not form an integral part of the appliance or load;

(g) the term **access** includes egress;

(h) the term **ship** covers any kind of ship, vessel, barge, lighter or hovercraft, excluding ships of war.

1.5.3 PART II. GENERAL PROVISIONS

Article 4

1. National laws or regulations shall prescribe that measures complying with Part III of this Convention be taken as regards dock work with a view to--

   (a) providing and maintaining workplaces, equipment and methods of work that are safe and without risk of injury to health;

   (b) providing and maintaining safe means of access to any workplace;

   (c) providing the information, training and supervision necessary to ensure the protection of workers against risks of accident or injury to health arising out of or in the course of their employment;
(d) providing workers with any personal protective equipment and protective clothing and any life-saving appliances reasonably required where adequate protection against risks of accident or injury to health cannot be provided by other means;

(e) providing and maintaining suitable and adequate first-aid and rescue facilities;

(f) developing and establishing proper procedures to deal with any emergency situations which may arise.

1. The measures to be taken in pursuance of this Convention shall cover--

(a) general requirements relating to the construction, equipping and maintenance of dock structures and other places at which dock work is carried out;

(b) fire and explosion prevention and protection;

(c) safe means of access to ships, holds, staging, equipment and lifting appliances;

(d) transport of workers;

(e) opening and closing of hatches, protection of hatchways and work in holds; (f) construction, maintenance and use of lifting and other cargo-handling appliances;

(g) construction, maintenance and use of staging;

(h) rigging and use of ship's derricks;

(i) testing, examination, inspection and certification, as appropriate, of lifting appliances, of loose gear, including chains and ropes, and of slings and other lifting devices which form an integral part of the load;

(j) handling of different types of cargo;

(k) stacking and storage of goods;

(l) dangerous substances and other hazards in the working environment;

(m) personal protective equipment and protective clothing;

(n) sanitary and washing facilities and welfare amenities;

(o) medical supervision;

(p) first-aid and rescue facilities;

(q) safety and health organisation;

(r) training of workers;
(s) notification and investigation of occupational accidents and diseases.

2. The practical implementation of the requirements prescribed in pursuance of paragraph 1 of this Article shall be ensured or assisted by technical standards or codes of practice approved by the competent authority, or by other appropriate methods consistent with national practice and conditions.

Article 5

1. National laws or regulations shall make appropriate persons, whether employers, owners, masters or other persons, as the case may be, responsible for compliance with the measures referred to in Article 4, paragraph 1, of this Convention.

2. Whenever two or more employers undertake activities simultaneously at one workplace, they shall have the duty to collaborate in order to comply with the prescribed measures, without prejudice to the responsibility of each employer for the health and safety of his employees. In appropriate circumstances, the competent authority shall prescribe general procedures for this collaboration.

Article 6

1. There shall be arrangements under which workers--

   (a) are required neither to interfere without due cause with the operation of, nor to misuse, any safety device or appliance provided for their own protection or the protection of others;

   (b) take reasonable care for their own safety and that of other persons who may be affected by their acts or omissions at work;

   (c) report forthwith to their immediate supervisor any situation which they have reason to believe could present a risk and which they cannot correct themselves, so that corrective measures can be taken.

2. Workers shall have a right at any workplace to participate in ensuring safe working to the extent of their control over the equipment and methods of work and to express views on the working procedures adopted as they affect safety. In so far as appropriate under national law and practice, where safety and health committees have been formed in accordance with Article 37 of this Convention, this right shall be exercised through these committees.

Article 7

1. In giving effect to the provisions of this Convention by national laws or regulations or other appropriate methods consistent with national practice and conditions, the competent authority shall act in consultation with the organisations of employers and workers concerned.

2. Provision shall be made for close collaboration between employers and workers or their representatives in the application of the measures referred to in Article 4, paragraph 1, of this Convention.
1.5.4 PART III. TECHNICAL MEASURES

Article 8

Any time that a workplace has become unsafe or there is a risk of injury to health, effective measures shall be taken (by fencing, flagging or other suitable means including, where necessary, cessation of work) to protect the workers until the place has been made safe again.

Article 9

1. All places where dock work is being carried out and any approaches thereto shall be suitably and adequately lighted.

2. Any obstacle liable to be dangerous to the movement of a lifting appliance, vehicle or person shall, if it cannot be removed for practical reasons, be suitably and conspicuously marked and, where necessary, adequately lighted.

Article 10

1. All surfaces used for vehicle traffic or for the stacking of goods or materials shall be suitable for the purpose and properly maintained.

2. Where goods or materials are stacked, stowed, unstacked or unstowed, the work shall be done in a safe and orderly manner having regard to the nature of the goods or materials and their packing.

Article 11

1. Passageways of adequate width shall be left to permit the safe use of vehicles and cargo-handling appliances.

2. Separate passageways for pedestrian use shall be provided where necessary and practicable; such passageways shall be of adequate width and, as far as is practicable, separated from passageways used by vehicles.

Article 12

Suitable and adequate means for fighting fire shall be provided and kept available for use where dock work is carried out.

Article 13

1. All dangerous parts of machinery shall be effectively guarded, unless they are in such a position or of such a construction as to be as safe as they would be if effectively guarded.

2. Effective measures shall be provided for promptly cutting off the power to any machinery in respect of which this is necessary, in an emergency.
3. When any cleaning, maintenance or repair work that would expose any person to danger has to be undertaken on machinery, the machinery shall be stopped before this work is begun and adequate measures shall be taken to ensure that the machinery cannot be restarted until the work has been completed: Provided that a responsible person may restart the machinery for the purpose of any testing or adjustment which cannot be carried out while the machinery is at rest.

4. Only an authorised person shall be permitted to--

(a) remove any guard where this is necessary for the purpose of the work being carried out;

(b) remove a safety device or make it inoperative for the purpose of cleaning, adjustment or repair.

5. If any guard is removed, adequate precautions shall be taken, and the guard shall be replaced as soon as practicable.

6. If any safety device is removed or made inoperative, the device shall be replaced or its operation restored as soon as practicable and measures shall be taken to ensure that the relevant equipment cannot be used or inadvertently started until the safety device has been replaced or its operation restored.

7. For the purpose of this Article, the term machinery includes any lifting appliance, mechanised hatch cover or power-driven equipment.

Article 14

All electrical equipment and installations shall be so constructed, installed, operated and maintained as to prevent danger and shall conform to such standards as have been recognised by the competent authority.

Article 15

When a ship is being loaded or unloaded alongside a quay or another ship, adequate and safe means of access to the ship, properly installed and secured, shall be provided and kept available.

Article 16

1. When workers have to be transported to or from a ship or other place by water, adequate measures shall be taken to ensure their safe embarking, transport and disembarking; the conditions to be complied with by the vessels used for this purpose shall be specified.

2. When workers have to be transported to or from a workplace on land, means of transport provided by the employer shall be safe.

Article 17

1. Access to a ship's hold or cargo deck shall be by means of--
(a) a fixed stairway or, where this is not practicable, a fixed ladder or cleats or cups of suitable dimensions, of adequate strength and proper construction; or

(b) by other means acceptable to the competent authority.

2. So far as is reasonably practicable, the means of access specified in this Article shall be separate from the hatchway opening.

3. Workers shall not use, or be required to use, any other means of access to a ship's hold or cargo deck than those specified in this Article.

Article 18

1. No hatch cover or beam shall be used unless it is of sound construction, of adequate strength for the use to which it is to be put and properly maintained.

2. Hatch covers handled with the aid of a lifting appliance shall be fitted with readily accessible and suitable attachments for securing the slings or other lifting gear.

3. Where hatch covers and beams are not interchangeable, they shall be kept plainly marked to indicate the hatch to which they belong and their position therein.

4. Only an authorised person (whenever practicable a member of the ship's crew) shall be permitted to open or close power-operated hatch covers; the hatch covers shall not be opened or closed while any person is liable to be injured by the operation of the covers.

5. The provisions of paragraph 4 of this Article shall apply, mutatis mutandis, to power-operated ship's equipment such as a door in the hull of a ship, a ramp, a retractable car deck or similar equipment.

Article 19

1. Adequate measures shall be taken to protect any opening in or on a deck where workers are required to work, through which opening workers or vehicles are liable to fall.

2. Every hatchway not fitted with a coaming of adequate height and strength shall be closed or its guard replaced when the hatchway is no longer in use, except during short interruptions of work, and a responsible person shall be charged with ensuring that these measures are carried out.

Article 20

1. All necessary measures shall be taken to ensure the safety of workers required to be in the hold or on a cargo deck of a ship when power vehicles operate in that hold or loading or unloading operations are taking place with the aid of power-operated appliances.

2. Hatch covers and beams shall not be removed or replaced while work is in progress in the hold under the hatchway. Before loading or unloading takes place, any hatch cover or beam that is not adequately secured against displacement shall be removed.
3. Adequate ventilation shall be provided in the hold or on a cargo deck by the circulation of fresh air to prevent risks of injury to health arising from the fumes emitted by internal combustion engines or from other sources.

4. Adequate arrangements, including safe means of escape, shall be made for the safety of persons when dry bulk cargo is being loaded or unloaded in any hold or ‘tween deck or when a worker is required to work in a bin or hopper on board ship.

Article 21

Every lifting appliance, every item of loose gear and every sling or lifting device forming an integral part of a load shall be--

(a) of good design and construction, of adequate strength for the purpose for which it is used, maintained in good repair and working order and, in the case of a lifting appliance in respect of which this is necessary, properly installed;

(b) used in a safe and proper manner and, in particular, shall not be loaded beyond its safe working load or loads, except for testing purposes as specified and under the direction of a competent person.

Article 22

1. Every lifting appliance and every item of loose gear shall be tested in accordance with national laws or regulations by a competent person before being put into use for the first time and after any substantial alteration or repair to any part liable to affect its safety.

2. Lifting appliances forming part of a ship's equipment shall be retested at least once in every five years.

3. Shore-based lifting appliances shall be retested at such times as prescribed by the competent authority.

4. Upon the completion of every test of a lifting appliance or item of loose gear carried out in accordance with this Article, the appliance or gear shall be thoroughly examined and certified by the person carrying out the test.

Article 23

1. In addition to the requirements of Article 22, every lifting appliance and every item of loose gear shall be periodically thoroughly examined and certified by a competent person. Such examinations shall take place at least once in every 12 months.

2. For the purpose of paragraph 4 of Article 22 and of paragraph 1 of this Article, a thorough examination means a detailed visual examination by a competent person, supplemented if necessary by other suitable means or measures in order to arrive at a reliable conclusion as to the safety of the appliance or item of loose gear examined.
Article 24

1. Every item of loose gear shall be inspected regularly before use. Expendable or disposable slings shall not be reused. In the case of pre-slung cargoes, the slings shall be inspected as frequently as is reasonably practicable.

2. For the purpose of paragraph 1 of this Article, an inspection means a visual inspection by a responsible person carried out to decide whether, so far as can be ascertained in such manner, the gear or sling is safe for continued use.

Article 25

1. Such duly authenticated records as will provide prima facie evidence of the safe condition of the lifting appliances and items of loose gear concerned shall be kept, on shore or on the ship as the case may be; they shall specify the safe working load and the dates and results of the tests, thorough examinations and inspections referred to in Articles 22, 23 and 24 of this Convention: Provided that in the case of inspections referred to in paragraph 1 of Article 24 of this Convention, a record need only be made where the inspection discloses a defect.

2. A register of the lifting appliances and items of loose gear shall be kept in a form prescribed by the competent authority, account being taken of the model recommended by the International Labour Office.

3. The register shall comprise certificates granted or recognised as valid by the competent authority, or certified true copies of the said certificates, in a form prescribed by the competent authority, account being taken of the models recommended by the International Labour Office in respect of the testing, thorough examination and inspection, as the case may be, of lifting appliances and items of loose gear.

Article 26

1. With a view to ensuring the mutual recognition of arrangements made by Members which have ratified this Convention for the testing, thorough examination, inspection and certification of lifting appliances and items of loose gear forming part of a ship's equipment and of the records relating thereto--

   (a) the competent authority of each Member which has ratified the Convention shall appoint or otherwise recognise competent persons or national or international organisations to carry out tests and/or thorough examinations and related functions, under conditions that ensure that the continuance of appointment or recognition depends upon satisfactory performance;

   (b) Members which have ratified the Convention shall accept or recognise those appointed or otherwise recognised pursuant to subparagraph (a) of this paragraph, or shall enter into reciprocal arrangements with regard to such acceptance or recognition; in either case, acceptance or recognition shall be under conditions that make their continuance dependent upon satisfactory performance.

2. No lifting appliance, loose gear or other cargo-handling appliances shall be used if--
(a) the competent authority is not satisfied by reference to a certificate of test or examination or to an authenticated record, as the case may be, that the necessary test, examination or inspection has been carried out in accordance with the provisions of this Convention; or

(b) in the view of the competent authority, the appliance or gear is not safe for use.

3. Paragraph 2 of this Article shall not be so applied as to cause delay in loading or unloading a ship where equipment satisfactory to the competent authority is used.

Article 27

1. Every lifting appliance (other than a ship's derrick) having a single safe working load and every item of loose gear shall be clearly marked with its safe working load by stamping or, where this is impracticable, by other suitable means.

2. Every lifting appliance (other than a ship's derrick) having more than one safe working load shall be fitted with effective means of enabling the driver to determine the safe working load under each condition of use.

3. Every ship's derrick (other than a derrick crane) shall be clearly marked with the safe working loads applying when the derrick is used--

   (a) in single purchase;

   (b) with a lower cargo block;

   (c) in union purchase in all possible block positions.

Article 28

Every ship shall carry rigging plans and any other relevant information necessary to permit the safe rigging of its derricks and accessory gear.

Article 29

Pallets and similar devices for containing or supporting loads shall be of sound construction, of adequate strength and free from visible defects liable to affect their safe use.

Article 30

Loads shall not be raised or lowered unless slung or otherwise attached to the lifting appliance in a safe manner.

Article 31

1. Every freight container terminal shall be so laid out and operated as to ensure so far as is reasonably practicable the safety of the workers.
2. In the case of ships carrying containers, means shall be provided for ensuring the safety of workers lashing or unlashing the containers.

**Article 32**

1. Any dangerous cargo shall be packed, marked and labelled, handled, stored and stowed in accordance with the relevant requirements of international regulations applying to the transport of dangerous goods by water and those dealing specifically with the handling of dangerous goods in ports.

2. Dangerous substances shall not be handled, stored or stowed unless they are packed and marked and labelled in compliance with international regulations for the transport of such substances.

3. If receptacles or containers of dangerous substances are broken or damaged to a dangerous extent, dock work, other than that necessary to eliminate danger, shall be stopped in the area concerned and the workers removed to a safe place until the danger has been eliminated.

4. Adequate measures shall be taken to prevent exposure of workers to toxic or harmful substances or agents, or oxygen-deficient or flammable atmospheres.

5. Where workers are required to enter any confined space in which toxic or harmful substances are liable to be present or in which there is liable to be an oxygen deficiency, adequate measures shall be taken to prevent accidents or injury to health.

**Article 33**

Suitable precautions shall be taken to protect workers against the harmful effects of excessive noise at the workplace.

**Article 34**

1. Where adequate protection against risks of accident or injury to health cannot be ensured by other means, workers shall be provided with and shall be required to make proper use of such personal protective equipment and protective clothing as is reasonably required for the performance of their work.

2. Workers shall be required to take care of that personal protective equipment and protective clothing.

3. Personal protective equipment and protective clothing shall be properly maintained by the employer.

**Article 35**

In case of accident, adequate facilities, including trained personnel, shall be readily available for the rescue of any person in danger, for the provision of first-aid and for the removal of injured persons in so far as is reasonably practicable without further endangering them.
Article 36

1. Each Member shall determine, by national laws or regulations or other appropriate methods consistent with national practice and conditions, and after consultation with the organisations of employers and workers concerned--

   (a) for which risks inherent in the work there is to be an initial medical examination or a periodical medical examination, or both;

   (b) with due regard to the nature and degree of the risks and the particular circumstances, the maximum intervals at which periodical medical examinations are to be carried out;

   (c) in the case of workers exposed to special occupational health hazards, the range of special investigations deemed necessary;

   (d) appropriate measures for the provision of occupational health services for workers.

2. All medical examinations and investigations carried out in pursuance of paragraph 1 of this Article shall be free of cost to the worker.

3. The records of the medical examinations and the investigations shall be confidential.

Article 37

1. Safety and health committees including employers' and workers' representatives shall be formed at every port where there is a significant number of workers. Such committees shall also be formed at other ports as necessary.

2. The establishment, composition and functions of such committees shall be determined by national laws or regulations or other appropriate methods consistent with national practice and conditions, after consultation with the organisations of employers and workers concerned, and in the light of local circumstances.

Article 38

1. No worker shall be employed in dock work unless he has been given adequate instruction or training as to the potential risks attaching to his work and the main precautions to be taken.

2. A lifting appliance or other cargo-handling appliance shall be operated only by a person who is at least 18 years of age and who possesses the necessary aptitudes and experience or a person under training who is properly supervised.

Article 39

To assist in the prevention of occupational accidents and diseases, measures shall be taken to ensure that they are reported to the competent authority and, where necessary, investigated.
Article 40

In accordance with national laws or regulations or national practice, a sufficient number of adequate and suitable sanitary and washing facilities shall be provided and properly maintained at each dock, wherever practicable within a reasonable distance of the workplace.

1.5.5 PART IV. IMPLEMENTATION

Article 41

Each Member which ratifies this Convention shall--

(a) specify the duties in respect of occupational safety and health of persons and bodies concerned with dock work;

(b) take necessary measures, including the provision of appropriate penalties, to enforce the provisions of the Convention;

(c) provide appropriate inspection services to supervise the application of the measures to be taken in pursuance of the Convention, or satisfy itself that appropriate inspection is carried out.

Article 42

1. National laws or regulations shall prescribe the time-limits within which the provisions of this Convention shall apply in respect of--

(a) the construction or equipping of a ship;

(b) the construction or equipping of any shore-based lifting appliance or other cargo-handling appliance;

(c) the construction of any item of loose gear.

2. The time-limits prescribed pursuant to paragraph 1 of this Article shall not exceed four years from the date of ratification of the Convention.

1.5.6 PART V. FINAL PROVISIONS

Article 43

This Convention revises the Protection against Accidents (Dockers) Convention, 1929, and the Protection against Accidents (Dockers) Convention (Revised), 1932.
Article 44

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 45

1. This Convention shall be binding only upon those Members of the International Labour Organisation whose ratifications have been registered with the Director-General.

2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.

3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification has been registered.

Article 46

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.

2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.

Article 47

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organisation of the registration of all ratifications and denunciations communicated to him by the Members of the Organisation.

2. When notifying the Members of the Organisation of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organisation to the date upon which the Convention will come into force.

Article 48

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and acts of denunciation registered by him in accordance with the provisions of the preceding Articles.
Article 49

At such times as it may consider necessary the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

Article 50

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides:

(a) the ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 46 above, if and when the new revising Convention shall have come into force;

(b) as from the date when the new revising Convention comes into force this Convention shall cease to be open to ratification by the Members.

2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

1.6 Occupational Safety and Health (Dock Work) Convention, 1979

1.6.1 Preamble

The General Conference of the International Labour Organisation,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Sixty-fifth Session on 6 June 1979, and

Noting the terms of existing international labour Conventions and Recommendations which are relevant and, in particular, the Marking of Weight (Packages Transported by Vessels) Convention, 1929, the Guarding of Machinery Convention, 1963, and the Working Environment (Air Pollution, Noise and Vibration) Convention, 1977, and

Having decided upon the adoption of certain proposals with regard to the revision of the Protection against Accidents (Dockers) Convention (Revised), 1932 (No. 32), which is the fourth item on the agenda of the session, and

Considering that these proposals must take the form of an international Convention,

adopts this twenty-fifth day of June of the year one thousand nine hundred and seventy-nine the following Convention, which may be cited as the Occupational Safety and Health (Dock Work) Convention, 1979:
1.6.2 PART I. SCOPE AND DEFINITIONS

Article 1

For the purpose of this Convention, the term *dock work* covers all and any part of the work of loading or unloading any ship as well as any work incidental thereto; the definition of such work shall be established by national law or practice. The organisations of employers and workers concerned shall be consulted on or otherwise participate in the establishment and revision of this definition.

Article 2

1. A Member may grant exemptions from or permit exceptions to the provisions of this Convention in respect of dock work at any place where the traffic is irregular and confined to small ships, as well as in respect of dock work in relation to fishing vessels or specified categories thereof, on condition that-

   (a) safe working conditions are maintained; and

   (b) the competent authority, after consultation with the organisations of employers and workers concerned, is satisfied that it is reasonable in all the circumstances that there be such exemptions or exceptions.

2. Particular requirements of Part III of this Convention may be varied if the competent authority is satisfied, after consultation with the organisations of employers and workers concerned, that the variations provide corresponding advantages and that the over-all protection afforded is not inferior to that which would result from the full application of the provisions of this Convention.

3. Any exemptions or exceptions made under paragraph 1 of this Article and any significant variations made under paragraph 2 of this Article, as well as the reasons therefor, shall be indicated in the reports on the application of the Convention submitted in pursuance of Article 22 of the Constitution of the International Labour Organisation.

Article 3

For the purpose of this Convention--

(a) the term *worker* means any person engaged in dock work;

(b) the term *competent person* means a person possessing the knowledge and experience required for the performance of a specific duty or duties and acceptable as such to the competent authority;

(c) the term *responsible person* means a person appointed by the employer, the master of the ship or the owner of the gear, as the case may be, to be responsible for the performance of a specific duty or duties and who has sufficient knowledge and experience and the requisite authority for the proper performance of the duty or duties;

(d) the term *authorised person* means a person authorised by the employer, the master of the ship or a responsible person to undertake a specific task or tasks and possessing the necessary technical knowledge and experience;
(e) the term **lifting appliance** covers all stationary or mobile cargo-handling appliances, including shore-based power-operated ramps, used on shore or on board ship for suspending, raising or lowering loads or moving them from one position to another while suspended or supported;

(f) the term **loose gear** covers any gear by means of which a load can be attached to a lifting appliance but which does not form an integral part of the appliance or load;

(g) the term **access** includes egress;

(h) the term **ship** covers any kind of ship, vessel, barge, lighter or hovercraft, excluding ships of war.

1.6.3 PART II. GENERAL PROVISIONS

**Article 4**

1. National laws or regulations shall prescribe that measures complying with Part III of this Convention be taken as regards dock work with a view to--

   (a) providing and maintaining workplaces, equipment and methods of work that are safe and without risk of injury to health;

   (b) providing and maintaining safe means of access to any workplace;

   (c) providing the information, training and supervision necessary to ensure the protection of workers against risks of accident or injury to health arising out of or in the course of their employment;

   (d) providing workers with any personal protective equipment and protective clothing and any life-saving appliances reasonably required where adequate protection against risks of accident or injury to health cannot be provided by other means;

   (e) providing and maintaining suitable and adequate first-aid and rescue facilities;

   (f) developing and establishing proper procedures to deal with any emergency situations which may arise.

2. The measures to be taken in pursuance of this Convention shall cover--

   (a) general requirements relating to the construction, equipping and maintenance of dock structures and other places at which dock work is carried out;

   (b) fire and explosion prevention and protection;

   (c) safe means of access to ships, holds, staging, equipment and lifting appliances;

   (d) transport of workers;

   (e) opening and closing of hatches, protection of hatchways and work in holds; (f) construction, maintenance and use of lifting and other cargo-handling appliances;
(g) construction, maintenance and use of staging;

(h) rigging and use of ship's derricks;

(i) testing, examination, inspection and certification, as appropriate, of lifting appliances, of loose gear, including chains and ropes, and of slings and other lifting devices which form an integral part of the load;

(j) handling of different types of cargo;

(k) stacking and storage of goods;

(l) dangerous substances and other hazards in the working environment;

(m) personal protective equipment and protective clothing;

(n) sanitary and washing facilities and welfare amenities;

(o) medical supervision;

(p) first-aid and rescue facilities;

(q) safety and health organisation;

(r) training of workers;

(s) notification and investigation of occupational accidents and diseases.

3. The practical implementation of the requirements prescribed in pursuance of paragraph 1 of this Article shall be ensured or assisted by technical standards or codes of practice approved by the competent authority, or by other appropriate methods consistent with national practice and conditions.

Article 5

1. National laws or regulations shall make appropriate persons, whether employers, owners, masters or other persons, as the case may be, responsible for compliance with the measures referred to in Article 4, paragraph 1, of this Convention.

2. Whenever two or more employers undertake activities simultaneously at one workplace, they shall have the duty to collaborate in order to comply with the prescribed measures, without prejudice to the responsibility of each employer for the health and safety of his employees. In appropriate circumstances, the competent authority shall prescribe general procedures for this collaboration.

Article 6

1. There shall be arrangements under which workers--
(a) are required neither to interfere without due cause with the operation of, nor to misuse, any safety device or appliance provided for their own protection or the protection of others;

(b) take reasonable care for their own safety and that of other persons who may be affected by their acts or omissions at work;

(c) report forthwith to their immediate supervisor any situation which they have reason to believe could present a risk and which they cannot correct themselves, so that corrective measures can be taken.

2. Workers shall have a right at any workplace to participate in ensuring safe working to the extent of their control over the equipment and methods of work and to express views on the working procedures adopted as they affect safety. In so far as appropriate under national law and practice, where safety and health committees have been formed in accordance with Article 37 of this Convention, this right shall be exercised through these committees.

Article 7

1. In giving effect to the provisions of this Convention by national laws or regulations or other appropriate methods consistent with national practice and conditions, the competent authority shall act in consultation with the organisations of employers and workers concerned.

2. Provision shall be made for close collaboration between employers and workers or their representatives in the application of the measures referred to in Article 4, paragraph 1, of this Convention.

1.6.4 PART III. TECHNICAL MEASURES

Article 8

Any time that a workplace has become unsafe or there is a risk of injury to health, effective measures shall be taken (by fencing, flagging or other suitable means including, where necessary, cessation of work) to protect the workers until the place has been made safe again.

Article 9

1. All places where dock work is being carried out and any approaches thereto shall be suitably and adequately lighted.

2. Any obstacle liable to be dangerous to the movement of a lifting appliance, vehicle or person shall, if it cannot be removed for practical reasons, be suitably and conspicuously marked and, where necessary, adequately lighted.

Article 10

1. All surfaces used for vehicle traffic or for the stacking of goods or materials shall be suitable for the purpose and properly maintained.
2. Where goods or materials are stacked, stowed, unstacked or unstowed, the work shall be done in a
safe and orderly manner having regard to the nature of the goods or materials and their packing.

Article 11

1. Passageways of adequate width shall be left to permit the safe use of vehicles and cargo-handling
appliances.

2. Separate passageways for pedestrian use shall be provided where necessary and practicable; such
passageways shall be of adequate width and, as far as is practicable, separated from passageways used
by vehicles.

Article 12

Suitable and adequate means for fighting fire shall be provided and kept available for use where dock
work is carried out.

Article 13

1. All dangerous parts of machinery shall be effectively guarded, unless they are in such a position or
of such a construction as to be as safe as they would be if effectively guarded.

2. Effective measures shall be provided for promptly cutting off the power to any machinery in
respect of which this is necessary, in an emergency.

3. When any cleaning, maintenance or repair work that would expose any person to danger has to be
undertaken on machinery, the machinery shall be stopped before this work is begun and adequate
measures shall be taken to ensure that the machinery cannot be restarted until the work has been
completed: Provided that a responsible person may restart the machinery for the purpose of any
testing or adjustment which cannot be carried out while the machinery is at rest.

4. Only an authorised person shall be permitted to--

   (a) remove any guard where this is necessary for the purpose of the work being carried out;

   (b) remove a safety device or make it inoperative for the purpose of cleaning, adjustment or
       repair.

5. If any guard is removed, adequate precautions shall be taken, and the guard shall be replaced as
soon as practicable.

6. If any safety device is removed or made inoperative, the device shall be replaced or its operation
restored as soon as practicable and measures shall be taken to ensure that the relevant equipment
cannot be used or inadvertently started until the safety device has been replaced or its operation
restored.

7. For the purpose of this Article, the term machinery includes any lifting appliance, mechanised
hatch cover or power-driven equipment.
Article 14

All electrical equipment and installations shall be so constructed, installed, operated and maintained as to prevent danger and shall conform to such standards as have been recognised by the competent authority.

Article 15

When a ship is being loaded or unloaded alongside a quay or another ship, adequate and safe means of access to the ship, properly installed and secured, shall be provided and kept available.

Article 16

1. When workers have to be transported to or from a ship or other place by water, adequate measures shall be taken to ensure their safe embarking, transport and disembarking; the conditions to be complied with by the vessels used for this purpose shall be specified.

2. When workers have to be transported to or from a workplace on land, means of transport provided by the employer shall be safe.

Article 17

1. Access to a ship's hold or cargo deck shall be by means of--

   (a) a fixed stairway or, where this is not practicable, a fixed ladder or cleats or cups of suitable dimensions, of adequate strength and proper construction; or

   (b) by other means acceptable to the competent authority.

2. So far as is reasonably practicable, the means of access specified in this Article shall be separate from the hatchway opening.

3. Workers shall not use, or be required to use, any other means of access to a ship's hold or cargo deck than those specified in this Article.

Article 18

1. No hatch cover or beam shall be used unless it is of sound construction, of adequate strength for the use to which it is to be put and properly maintained.

2. Hatch covers handled with the aid of a lifting appliance shall be fitted with readily accessible and suitable attachments for securing the slings or other lifting gear.

3. Where hatch covers and beams are not interchangeable, they shall be kept plainly marked to indicate the hatch to which they belong and their position therein.

4. Only an authorised person (whenever practicable a member of the ship's crew) shall be permitted to open or close power-operated hatch covers; the hatch covers shall not be opened or closed while any person is liable to be injured by the operation of the covers.
5. The provisions of paragraph 4 of this Article shall apply, mutatis mutandis, to power-operated ship's equipment such as a door in the hull of a ship, a ramp, a retractable car deck or similar equipment.

Article 19

1. Adequate measures shall be taken to protect any opening in or on a deck where workers are required to work, through which opening workers or vehicles are liable to fall.

2. Every hatchway not fitted with a coaming of adequate height and strength shall be closed or its guard replaced when the hatchway is no longer in use, except during short interruptions of work, and a responsible person shall be charged with ensuring that these measures are carried out.

Article 20

1. All necessary measures shall be taken to ensure the safety of workers required to be in the hold or on a cargo deck of a ship when power vehicles operate in that hold or loading or unloading operations are taking place with the aid of power-operated appliances.

2. Hatch covers and beams shall not be removed or replaced while work is in progress in the hold under the hatchway. Before loading or unloading takes place, any hatch cover or beam that is not adequately secured against displacement shall be removed.

3. Adequate ventilation shall be provided in the hold or on a cargo deck by the circulation of fresh air to prevent risks of injury to health arising from the fumes emitted by internal combustion engines or from other sources.

4. Adequate arrangements, including safe means of escape, shall be made for the safety of persons when dry bulk cargo is being loaded or unloaded in any hold or 'tween deck or when a worker is required to work in a bin or hopper on board ship.

Article 21

Every lifting appliance, every item of loose gear and every sling or lifting device forming an integral part of a load shall be--

(a) of good design and construction, of adequate strength for the purpose for which it is used, maintained in good repair and working order and, in the case of a lifting appliance in respect of which this is necessary, properly installed;

(b) used in a safe and proper manner and, in particular, shall not be loaded beyond its safe working load or loads, except for testing purposes as specified and under the direction of a competent person.

Article 22

1. Every lifting appliance and every item of loose gear shall be tested in accordance with national laws or regulations by a competent person before being put into use for the first time and after any substantial alteration or repair to any part liable to affect its safety.
2. Lifting appliances forming part of a ship's equipment shall be retested at least once in every five years.

3. Shore-based lifting appliances shall be retested at such times as prescribed by the competent authority.

4. Upon the completion of every test of a lifting appliance or item of loose gear carried out in accordance with this Article, the appliance or gear shall be thoroughly examined and certified by the person carrying out the test.

Article 23

1. In addition to the requirements of Article 22, every lifting appliance and every item of loose gear shall be periodically thoroughly examined and certified by a competent person. Such examinations shall take place at least once in every 12 months.

2. For the purpose of paragraph 4 of Article 22 and of paragraph 1 of this Article, a thorough examination means a detailed visual examination by a competent person, supplemented if necessary by other suitable means or measures in order to arrive at a reliable conclusion as to the safety of the appliance or item of loose gear examined.

Article 24

1. Every item of loose gear shall be inspected regularly before use. Expendable or disposable slings shall not be reused. In the case of pre-slung cargoes, the slings shall be inspected as frequently as is reasonably practicable.

2. For the purpose of paragraph 1 of this Article, an inspection means a visual inspection by a responsible person carried out to decide whether, so far as can be ascertained in such manner, the gear or sling is safe for continued use.

Article 25

1. Such duly authenticated records as will provide prima facie evidence of the safe condition of the lifting appliances and items of loose gear concerned shall be kept, on shore or on the ship as the case may be; they shall specify the safe working load and the dates and results of the tests, thorough examinations and inspections referred to in Articles 22, 23 and 24 of this Convention: Provided that in the case of inspections referred to in paragraph 1 of Article 24 of this Convention, a record need only be made where the inspection discloses a defect.

2. A register of the lifting appliances and items of loose gear shall be kept in a form prescribed by the competent authority, account being taken of the model recommended by the International Labour Office.

3. The register shall comprise certificates granted or recognised as valid by the competent authority, or certified true copies of the said certificates, in a form prescribed by the competent authority, account being taken of the models recommended by the International Labour Office in respect of the testing, thorough examination and inspection, as the case may be, of lifting appliances and items of loose gear.
Article 26

1. With a view to ensuring the mutual recognition of arrangements made by Members which have ratified this Convention for the testing, thorough examination, inspection and certification of lifting appliances and items of loose gear forming part of a ship's equipment and of the records relating thereto--

   (a) the competent authority of each Member which has ratified the Convention shall appoint or otherwise recognise competent persons or national or international organisations to carry out tests and/or thorough examinations and related functions, under conditions that ensure that the continuance of appointment or recognition depends upon satisfactory performance;

   (b) Members which have ratified the Convention shall accept or recognise those appointed or otherwise recognised pursuant to subparagraph (a) of this paragraph, or shall enter into reciprocal arrangements with regard to such acceptance or recognition; in either case, acceptance or recognition shall be under conditions that make their continuance dependent upon satisfactory performance.

2. No lifting appliance, loose gear or other cargo-handling appliances shall be used if--

   (a) the competent authority is not satisfied by reference to a certificate of test or examination or to an authenticated record, as the case may be, that the necessary test, examination or inspection has been carried out in accordance with the provisions of this Convention; or

   (b) in the view of the competent authority, the appliance or gear is not safe for use.

3. Paragraph 2 of this Article shall not be so applied as to cause delay in loading or unloading a ship where equipment satisfactory to the competent authority is used.

Article 27

1. Every lifting appliance (other than a ship's derrick) having a single safe working load and every item of loose gear shall be clearly marked with its safe working load by stamping or, where this is impracticable, by other suitable means.

2. Every lifting appliance (other than a ship's derrick) having more than one safe working load shall be fitted with effective means of enabling the driver to determine the safe working load under each condition of use.

3. Every ship's derrick (other than a derrick crane) shall be clearly marked with the safe working loads applying when the derrick is used--

   (a) in single purchase;

   (b) with a lower cargo block;

   (c) in union purchase in all possible block positions.
Article 28

Every ship shall carry rigging plans and any other relevant information necessary to permit the safe rigging of its derricks and accessory gear.

Article 29

Pallets and similar devices for containing or supporting loads shall be of sound construction, of adequate strength and free from visible defects liable to affect their safe use.

Article 30

Loads shall not be raised or lowered unless slung or otherwise attached to the lifting appliance in a safe manner.

Article 31

1. Every freight container terminal shall be so laid out and operated as to ensure so far as is reasonably practicable the safety of the workers.

2. In the case of ships carrying containers, means shall be provided for ensuring the safety of workers lashing or unlashing the containers.

Article 32

1. Any dangerous cargo shall be packed, marked and labelled, handled, stored and stowed in accordance with the relevant requirements of international regulations applying to the transport of dangerous goods by water and those dealing specifically with the handling of dangerous goods in ports.

2. Dangerous substances shall not be handled, stored or stowed unless they are packed and marked and labelled in compliance with international regulations for the transport of such substances.

3. If receptacles or containers of dangerous substances are broken or damaged to a dangerous extent, dock work, other than that necessary to eliminate danger, shall be stopped in the area concerned and the workers removed to a safe place until the danger has been eliminated.

4. Adequate measures shall be taken to prevent exposure of workers to toxic or harmful substances or agents, or oxygen-deficient or flammable atmospheres.

5. Where workers are required to enter any confined space in which toxic or harmful substances are liable to be present or in which there is liable to be an oxygen deficiency, adequate measures shall be taken to prevent accidents or injury to health.

Article 33

Suitable precautions shall be taken to protect workers against the harmful effects of excessive noise at the workplace.
Article 34

1. Where adequate protection against risks of accident or injury to health cannot be ensured by other means, workers shall be provided with and shall be required to make proper use of such personal protective equipment and protective clothing as is reasonably required for the performance of their work.

2. Workers shall be required to take care of that personal protective equipment and protective clothing.

3. Personal protective equipment and protective clothing shall be properly maintained by the employer.

Article 35

In case of accident, adequate facilities, including trained personnel, shall be readily available for the rescue of any person in danger, for the provision of first-aid and for the removal of injured persons in so far as is reasonably practicable without further endangering them.

Article 36

1. Each Member shall determine, by national laws or regulations or other appropriate methods consistent with national practice and conditions, and after consultation with the organisations of employers and workers concerned--

   (a) for which risks inherent in the work there is to be an initial medical examination or a periodical medical examination, or both;

   (b) with due regard to the nature and degree of the risks and the particular circumstances, the maximum intervals at which periodical medical examinations are to be carried out;

   (c) in the case of workers exposed to special occupational health hazards, the range of special investigations deemed necessary;

   (d) appropriate measures for the provision of occupational health services for workers.

2. All medical examinations and investigations carried out in pursuance of paragraph 1 of this Article shall be free of cost to the worker.

3. The records of the medical examinations and the investigations shall be confidential.

Article 37

1. Safety and health committees including employers' and workers' representatives shall be formed at every port where there is a significant number of workers. Such committees shall also be formed at other ports as necessary.
2. The establishment, composition and functions of such committees shall be determined by national laws or regulations or other appropriate methods consistent with national practice and conditions, after consultation with the organisations of employers and workers concerned, and in the light of local circumstances.

Article 38

1. No worker shall be employed in dock work unless he has been given adequate instruction or training as to the potential risks attaching to his work and the main precautions to be taken.

2. A lifting appliance or other cargo-handling appliance shall be operated only by a person who is at least 18 years of age and who possesses the necessary aptitudes and experience or a person under training who is properly supervised.

Article 39

To assist in the prevention of occupational accidents and diseases, measures shall be taken to ensure that they are reported to the competent authority and, where necessary, investigated.

Article 40

In accordance with national laws or regulations or national practice, a sufficient number of adequate and suitable sanitary and washing facilities shall be provided and properly maintained at each dock, wherever practicable within a reasonable distance of the workplace.

1.6.5 PART IV. IMPLEMENTATION

Article 41

Each Member which ratifies this Convention shall--

(a) specify the duties in respect of occupational safety and health of persons and bodies concerned with dock work;

(b) take necessary measures, including the provision of appropriate penalties, to enforce the provisions of the Convention;

(c) provide appropriate inspection services to supervise the application of the measures to be taken in pursuance of the Convention, or satisfy itself that appropriate inspection is carried out.

Article 42

1. National laws or regulations shall prescribe the time-limits within which the provisions of this Convention shall apply in respect of--

(a) the construction or equipping of a ship;
(b) the construction or equipping of any shore-based lifting appliance or other cargo-handling appliance;

(c) the construction of any item of loose gear.

2. The time-limits prescribed pursuant to paragraph 1 of this Article shall not exceed four years from the date of ratification of the Convention.

1.6.6 PART V. FINAL PROVISIONS

Article 43

This Convention revises the Protection against Accidents (Dockers) Convention, 1929, and the Protection against Accidents (Dockers) Convention (Revised), 1932.

Article 44

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 45

1. This Convention shall be binding only upon those Members of the International Labour Organisation whose ratifications have been registered with the Director-General.

2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.

3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification has been registered.

Article 46

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.

2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.
Article 47

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organisation of the registration of all ratifications and denunciations communicated to him by the Members of the Organisation.

2. When notifying the Members of the Organisation of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organisation to the date upon which the Convention will come into force.

Article 48

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and acts of denunciation registered by him in accordance with the provisions of the preceding Articles.

Article 49

At such times as it may consider necessary the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

Article 50

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides:

   (a) the ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 46 above, if and when the new revising Convention shall have come into force;

   (b) as from the date when the new revising Convention comes into force this Convention shall cease to be open to ratification by the Members.

2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

1.8 Safety and Health in Agriculture Convention, 2001

1.8.1 Preamble

The General Conference of the International Labour Organization,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its 89th Session on 5 June 2001, and

Stressing the need for a coherent approach to agriculture and taking into consideration the wider framework of the principles embodied in other ILO instruments applicable to the sector, in particular the Freedom of Association and Protection of the Right to Organise Convention, 1948, the Right to Organise and Collective Bargaining Convention, 1949, the Minimum Age Convention, 1973, and the Worst Forms of Child Labour Convention, 1999, and

Noting the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy as well as the relevant codes of practice, in particular the code of practice on recording and notification of occupational accidents and diseases, 1996, and the code of practice on safety and health in forestry work, 1998, and

Having decided upon the adoption of certain proposals with regard to safety and health in agriculture, which is the fourth item on the agenda of the session, and

Having determined that these proposals shall take the form of an international Convention;

adopts this twenty-first day of June of the year two thousand and one the following Convention, which may be cited as the Safety and Health in Agriculture Convention, 2001.

1.8.2 SCOPE

Article 1

For the purpose of this Convention the term agriculture covers agricultural and forestry activities carried out in agricultural undertakings including crop production, forestry activities, animal husbandry and insect raising, the primary processing of agricultural and animal products by or on behalf of the operator of the undertaking as well as the use and maintenance of machinery, equipment, appliances, tools, and agricultural installations, including any process, storage, operation or transportation in an agricultural undertaking, which are directly related to agricultural production.

Article 2

For the purpose of this Convention the term agriculture does not cover:

(a) subsistence farming;

(b) industrial processes that use agricultural products as raw material and the related services; and

(c) the industrial exploitation of forests.
Article 3

1. The competent authority of a Member which ratifies the Convention, after consulting the representative organizations of employers and workers concerned:

   (a) may exclude certain agricultural undertakings or limited categories of workers from the application of this Convention or certain provisions thereof, when special problems of a substantial nature arise; and

   (b) shall, in the case of such exclusions, make plans to cover progressively all undertakings and all categories of workers.

2. Each Member shall list, in the first report on the application of the Convention submitted under article 22 of the Constitution of the International Labour Organization, any exclusions made in pursuance of paragraph 1(a) of this Article giving the reasons for such exclusion. In subsequent reports, it shall describe the measures taken with a view to extending progressively the provisions of the Convention to the workers concerned.

1.8.3 GENERAL PROVISIONS

Article 4

1. In the light of national conditions and practice and after consulting the representative organizations of employers and workers concerned, Members shall formulate, carry out and periodically review a coherent national policy on safety and health in agriculture. This policy shall have the aim of preventing accidents and injury to health arising out of, linked with, or occurring in the course of work, by eliminating, minimizing or controlling hazards in the agricultural working environment.

2. To this end, national laws and regulations shall:

   (a) designate the competent authority responsible for the implementation of the policy and for the enforcement of national laws and regulations on occupational safety and health in agriculture;

   (b) specify the rights and duties of employers and workers with respect to occupational safety and health in agriculture; and

   (c) establish mechanisms of inter-sectoral coordination among relevant authorities and bodies for the agricultural sector and define their functions and responsibilities, taking into account their complementarity and national conditions and practices.

3. The designated competent authority shall provide for corrective measures and appropriate penalties in accordance with national laws and regulations, including, where appropriate, the suspension or restriction of those agricultural activities which pose an imminent risk to the safety and health of workers, until the conditions giving rise to the suspension or restriction have been corrected.
Article 5

1. Members shall ensure that an adequate and appropriate system of inspection for agricultural workplaces is in place and is provided with adequate means.

2. In accordance with national legislation, the competent authority may entrust certain inspection functions at the regional or local level, on an auxiliary basis, to appropriate government services, public institutions, or private institutions under government control, or may associate these services or institutions with the exercise of such functions.

1.8.4 PREVENTIVE AND PROTECTIVE MEASURES

GENERAL

Article 6

1. In so far as is compatible with national laws and regulations, the employer shall have a duty to ensure the safety and health of workers in every aspect related to the work.

2. National laws and regulations or the competent authority shall provide that whenever in an agricultural workplace two or more employers undertake activities, or whenever one or more employers and one or more self-employed persons undertake activities, they shall cooperate in applying the safety and health requirements. Where appropriate, the competent authority shall prescribe general procedures for this collaboration.

Article 7

In order to comply with the national policy referred to in Article 4 of the Convention, national laws and regulations or the competent authority shall provide, taking into account the size of the undertaking and the nature of its activity, that the employer shall:

(a) carry out appropriate risk assessments in relation to the safety and health of workers and, on the basis of these results, adopt preventive and protective measures to ensure that under all conditions of their intended use, all agricultural activities, workplaces, machinery, equipment, chemicals, tools and processes under the control of the employer are safe and comply with prescribed safety and health standards;

(b) ensure that adequate and appropriate training and comprehensible instructions on safety and health and any necessary guidance or supervision are provided to workers in agriculture, including information on the hazards and risks associated with their work and the action to be taken for their protection, taking into account their level of education and differences in language; and

(c) take immediate steps to stop any operation where there is an imminent and serious danger to safety and health and to evacuate workers as appropriate.

Article 8

1. Workers in agriculture shall have the right:
(a) to be informed and consulted on safety and health matters including risks from new technologies;

(b) to participate in the application and review of safety and health measures and, in accordance with national law and practice, to select safety and health representatives and representatives in safety and health committees; and

(c) to remove themselves from danger resulting from their work activity when they have reasonable justification to believe there is an imminent and serious risk to their safety and health and so inform their supervisor immediately. They shall not be placed at any disadvantage as a result of these actions.

2. Workers in agriculture and their representatives shall have the duty to comply with the prescribed safety and health measures and to cooperate with employers in order for the latter to comply with their own duties and responsibilities.

3. The procedures for the exercise of the rights and duties referred to in paragraphs 1 and 2 shall be established by national laws and regulations, the competent authority, collective agreements or other appropriate means.

4. Where the provisions of this Convention are implemented as provided for by paragraph 3, there shall be prior consultation with the representative organizations of employers and workers concerned.

MACHINERY SAFETY AND ERGONOMICS

Article 9

1. National laws and regulations or the competent authority shall prescribe that machinery, equipment, including personal protective equipment, appliances and hand tools used in agriculture comply with national or other recognized safety and health standards and be appropriately installed, maintained and safeguarded.

2. The competent authority shall take measures to ensure that manufacturers, importers and suppliers comply with the standards referred to in paragraph 1 and provide adequate and appropriate information, including hazard warning signs, in the official language or languages of the user country, to the users and, on request, to the competent authority.

3. Employers shall ensure that workers receive and understand the safety and health information supplied by manufacturers, importers and suppliers.

Article 10

National laws and regulations shall prescribe that agricultural machinery and equipment shall:

(a) only be used for work for which they are designed, unless a use outside of the initial design purpose has been assessed as safe in accordance with national law and practice and, in particular, shall not be used for human transportation, unless designed or adapted so as to carry persons; and

(b) be operated by trained and competent persons, in accordance with national law and practice.
HANDLING AND TRANSPORT OF MATERIALS

Article 11

1. The competent authority, after consulting the representative organizations of employers and workers concerned, shall establish safety and health requirements for the handling and transport of materials, particularly on manual handling. Such requirements shall be based on risk assessment, technical standards and medical opinion, taking account of all the relevant conditions under which the work is performed in accordance with national law and practice.

2. Workers shall not be required or permitted to engage in the manual handling or transport of a load which by reason of its weight or nature is likely to jeopardize their safety or health.

SOUND MANAGEMENT OF CHEMICALS

Article 12

The competent authority shall take measures, in accordance with national law and practice, to ensure that:

(a) there is an appropriate national system or any other system approved by the competent authority establishing specific criteria for the importation, classification, packaging and labelling of chemicals used in agriculture and for their banning or restriction;

(b) those who produce, import, provide, sell, transfer, store or dispose of chemicals used in agriculture comply with national or other recognized safety and health standards, and provide adequate and appropriate information to the users in the appropriate official language or languages of the country and, on request, to the competent authority; and

(c) there is a suitable system for the safe collection, recycling and disposal of chemical waste, obsolete chemicals and empty containers of chemicals so as to avoid their use for other purposes and to eliminate or minimize the risks to safety and health and to the environment.

Article 13

1. National laws and regulations or the competent authority shall ensure that there are preventive and protective measures for the use of chemicals and handling of chemical waste at the level of the undertaking.

2. These measures shall cover, inter alia:

(a) the preparation, handling, application, storage and transportation of chemicals;

(b) agricultural activities leading to the dispersion of chemicals;

(c) the maintenance, repair and cleaning of equipment and containers for chemicals; and

(d) the disposal of empty containers and the treatment and disposal of chemical waste and obsolete chemicals.
Article 14

National laws and regulations shall ensure that risks such as those of infection, allergy or poisoning are prevented or kept to a minimum when biological agents are handled, and activities involving animals, livestock and stabling areas, comply with national or other recognized health and safety standards.

AGRICULTURAL INSTALLATIONS

Article 15

The construction, maintenance and repairing of agricultural installations shall be in conformity with national laws, regulations and safety and health requirements.

1.8.5 OTHER PROVISIONS

YOUNG WORKERS AND HAZARDOUS WORK

Article 16

1. The minimum age for assignment to work in agriculture which by its nature or the circumstances in which it is carried out is likely to harm the safety and health of young persons shall not be less than 18 years.

2. The types of employment or work to which paragraph 1 applies shall be determined by national laws and regulations or by the competent authority, after consultation with the representative organizations of employers and workers concerned.

3. Notwithstanding paragraph 1, national laws or regulations or the competent authority may, after consultation with the representative organizations of employers and workers concerned, authorize the performance of work referred to in that paragraph as from 16 years of age on condition that appropriate prior training is given and the safety and health of the young workers are fully protected.

TEMPORARY AND SEASONAL WORKERS

Article 17

Measures shall be taken to ensure that temporary and seasonal workers receive the same safety and health protection as that accorded to comparable permanent workers in agriculture.

WOMEN WORKERS

Article 18

Measures shall be taken to ensure that the special needs of women agricultural workers are taken into account in relation to pregnancy, breastfeeding and reproductive health.
WELFARE AND ACCOMMODATION FACILITIES

Article 19

National laws and regulations or the competent authority shall prescribe, after consultation with the representative organizations of employers and workers concerned:

(a) the provision of adequate welfare facilities at no cost to the worker; and

(b) the minimum accommodation standards for workers who are required by the nature of the work to live temporarily or permanently in the undertaking.

WORKING TIME ARRANGEMENTS

Article 20

Hours of work, night work and rest periods for workers in agriculture shall be in accordance with national laws and regulations or collective agreements.

COVERAGE AGAINST OCCUPATIONAL INJURIES AND DISEASES

Article 21

1. In accordance with national law and practice, workers in agriculture shall be covered by an insurance or social security scheme against fatal and non-fatal occupational injuries and diseases, as well as against invalidity and other work-related health risks, providing coverage at least equivalent to that enjoyed by workers in other sectors.

2. Such schemes may either be part of a national scheme or take any other appropriate form consistent with national law and practice.

Article 22

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 23

1. This Convention shall be binding only upon those Members of the International Labour Organization whose ratifications have been registered with the Director-General of the International Labour Office.

2. It shall come into force 12 months after the date on which the ratifications of two Members have been registered with the Director-General.

3. Thereafter, this Convention shall come into force for any Member 12 months after the date on which its ratification has been registered.
Article 24

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.

2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.

Article 25

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organization of the registration of all ratifications and acts of denunciation communicated by the Members of the Organization.

2. When notifying the Members of the Organization of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organization to the date upon which the Convention shall come into force.

Article 26

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations, for registration in accordance with article 102 of the Charter of the United Nations, full particulars of all ratifications and acts of denunciation registered by the Director-General in accordance with the provisions of the preceding Articles.

Article 27

At such times as it may consider necessary, the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

Article 28

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides -

   (a) the ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 24 above, if and when the new revising Convention shall have come into force;

   (b) as from the date when the new revising Convention comes into force, this Convention shall cease to be open to ratification by the Members.
2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

**Review Questions**

1. What is the basic purpose of Occupational Health and Safety?
2. Explain the idea of safety convention?
3. What is the present status of safety convention?
4. What are the different type of ILO convention?

**Discussion Questions**

Discuss the major convention related to Occupational Health and Safety and their role in workers safety?
Lesson 2 – Safety and Health in construction

Learning Objectives

- To define the construction work.
- To explain the causes of accidents at construction sites.
- To explain the safety at construction sites.
- Discover ways to reduce construction accidents.

2.1 Safety and Health in Construction Convention

2.1.1 Preamble

The General Conference of the International Labour Organisation,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Seventy-fifth Session on 1 June 1988, and


Having decided upon the adoption of certain proposals with regard to safety and health in construction, which is the fourth item on the agenda of the session, and

Having determined that these proposals shall take the form of an international Convention revising the Safety Provisions (Building) Convention, 1937,

adopts this twentieth day of June of the year one thousand nine hundred and eighty-eight the following Convention, which may be cited as the Safety and Health in Construction Convention, 1988:

2.1.2 SCOPE AND DEFINITIONS

Article 1

1. This Convention applies to all construction activities, namely building, civil engineering, and erection and dismantling work, including any process, operation or transport on a construction site, from the preparation of the site to the completion of the project.
2. A Member ratifying this Convention may, after consultation with the most representative organisations of employers and workers concerned, where they exist, exclude from the application of the Convention, or certain provisions thereof, particular branches of economic activity or particular undertakings in respect of which special problems of a substantial nature arise, on condition that a safe and healthy working environment is maintained.

3. This Convention also applies to such self-employed persons as may be specified by national laws or regulations.

Article 2

For the purpose of this Convention:

(a) The term construction covers:

(i) building, including excavation and the construction, structural alteration, renovation, repair, maintenance (including cleaning and painting) and demolition of all types of buildings or structures;

(ii) civil engineering, including excavation and the construction, structural alteration, repair, maintenance and demolition of, for example, airports, docks, harbours, inland waterways, dams, river and avalanche and sea defence works, roads and highways, railways, bridges, tunnels, viaducts and works related to the provision of services such as communications, drainage, sewerage, water and energy supplies;

(iii) the erection and dismantling of prefabricated buildings and structures, as well as the manufacturing of prefabricated elements on the construction site;

(b) the term construction site means any site at which any of the processes or operations described in subparagraph (a) above are carried on;

(c) the term workplace means all places where workers need to be or to go by reason of their work and which are under the control of an employer as defined in subparagraph (e) below;

(d) the term worker means any person engaged in construction;

(e) the term employer means:

(i) any physical or legal person who employs one or more workers on a construction site; and

(ii) as the context requires, the principal contractor, the contractor or the subcontractor;

(f) the term competent person means a person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill for the safe performance of the specific work. The competent authorities may define appropriate criteria for the designation of such persons and may determine the duties to be assigned to them;
(g) the term scaffold means any temporary structure, fixed, suspended or mobile, and its supporting components which is used for supporting workers and materials or to gain access to any such structure, and which is not a "lifting appliance" as defined in subparagraph (h) below;

(h) the term lifting appliance means any stationary or mobile appliance used for raising or lowering persons or loads;

(i) the term lifting gear means any gear or tackle by means of which a load can be attached to a lifting appliance but which does not form an integral part of the appliance or load.

2.1.3 GENERAL PROVISIONS

Article 3
The most representative organisations of employers and workers concerned shall be consulted on the measures to be taken to give effect to the provisions of this Convention.

Article 4
Each Member which ratifies this Convention undertakes that it will, on the basis of an assessment of the safety and health hazards involved, adopt and maintain in force laws or regulations which ensure the application of the provisions of the Convention.

Article 5

1. The laws and regulations adopted in pursuance of Article 4 above may provide for their practical application through technical standards or codes of practice, or by other appropriate methods consistent with national conditions and practice.

2. In giving effect to Article 4 above and to paragraph 1 of this Article, each Member shall have due regard to the relevant standards adopted by recognised international organisations in the field of standardisation.

Article 6
Measures shall be taken to ensure that there is co-operation between employers and workers, in accordance with arrangements to be defined by national laws or regulations, in order to promote safety and health at construction sites.

Article 7
National laws or regulations shall require that employers and self-employed persons have a duty to comply with the prescribed safety and health measures at the workplace.

Article 8

1. Whenever two or more employers undertake activities simultaneously at one construction site-
(a) the principal contractor, or other person or body with actual control over or primary responsibility for overall construction site activities, shall be responsible for co-ordinating the prescribed safety and health measures and, in so far as is compatible with national laws and regulations, for ensuring compliance with such measures;

(b) in so far as is compatible with national laws and regulations, where the principal contractor, or other person or body with actual control over or primary responsibility for overall construction site activities, is not present at the site, he shall nominate a competent person or body at the site with the authority and means necessary to ensure on his behalf co-ordination and compliance with the measures, as foreseen in subparagraph (a) above;

(c) each employer shall remain responsible for the application of the prescribed measures in respect of the workers placed under his authority.

2. Whenever employers or self-employed persons undertake activities simultaneously at one construction site they shall have the duty to co-operate in the application of the prescribed safety and health measures, as may be specified by national laws or regulations.

Article 9

Those concerned with the design and planning of a construction project shall take into account the safety and health of the construction workers in accordance with national laws, regulations and practice.

Article 10

National laws or regulations shall provide that workers shall have the right and the duty at any workplace to participate in ensuring safe working conditions to the extent of their control over the equipment and methods of work and to express views on the working procedures adopted as they may affect safety and health.

Article 11

National laws or regulations shall provide that workers shall have the duty to-

(a) co-operate as closely as possible with their employer in the application of the prescribed safety and health measures;

(b) take reasonable care for their own safety and health and that of other persons who may be affected by their acts or omissions at work;

(c) use facilities placed at their disposal and not misuse anything provided for their own protection or the protection of others;

(d) report forthwith to their immediate supervisor, and to the workers' safety representative where one exists, any situation which they believe could present a risk, and which they cannot properly deal with themselves;

(e) comply with the prescribed safety and health measures.
Article 12

1. National laws or regulations shall provide that a worker shall have the right to remove himself from danger when he has good reason to believe that there is an imminent and serious danger to his safety or health, and the duty so to inform his supervisor immediately.

2. Where there is an imminent danger to the safety of workers the employer shall take immediate steps to stop the operation and evacuate workers as appropriate.

2.1.4 PREVENTIVE AND PROTECTIVE MEASURES

Article 13

SAFETY OF WORKPLACES

1. All appropriate precautions shall be taken to ensure that all workplaces are safe and without risk of injury to the safety and health of workers.

2. Safe means of access to and egress from all workplaces shall be provided and maintained, and indicated where appropriate.

3. All appropriate precautions shall be taken to protect persons present at or in the vicinity of a construction site from all risks which may arise from such site.

Article 14

SCAFFOLDS AND LADDERS

1. Where work cannot safely be done on or from the ground or from part of a building or other permanent structure, a safe and suitable scaffold shall be provided and maintained, or other equally safe and suitable provision shall be made.

2. In the absence of alternative safe means of access to elevated working places, suitable and sound ladders shall be provided. They shall be properly secured against inadvertent movement.

3. All scaffolds and ladders shall be constructed and used in accordance with national laws and regulations.

4. Scaffolds shall be inspected by a competent person in such cases and at such times as shall be prescribed by national laws or regulations.

Article 15

LIFTING APPLIANCES AND GEAR

1. Every lifting appliance and item of lifting gear, including their constituent elements, attachments, anchorages and supports, shall-
   - (a) be of good design and construction, sound material and adequate strength for the purpose for which they are used;
   - (b) be properly installed and used;
   - (c) be maintained in good working order;
(d) be examined and tested by a competent person at such times and in such cases as shall be prescribed by national laws or regulations; the results of these examinations and tests shall be recorded;
(c) be operated by workers who have received appropriate training in accordance with national laws and regulations.

2. No person shall be raised, lowered or carried by a lifting appliance unless it is constructed, installed and used for that purpose in accordance with national laws and regulations, except in an emergency situation in which serious personal injury or fatality may occur, and for which the lifting appliance can be safely used.

Article 16

TRANSPORT, EARTH-MOVING AND MATERIALS-HANDLING EQUIPMENT

1. All vehicles and earth-moving or materials-handling equipment shall-

   (a) be of good design and construction taking into account as far as possible ergonomic principles;
   
   (b) be maintained in good working order;
   
   (c) be properly used;
   
   (d) be operated by workers who have received appropriate training in accordance with national laws and regulations.

2. On all construction sites on which vehicles, earth-moving or materials-handling equipment are used-

   (a) safe and suitable access ways shall be provided for them; and
   
   (b) traffic shall be so organised and controlled as to secure their safe operation.

Article 17

PLANT, MACHINERY, EQUIPMENT AND HAND TOOLS

1. Plant, machinery and equipment, including hand tools, both manual and power driven, shall-

   (a) be of good design and construction, taking into account as far as possible ergonomic principles;
   
   (b) be maintained in good working order;
   
   (c) be used only for work for which they have been designed unless a use outside the initial design purposes has been assessed by a competent person who has concluded that such use is safe;
   
   (d) be operated by workers who have received appropriate training.
2. Adequate instructions for safe use shall be provided where appropriate by the manufacturer or the employer, in a form understood by the users.

3. Pressure plant and equipment shall be examined and tested by a competent person in cases and at times prescribed by national laws or regulations.

**Article 18**

**WORK AT HEIGHTS INCLUDING ROOFWORK**

1. Where necessary to guard against danger, or where the height of a structure or its slope exceeds that prescribed by national laws or regulations, preventive measures shall be taken against the fall of workers and tools or other objects or materials.

2. Where workers are required to work on or near roofs or other places covered with fragile material, through which they are liable to fall, preventive measures shall be taken against their inadvertently stepping on or falling through the fragile material.

**Article 19**

**EXCAVATIONS, SHAFTS, EARTHWORKS, UNDERGROUND WORKS AND TUNNELS**

Adequate precautions shall be taken in any excavation, shaft, earthworks, underground works or tunnel-

(a) by suitable shoring or otherwise to guard against danger to workers from a fall or dislodgement of earth, rock or other material;

(b) to guard against dangers arising from the fall of persons, materials or objects or the inrush of water into the excavation, shaft, earthworks, underground works or tunnel;

(c) to secure adequate ventilation at every workplace so as to maintain an atmosphere fit for respiration and to limit any fumes, gases, vapours, dust or other impurities to levels which are not dangerous or injurious to health and are within limits laid down by national laws or regulations;

(d) to enable the workers to reach safety in the event of fire, or an inrush of water or material;

(e) to avoid risk to workers arising from possible underground dangers such as the circulation of fluids or the presence of pockets of gas, by undertaking appropriate investigations to locate them.

**Article 20**

**COFFERDAMS AND CAISSONS**

1. Every cofferdam and caisson shall be-

   (a) of good construction and suitable and sound material and of adequate strength;

   (b) provided with adequate means for workers to reach safety in the event of an inrush of water or material.
2. The construction, positioning, modification or dismantling of a cofferdam or caisson shall take place only under the immediate supervision of a competent person.

3. Every cofferdam and caisson shall be inspected by a competent person at prescribed intervals.

Article 21

WORK IN COMPRESSED AIR

1. Work in compressed air shall be carried out only in accordance with measures prescribed by national laws or regulations.

2. Work in compressed air shall be carried out only by workers whose physical aptitude for such work has been established by a medical examination and when a competent person is present to supervise the conduct of the operations.

Article 22

STRUCTURAL FRAMES AND FORMWORK

1. The erection of structural frames and components, formwork, falsework and shoring shall be carried out only under the supervision of a competent person.

2. Adequate precautions shall be taken to guard against danger to workers arising from any temporary state of weakness or instability of a structure.

3. Formwork, falsework and shoring shall be so designed, constructed and maintained that it will safely support all loads that may be imposed on it.

Article 23

WORK OVER WATER

Where work is done over or in close proximity to water there shall be adequate provision for-

(a) preventing workers from falling into water;

(b) the rescue of workers in danger of drowning;

(c) safe and sufficient transport.

Article 24

DEMOLITION

When the demolition of any building or structure might present danger to workers or to the public-

(a) appropriate precautions, methods and procedures shall be adopted, including those for the disposal of waste or residues, in accordance with national laws or regulations;
(b) the work shall be planned and undertaken only under the supervision of a competent person.

Article 25

LIGHTING

Adequate and suitable lighting, including portable lighting where appropriate, shall be provided at every workplace and any other place on the construction site where a worker may have to pass.

Article 26

ELECTRICITY

1. All electrical equipment and installations shall be constructed, installed and maintained by a competent person, and so used as to guard against danger.

2. Before construction is commenced and during the progress thereof adequate steps shall be taken to ascertain the presence of and to guard against danger to workers from any live electrical cable or apparatus which is under, over or on the site.

3. The laying and maintenance of electrical cables and apparatus on construction sites shall be governed by the technical rules and standards applied at the national level.

Article 27

EXPLOSIVES

Explosives shall not be stored, transported, handled or used except-

(a) under conditions prescribed by national laws or regulations; and

(b) by a competent person, who shall take such steps as are necessary to ensure that workers and other persons are not exposed to risk of injury.

Article 28

HEALTH HAZARDS

1. Where a worker is liable to be exposed to any chemical, physical or biological hazard to such an extent as is liable to be dangerous to health, appropriate preventive measures shall be taken against such exposure.

2. The preventive measures referred to in paragraph 1 above shall comprise-

(a) the replacement of hazardous substances by harmless or less hazardous substances wherever possible; or

(b) technical measures applied to the plant, machinery, equipment or process; or
(c) where it is not possible to comply with subparagraphs (a) or (b) above, other effective measures, including the use of personal protective equipment and protective clothing.

3. Where workers are required to enter any area in which a toxic or harmful substance may be present, or in which there may be an oxygen deficiency, or a flammable atmosphere, adequate measures shall be taken to guard against danger.

4. Waste shall not be destroyed or otherwise disposed of on a construction site in a manner which is liable to be injurious to health.

**Article 29**

**FIRE PRECAUTIONS**

1. The employer shall take all appropriate measures to-

(a) avoid the risk of fire;

(b) combat quickly and efficiently any outbreak of fire;

(c) bring about a quick and safe evacuation of persons.

2. Sufficient and suitable storage shall be provided for flammable liquids, solids and gases.

**Article 30**

**PERSONAL PROTECTIVE EQUIPMENT AND PROTECTIVE CLOTHING**

1. Where adequate protection against risk of accident or injury to health, including exposure to adverse conditions, cannot be ensured by other means, suitable personal protective equipment and protective clothing, having regard to the type of work and risks, shall be provided and maintained by the employer, without cost to the workers, as may be prescribed by national laws or regulations.

2. The employer shall provide the workers with the appropriate means to enable them to use the individual protective equipment, and shall ensure its proper use.

3. Protective equipment and protective clothing shall comply with standards set by the competent authority taking into account as far as possible ergonomic principles.

4. Workers shall be required to make proper use of and to take good care of the personal protective equipment and protective clothing provided for their use.

**Article 31**

**FIRST AID**

The employer shall be responsible for ensuring that first aid, including trained personnel, is available at all times. Arrangements shall be made for ensuring the removal for medical attention of workers who have suffered an accident or sudden illness.
Article 32

WELFARE

1. At or within reasonable access of every construction site an adequate supply of wholesome drinking water shall be provided.

2. At or within reasonable access of every construction site, the following facilities shall, depending on the number of workers and the duration of the work, be provided and maintained-

(a) sanitary and washing facilities;

(b) facilities for changing and for the storage and drying of clothing;

(c) accommodation for taking meals and for taking shelter during interruption of work due to adverse weather conditions.

3. Men and women workers should be provided with separate sanitary and washing facilities.

Article 33

INFORMATION AND TRAINING

Workers shall be adequately and suitably-

(a) informed of potential safety and health hazards to which they may be exposed at their workplace;

(b) instructed and trained in the measures available for the prevention and control of, and protection against, those hazards.

Article 34

REPORTING OF ACCIDENTS AND DISEASES

National laws or regulations shall provide for the reporting to the competent authority within a prescribed time of occupational accidents and diseases.

2.1.5 IMPLEMENTATION

Article 35

Each Member shall-

(a) take all necessary measures, including the provision of appropriate penalties and corrective measures, to ensure the effective enforcement of the provisions of the Convention;

(b) provide appropriate inspection services to supervise the application of the measures to be taken in pursuance of the Convention and provide these services with the resources necessary for the accomplishment of their task, or satisfy itself that appropriate inspection is carried out.
2.1.6 FINAL PROVISIONS

Article 36

This Convention revises the Safety Provisions (Building) Convention, 1937.

Article 37

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 38

1. This Convention shall be binding only upon those Members of the International Labour Organisation whose ratifications have been registered with the Director-General.

2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.

3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification has been registered.

Article 39

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.

2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.

Article 40

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organisation of the registration of all ratifications and denunciations communicated to him by the Members of the Organisation.

2. When notifying the members of the Organisation of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organisation to the date upon which the Convention will come into force.
Article 41

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and acts of denunciation registered by him in accordance with the provisions of the preceding Articles.

Article 42

At such times as it may consider necessary the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

Article 43

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides-
   
   (a) the ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 39 above, if and when the new revising Convention shall have come into force;
   
   (b) as from the date when the new revising Convention comes into force this Convention shall cease to be open to ratification by the Members.

2. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

2.2. Industrial Safety and Hazard Management in Construction Industry

2.2.1 Introduction

The construction industry in India today is very large and complex, but the rapid growth has led to a shortfall in terms of safety and health aspects of the construction workers. This has happened largely due to lack of formal organizations combined with a gap in terms of suitable legislations and standards and their implementation.

Accidents occurring at a construction site are usually due to a lack of communication among the various departments involved, and lack of proper inspections. The accidents may be due to the following factors:

- Collapse of building parts and masses of earth.
- Falling of objects and pieces of work on workers.
- Falls of persons from heights, ladders and stairs.
- Loading, unloading and transportation of loads.
- Working on machines.
- Blasting with explosives.
The major occupational diseases in construction requiring particular attention are:

- Silicosis
- Lead poisoning
- Diseases of joints and bones
- Poisoning by carbon monoxide and benzene
- Skin diseases

Though the nature of health and safety hazards are the same in developed and developing countries, the former have made a concerted effort towards identifying the adverse occupational safety and health consequences. This involves:

- Carrying out research and investigations,
- Arranging training and educational programs,
- Designing appropriate safety equipment,
- Formulating effective legislation,
- Providing for proper medical facilities,

2.2.2 Scope, objective and methodology

The objective was to bring forth a set of recommendations based on the observations of the survey and to evolve an action plan for a more effective strategy towards occupational health and safety in construction.

The methodology adopted for carrying out the techno-market survey consisted of the following:

2.2.3 Desk Study – consisted of studying in detail, the available literature on safety and hazard management in construction.

2.2.4 Primary survey analysis - involved site visits and organizing of seminars together with personal meetings with head of various companies, government agencies, manufacturing units and organization involved with health and safety.

The entire data was then compiled and edited.

2.2.5 Occupational safety hazards

A construction project involves a number of small contractors that may be lacking in terms of technical supervisors and trained workers and may resort to unsafe work practices such as:

- Improper building design.
- Lack of guardrails
- Problems with exits.

In addition to the above, occupational safety hazards in construction may occur due to any of the following factors:

- Improper illumination,
- Improper material handling and storage,
improper walking and working surfaces,
- improperly protected pen floors and high platforms,
- obstructive and unclean floors and aisles,
- improperly shored trenches and excavations,
- badly maintained tools,
- improper scaffoldings,
- Wrongly designed ladders and stairs
- Unsuitable and badly maintained lifting appliances
- Unsafe demolition methods
- Insufficient protection against fire and electric hazards.

2.2.6 Occupational health hazards

Occupational health hazards associated with the construction industry include various diseases, mental and physical stress, disability and injuries. The potentially damaging factors are:

Noise – this causes hearing loss and also effects the heart.

Vibration – causes Raynaud’s syndrome, a potentially damaging disease affecting the fingers. It also causes physiological orders.

Dust – this mainly affects the respiratory system.

Radiation.

Improper sanitation.

2.2.7 Major construction disasters

There are more than 9 million construction workers in India. Though the number of deaths due to construction related activity is not known, some major disasters causes a number of deaths & makes the policy makers review their entire safety programme.

2.2.8 Prevention of health and safety hazards

The management and supervisory staff, at construction sites, ca minimize unsafe conditions by constantly monitoring the progress of the work and the workforce. Training and proper education also helps in achieving safety. In addition to these, the general provisions required to attain a safe work-site are:

- Emergency alarms
- Safety guidelines for equipment use
- Safety belts
- Safety nets
- Safety inspections
- Mitigating factors

Health hazards may be minimized by the following methods:
Equipment modification
- Isolating the worker from the damaging machinery
- By making provisions for personal protective equipment
- By providing adequate illumination
- Proper housekeeping
- Replacement of hazardous building materials

Together with adherence to a good practice and predictive hazard evaluation.

2.2.9 Work environment

A good work environment is necessary for improving the safety and health of the workers and also helps to increase productivity. It consists of the following:

- work area and work conditions
- illumination
- noise and hearing
- cold and wet
- dust and fumes
- sanitation

The work site must also take proper precautions for emergency measures. The entire programme for preplanning for emergency control must be a coordinated effort and must include all personnel from the management as well as the force and proper instructions and suitable training must be provided to them on the following lines:

- Identification of hazard
- Provision of safeguards
- Proper safety guidelines
- Simulated drills
- Identification warning signals

2.2.10 Safety in Construction: Good practices

To identify good safety practices in construction, the survey team visited the following work sites:

- Thapar-Dupont construction project Gummidipoondi, Tamil Nadu
- Obayashi Limited Construction of extension of Nizamuddin bridge, New Delhi.
- Gammon Construction India Limited construction of extension of ITO bridge, New Delhi.

2.2.11 Workmen Compensation:

In India, all building workers who have completed eighteen years of age, but have not complete the age of sixty, and are engage in a construction activity for not less than ninety days during the preceding twelve months shall be eligible for benefits under the Building and other Construction Workers Second Ordinance, 1996.
In America workmen’s compensation laws are state statutes under which an employer is bound to pay a predetermined amount of compensation for any injury suffered by an employee.

In Australia an employer is liable to his employee for injuries caused to him through his negligent order or other negligent act on his part. If the injury suffered by the employee is partly the result of the employee’s own negligence, then the damages are recoverable by the employers.

2.2.12 Cost Analysis:

The provision of safeguards to eliminate or reduce the accidents are based on two important aspects:

a) Cost of accident prevention
b) Moral regard for human life

Calculation of cost of accident prevention includes:

a) Direct costs
b) Indirect costs
c) Cost of safety programmes

2.2.13 Implementation

For implementation of the various safety measures, the various safety measures, the management and trade unions must contribute individually to create a safe work environment.

The role of management should be:

- To give some priority to safety measures as to production and quality.
- Employ adequate staff for implementing safety policies.
- Provide proper training to personnel.
- Conduct regular safety inspection.

2.2.14 Role of Trade unions:

- Assist government commissions and other public committees dealing with worker’s safety
- Suggest and ask for investigations into hazardous processes
- Provide and create awareness among their members.

2.2.15 Conclusions

- A wide variety of research developments in construction equipment and project management has occurred in the recent past.
- Effective performance measures for all parties involved in a construction project are lacking.
- Facilities for training skilled and semi-skilled personnel for construction are conspicuous by their absence.
- There has been a proliferation of establishments over which the government bodies have a loose control.
- The construction workers are almost always made to live in the vicinity of the work-site with no adequate lodging or sanitary arrangements.
- The semi-skilled and unskilled workers, together with women and children; are unaware of the use of
personal protective equipment.
- Health facilities for construction workers are lacking.
- The labour unions are often responsible for endangering the life of workers.
- Lack of feedback systems – Construction knowledge feedback generally occurs through distribution of a memorandum regarding a problem, and sometimes through distributions in various meetings and conferences. This methodology has certain shortcomings.
- The current status of safety in construction exposes the fact that safety has been a non-issue so far, despite the fact that almost one out of every five workers received injury annually.

2.2.16 Recommendations

- Researchers should actively involve the industry in defining and garnering support for long-term construction research agenda.
- Regular safety audits, review of safety procedures, safety performance monitoring should be important constituents of company policies.
- Short term training courses on safety for unskilled workers should be organized by construction companies.
- The government should play a more visible role in ensuring a high standards of safety in the construction industry.
- Separate residential area with proper sanitary facilities at the site itself should be earmarked for those workers staying at the construction site.
- Workers should be made aware of the need to use personal protective equipment.
- Health services offered by the government to workers in other sectors should also be extended to construction workers.
- Trade unions need to be educate on the importance of safety measures.
- To make the feedback systems more effective, a comprehensive strategy involving trade unions, workers’ representatives, non-governmental organizations, and safety professionals needs to be implemented.
- Constant review and upgradation of the concerned legislations, safety standards, organizational policies, training programmes are essential for successful safety and health management.

2.2.17 Desired impact of the action plan

- Construction workers comprise the unorganized and underprivileged section of community. They have been deprived of social justice to which the government is wedded. It is, therefore, imperative that the government gives attention to the construction industry, more particularly to the life and limb of workers employed

Review Questions
1. What is the basic purpose of construction Safety?
2. Explain the idea of health and construction Safety?
3. What is the present status of construction safety convention?
4. What are the ILO convention in this regard?

Discussion Questions
Discuss the present status of construction safety in India and various remedy to make construction more safe?
Lesson 3 – Prevention of major industrial accidents

Learning Objectives

- To define and describe the industrial accidents.
- To explain the causes of accidents prevention.
- To explain the way of accidents prevention.
- Discover ways to accident investigation.

3.1 Accident prevention and preparedness

Within a decade of the accidental gas release at Bhopal in India, at least 4000 people had died as a result of this well known industrial disaster. Thankfully, there has not - so far - been another Bhopal. However, serious technological accidents happen every day somewhere in the world, causing deaths, injuries and damage to the environment. In industry, as in other activities, specialists assure us that zero risk will never be attained. It is therefore up to governments and industry to reduce the probability of accidents occurring to a level which is acceptable to society, and to prepare populations for emergency response should an accident occur. In short, accident prevention and preparedness are key elements in the promotion of sustainable production patterns.

It was in 1988, just a few years after the Bhopal disaster, that Industry and Environment last focused on the environmental consequences of major technological accidents. UNEP also launched its Awareness and Preparedness for Emergencies at Local Level (APELL) programme in 1988, in conjunction with governments and the chemical industry. APELL has established itself (within the range of activities of international organizations on accident prevention and preparedness) as a practical programme which assists industry, public authorities and the community at the local level to increase community awareness of technological hazards and to prepare integrated plans for effective response should accidents occur. The quality of response to what might seem a minor incident at a facility or during transport of hazardous materials is often the determining factor in ensuring that such an incident does not become a major disaster. Promotion of the APELL programme as the means to achieve these ends was recommended in 1992 in UNCED's Agenda 21.

APELL was originally based on the Community Awareness and Emergency Response (CAER) programme, which later became part of the chemical industry's Responsible Care® initiative. It also included elements of the European Union's "Seveso" Directive and the United States' Right-to-Know initiative. UNEP's focus on developing countries has meant that APELL is able to reach places and stakeholders which Responsible Care does not. This issue of Industry and Environment presents case studies illustrating how the APELL process has been implemented in communities in different parts of the world. These case studies will be of interest to current and potential APELL users, as well as being of general interest to many of our readers. This special issue also looks at some of the new areas into which APELL is likely to expand.

From its origins in the chemical industry APELL is branching out, functioning in this way as a vector for the sharing of experience and technology. As the programme enters its second decade, it is beginning
to address emerging issues such as accident prevention and preparedness in ports (a publication on this subject has already been produced in collaboration with the International Maritime Organization) and is extending its range from fixed to mobile installations by addressing accidents arising from the transport of hazardous materials. Work in the latter area is going ahead with help from Sweden, in the form of the TransApell initiative. Pipeline safety is also a major issue for many countries. There is a call for UNEP to work with industry, particularly the oil industry, to produce guidance. Recently, there has also been a call to apply the principles of APELL to safer production and to community relations in the Arctic Region.

The 1990s are the International Decade for Natural Disaster Reduction. Activities undertaken as part of this initiative have brought a greater understanding of the connections between natural and technological disasters. This is particularly important in an era of increasing urbanization. An apparently "natural" disaster such as a landslide may, for example, be caused by human activities. If there is a chemical plant in its path, this may in turn spark off an industrial disaster. These combination disasters are called "Na-Techs" ("Na" for natural, "Tech" for technological). Civil defence organizations are becoming increasingly conscious of the need to consider the possibility of technological accidents in their planning, and are involving local industry in the planning process. They are also becoming aware of the need for a more preventive approach. Cleaning up after a disaster of any kind can be compared to the "end-of-pipe" approach to pollution control. Prevention is always better than cure.

Technological solutions alone will not be sufficient to ensure continuing growth of an accident prevention and preparedness culture. Prevention and preparedness need to be woven into management structures. Indeed, their incorporation into Environmental Management Systems, which has been the hallmark of Responsible Care, has recently been further stimulated by their inclusion in ISO 14001, which requires companies to establish and maintain procedures for identification of potential causes of accidents, for response to accidents and emergency situations, and for the prevention and mitigation of their environmental impacts. The ISO standard also recognizes that analysing accidents and emergencies after they happen can be a valuable tool for improving safety and increasing preparedness, by including a requirement for review and revision of procedures in the light of those incidents which occur. It also specifies that, whenever practicable, procedures should be tested. Companies wishing to translate such framework proposals into actions will find the APELL approach helpful in building up solid internal management structures for prevention and preparedness.

Preparedness, of course, requires increased communication with populations in the vicinity of potentially hazardous installations. Legislation introduced to bring this about tends, like ISO 14001, to provide a framework and specify requirements but not to specify methods. For example, the EU's 1988 "Seveso" Directive, by stipulating that members of the public liable to be affected by a major accident must be informed of safety measures and of how they should behave in the event of an accident, presented new challenges concerning how to communicate within the context of European cultural and legislative diversity. As rapidly industrializing countries become increasingly aware of the need for such communication, they will face the same challenges. Here again, the APELL approach will prove useful in helping define which links should be established and with whom, as well as how to effectively communicate information about risks and preparedness measures within communities.

Accidents kill and injure people, damage the environment and property, and waste resources. In those areas of the world which are rapidly expanding their industrial base, some of the accident patterns discerned in developed countries are already being repeated. There is an ongoing need for accident prevention, to keep the number of accidents to a minimum, and for preparedness, to minimize the consequences of any that do occur. This need was recognized at the 1997 United Nations General Assembly Special Session - New York (UNGASS), convened to review progress on the implementation of Agenda 21. The UNGASS programme states that "major technological and other disasters with an
adverse impact on the environment can be a substantial obstacle in the way of achieving the goals of sustainable development in many countries," and recommends that the international community increase its efforts in regard to cooperation to avoid such disasters. We hope decision-makers in governments and industry will find this issue of Industry and Environment useful in their efforts to implement the UNGASS recommendations.

3.2 What Are the Causes of Industrial Accidents?

Industrial accidents are unforeseen incidents that are not scheduled or planned and cause injury to employees. These types of accidents accounted for more 1.2 million U.S. employees missing time from work because of nonfatal injuries, according to the Bureau of Labor Statistics. This 2009 statistic was a decrease of 9 percent from 2008. A host of causes created industrial accidents, and these causes can be placed into different categories. Industrial accidents accounted for 4,340 deaths during 2009, as reported by the Bureau of Labor Statistics.

3.2.1 Human Error

- Most industrial accidents occur because of human error. A worker does not follow the proper safety procedures or is attempting to accomplish a task without the proper equipment. According to the Bureau of Labor Statistics, as of 2009, 74.8 percent of these injuries occurred in the service-related industry. Most of these injuries were caused because an employee worked on equipment without the proper tools, damaging the industrial equipment and creating a safety hazard.

3.2.2 Training

- Many industrial accidents occur because an employee is not trained properly on the use of the equipment or the safety procedures used during the operation and maintenance of the equipment. The manufacturing industry reported 4.3 industrial accidents occurring for every 100 workers during the 2009 work year. Most of these accidents occurred because of lack of training of the employee. The equipment must have qualified operators and these operators must know what to do if something happens to the equipment.

3.2.3 Manufacturing Defect

- Industrial accidents also occur because of a manufacturing defect in a piece of equipment or material. During the course of manufacturing several quality-control steps are taken to ensure the equipment is within safety tolerances. Because most of these quality controls are handled by humans, there is a chance that a piece of equipment can have a defect that is missed during the process. The equipment is installed, operated and then fails, causing an industrial accident that can injure or even kill an employee.

3.2.4 Maintenance

- One of the common causes for industrial accidents is improper maintenance procedures or the lack of preventive maintenance programs. Equipment cannot run without having maintenance performed on a scheduled basis. Most equipment manufacturers publish a recommended preventive maintenance schedule for the equipment, but the companies and their maintenance
personnel are responsible for carrying out these preventive maintenance programs. Like an automobile that does not regularly get fuel, oil or the brakes replaced, a piece of equipment not maintained fails -- at times with consequences.

3.3 Accident Investigation

An accident is an unwanted event that is never scheduled or planned. Many factors contribute to accidents' occurrence; significant losses and even bodily injury can result following each incident. These basic facts are well understood, yet accidents continue to occur, property damage accumulates, work schedules remain interrupted, and injuries reduce personal income.

Are accidents inevitable? Do they occur as a natural consequence of a daily routine? Can they be avoided?

All accidents are caused. They are the result of human error, and they involve unsafe behavior or an unsafe condition, or a combination of both. Process improvement opportunities are always identified following an accident, and prompt corrective measures are scheduled. Unfortunately, the inherent ability of the environment or behavior that initially caused the accident is seldom addressed in its entirety. Thus, we wait for the next accident in order to identify the next required corrective action. Hindsight has future value, but only after the accident occurs. The opposite of hindsight is foresight. With foresight, you identify accident potentials; with hindsight, you investigate accidents. Let us consider the value of each.

3.3.1 The Process of Hindsight: Accident Investigation

Discovering "what happened" and "why" are the objectives of an accident investigation. To ensure standardization in fact gathering, checklists are often used. Supervisor and employee work together to identify causes and remedial actions. The process requires a "questioning attitude."

Everyone involved should know that an accident investigation is not a "fault finding" or "finger pointing" expedition. Meaningful involvement is essential. Employees can provide valuable suggestions when they are regarded as "full partners" in the investigation process.

There are generally five major elements in a good investigation: specifics, procedures, conditions, unsafe elements (acts and/or behavior), and corrective action. How, when, where, and why did the accident occur? What procedures were being followed and why? What conditions existed when the accident occurred? What was the primary cause of the accident? What should be done to prevent similar occurrences? Remember: All accidents are caused and could have been prevented by the identification and removal of one or more of the contributing factors. All possible factors must be discussed and identified. Participants in the investigation should agree with the conclusions.

"Employee tripped and fell while en route to the parking lot" does not provide sufficient details. "Employee should be more careful" is not adequate corrective action. "Repaired the defective equipment" does not identify the root cause of the failure. "Additional training will be provided" does not explain why the unsafe behavior occurred. Anyone reading an accident investigation report should be able to visualize exactly how the accident happened and should know the corrective action needed to prevent recurrence is adequate.

Hindsight is effective only when each accident, regardless of disposition, is treated as a matter of real importance. Reporting must be encouraged, and investigation must be prompt. Supervisor and employee
must work as a team to identify accident causes and corrective actions needed to prevent similar incidents.

3.3.2 The Process of Foresight: Identification of Potentials

Each accident results from a breakdown in the safety system. Employee behavior/procedures and/or the condition of equipment/environment are always involved. The ability to monitor and evaluate these elements on a continuous basis can identify work practices and conditions that have the ability to produce accidents.

Employee involvement is critical to the foresight approach. Most injuries involve shop employees who "do the work." Their work practices and attitudes determine the level of safety that exists in the shop.

It is not possible to provide continuous monitoring during a work shift. A representative sample of work routines is usually enough, provided the data collected is quantified and reviewed with supervisors. Behavioral trends must be determined; equipment abuse/misuse must be identified; random adjustments in work procedures must be discovered; and work flow must be evaluated. Whenever the potential to cause an accident/injury is apparent, corrective action must be implemented.

"Foresight Programs" must be a joint effort (supervisor and employee) with objectives that are predetermined. Audit teams must be developed, and observations of work practices in designated areas must be scheduled. Typically, an audit might involve a supervisor and employee visiting a work area other than their own to observe work habits/routines. The actual process would be:

1. Select the workstation or operation to be observed before beginning the audit. Concentrate on a single worker or operation. (The "big picture look" often produces very little meaningful information.)
2. Observe the work habits/procedures/equipment being used to perform work. Determine how accidents/injuries can occur.
3. Identify any behavioral changes that occur during the audit.
4. Evaluate housekeeping conditions and equipment in the work area. Is anything "out of place"? Is unnecessary material or equipment located in the work area?
5. Discuss work routine with the worker. Do not "coach" the worker. Ask questions such as, "Why are you using (a particular method)?" "Do you think there is a better method?" "Have you ever had an accident?" The worker should identify unsafe practices and/or potential accident causes without assistance. Unsafe behavior should not be criticized.
6. Summarize your observations and provide corrective action not indicated by the worker. The worker should take the initiative in correcting unsafe work practices and should accept responsibility for working safely.

Information collected should be combined with data from other audits to establish trends and to identify accident potentials that are inherent within the work process. Accident source reports should be developed and reviewed with supervision. Appropriate corrective action should be implemented. All workers should know that these "get acquainted audits" are being conducted to evaluate safety practices and to provide improvements that will "make work easier and safer" for all employees.

Foresight is an effective means of preventing accidents when workers embrace the concept, regular audits are conducted, and corrective action is provided. Participation must be encouraged and supported by top management. Considerable benefits, including "before-the-fact" accident prevention, can be derived from a well-run program.
3.3.3 Hindsight vs. Foresight
Hindsight determines why accidents occurred; it does not prevent them. Foresight identifies potential accident conditions and provides corrective action before the incident occurs. It is the difference between being proactive and reactive in your safety philosophy. Both methods require employee involvement and an investment of time. The foresight approach does not involve equipment and/or property damage, injury costs, unscheduled production downtime, or product quality issues.

While there is no guarantee that accidents will not continue to occur when the foresight approach is adopted, there is a "comfortable feeling" about the value of accident prevention efforts.

3.3.4 How To Prevent Industrial Accidents

Industrial accidents are disasters that happen in industrial business sites. Aside from accidental happenings, industrial accidents can also be caused by negligence on the part of the company or incompetence of personnel. A lot of industrial disasters have happened since the 19th century. Some examples of some industrial accidents include the Courrieres Mine Disaster in France, the Boston Molasses Disaster, The Port Chicago Disaster and the Triangle Shirtwaist Factory Fire in New York City.

Legal measures have been passed in order to avoid occupational accidents. These prevention measures help decrease the chances of industrial accidents from happening. Here are some of the ways how to prevent these accidents:

- Danger zone warnings. A lot of industrial accidents result from neglecting to inform or warn people of danger zones. In industrial settings, there are places that have industrial hazards that can lead to different kinds of accidents. For this, it is imperative that the people working on the site are warned. Safety engineers are the ones who will be responsible for this.
- Quality assurance of equipment. Another cause of industrial accidents is due to equipment that is not checked for quality. This can cost the lives of the employees. Every so often, equipment must be checked for quality. It must pass the established standards in order for it to be used.
- Employee training. Employee incompetence is another thing that causes injury accidents. In order for employees to work in dangerous settings, they must be trained how to handle certain equipment and dangerous substances. This will ensure that they know how to handle and operate heavy and dangerous equipment.
- Emergency briefing of employees. Employees must be briefed on emergency procedures when industrial accidents happen. If employees aren’t briefed, there is a bigger chance that more people can be harmed when accidents occur. Panicking or not knowing what to do when faced with a difficult situation may cause this.
- Proper handling of hazardous waste materials. Some industrial accidents occur because of proper disposal of hazardous waste materials and chemicals. This may cause fires and explosions. Employees should be briefed on the proper handling and disposal of these materials to avoid untoward incidents.
- Health and safety inspection checks. There are some non-profit organizations that conduct health and safety inspection checks in different industrial settings. These organizations not only inspect the workplace, but they also provide training to employees, consulting for improvement and dissemination of important information on industrial health and safety.

These are some of the preventive measures done in order to avoid industrial accidents. Although these measures may be implemented, there may still be accidents that cannot be avoided. Some of these can be caused by natural disasters that can strike at any given moment.
It is important that all these safety measures are implemented in order to have a secure work environment where negligence and incompetence cannot be blamed for accidents that occur. With these prevention methods, industrial accident rates will surely decrease.

**Review Questions**
1. What is the industrial accidents?
2. Explain the causes of industrial accidents?
3. What is the industrial accident investigation?
4. What are the steps for reducing accident?

**Discussion Questions**

Discuss in detail the various causes of industrial accident and ways to prevent these?
4.1 Factories Act, 1948 (as amended in 1987)

The factories act is an extensive and lengthy act that covers an endless number of concerns for labour working in factories. The following is an overview of provisions in the act that are relevant to children ages 0-18. The act defines a child as a person who has completed him/her 15th year of age. It defines an adolescent as one who is has completed his/her 15th year of age but not completed his/her 18th year of age. A young person is defined as either a child or an adolescent. According to this act it is the duty of a certified medical practitioner or surgeon to examine and medical condition and certifies all young people working in the factory. These examinations take place where a young person is or is going to be engaged in work that is injurious to his health. Under this act a young person may not clean or lubricate the parts of any moving machinery that is likely to cause them injury.

Section 23 is concerned with the employment of young persons on dangerous machinery. Young persons are not to be compelled to work dangerous machinery unless they have full prior knowledge of the danger, are trained and there is a supervisor present at all times who is fully trained in the machinery. Children are prohibited from working in any area where a cotton opener is functional. The act calls for a crèche service to be available to children below the age of six with the factory has a minimum of 30 women working there.

Chapter VII of the act concerns the employment of young persons. This section states that no child below the age of fourteen will be allowed or required to work in a factory. It requires that all non-adult workers or adolescents carry tokens that show that they have been deemed medically fit by a certifying surgeon. The certificate of fitness is given for a 12 month period, and can be revoked at any point if the child is found not to be medically fit anymore. The certificate also deem an adolescent to be treated as an adult as per certain provisions of this act. An adolescent who has not been deemed an adult for provisions of this act shall be considered a child.

The act places time restrictions to the work of adolescents who have been granted a certificate to work as adults. Adolescents are only allowed to work in the factory between 6 a.m. and 7 p.m. unless the State Government decides otherwise. Children or adolescents who have not been deemed adults shall not be allowed to work in a factory for more than four and half hours in any day and can not work at night. They must no work more than two shifts, are not allowed to work in two factories in the same day and a register of all children working there and their hours must be maintained by the manger in every factory. An inspector has the power to order a medical check-up at any point if he suspects a child is working against the provisions of this act.

Children who have worked more than 240 days in the previous calendar year are allowed one day paid leave for every fifteen days they worked. He/She can carry forth forty unused leave days to the next calendar year. A child who has been granted five or more days leave can collect the wages for those days before the leave. Parents/Guardians of a child can be fined for allowing the child to work in two factories in the same day. Adolescents and children are not permitted to work in the manufacturing process or any other dangerous environment in a factory.

In 2005 the Ministry of Labour proposed an amendment bill that has yet to be passed. It was reintroduced in 2009 but was still not passed. The amendment does not really concern any of the provisions related to the child but is concerns the right of women to work at night in the factories.
4.2 Provisions of the Factories Act, 1948

Provisions of the Factories Act, 1948. Interpretation:- In this Act, unless there is anything repugnant in the subject or context,-

(cb) “hazardous process” means any process or activity in relation to an industry specified in the First Schedule where, unless special care is taken, raw materials used therein or the intermediate or finished products, by-products, wastes or effluents thereof would-

(i) cause material impairment to the health of the persons engaged in or connected there with, or

(ii) result in the pollution of the general environment:

Provided that the State Government may, by notification in the Official Gazette, amend the First Schedule by way of addition, omission or variation of any industry specified in the said Schedule

(n) “occupier” of a factory means the person who has ultimate control over the affairs of the factory (* * * )(1) (2) [Provided that

(i) in the case of a firm or other association of individuals, any one of the individual partners or members thereof shall be deemed to be the occupier;

(ii) in the case of a company, any one of the directors shall be deemed to be the occupier;

(iii) in the case of a factory owned or controlled by the Central Government or any State Government, or any local authority, the person or persons appointed to manage the affairs of the factory by the Central Government, the State Government or the local authority, as the case may be, shall be deemed to be the occupier:

(3)(4)[Provided further that in the case of a ship which is being repaired, or on which maintenance work is being carried out, in a dry dock which is available for hire,-

(1) the owner of the dock shall be deemed to be the occupier for the purposes of any matter provided for by or under:

(a) Section 6, Section 7, (5)[Section 7-A, Section 7-B, Section 11 or Section 12;

(b) Section 17, in so far as it relates to the providing and maintenance of sufficient and suitable lighting in or around the dock;

(c) Section 18, Section 19, Section 42, Section 46, Section 47 or Section 49, in relation to the workers employed on such repair or maintenance;

(6)[7-A. General duties of the occupier - (1) Every occupier shall ensure, so far as reasonably practicable, the health, safety and welfare of all workers while they are at work in the factory.

(2) Without prejudice to the generality of the provisions of sub-section (1), the matters to which such duty extends, shall include -
(a) the provisions and maintenance of plant and systems of work in the factory that are safe and without risks to health;

(b) the arrangements in the factory for ensuring safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substance;

(c) the provision of such information, instruction, training and supervision as are necessary to ensure the health and safety of all workers at work;

(d) the maintenance of all places of work in the factory in a condition that is safe and without risks to health and the provision and maintenance of such means of access to, and egress from, such places as are safe and without such risks;

(e) the provision, maintenance or monitoring of such working environment in the factory for the workers that is safe, without risks to health and adequate as regards facilities and arrangements for their welfare at work.

(3) Except in such cases as may be prescribed, every occupier shall prepare, and, as often as may be appropriate, revise, a written statement of his general policy with respect to the health and safety of the workers at work and the organisation and arrangements for the time being in force for carrying out that policy, and to bring the statement and any revision thereof to the notice of all the workers in such manner as may be prescribed.

(7-B. General duties of manufacturers, etc. as regards articles and substances for use in factories. - (1) Every person who designs, manufactures, imports or supplies any article for use in any factory shall -

(a) ensure, so far as is reasonably practicable, that the article is so designed and constructed as to be safe and without risks to the health of the workers when properly used;

(b) carry out or arrange for the carrying out of such tests and examination as may be considered necessary for the effective implementation of the provisions of clause (a),

(c) take such steps as may be necessary to ensure that adequate information will be available -

(i) in connection with the use of the article in any factory;

(ii) about the use for which it is designed and tested; and

(iii) about any conditions necessary to ensure that the article, when put to such use, will be safe, and without risks to the health of the workers:

Provided that where an article is designed or manufactured outside India, it shall be obligatory on the part of the importer to see -

(a) that the article conforms to the same standards such article is manufactured in India, or

(b) if the standards, adopted in the country outside for the manufacture of such article is above the standards adopted in India, that the article conforms to such standards.
(2) Every person, who undertakes to design or manufacture any article for use in any factory, may carry out or arrange for the carrying out of necessary research with a view to the discovery and, so far as is reasonably practicable, the elimination or minimisation of any risks to the health or safety of the workers to which the design or article may give rise.

(3) Nothing contained in sub-sections (1) and (2) shall be construed to require a person to repeat the testing, examination or research which has been carried out otherwise than by him at his instance in so far as it is reasonable for him to rely on the results thereof for the purpose of the said sub-sections.

(4) Any duty imposed on any person by sub-sections (1) and (2) shall extend only to things done in the course of business carried on by him and to matters within his control.

(5) Where a person designs, manufactures, imports or supplies an article on the basis of a written undertaking by the user of such article to take the steps specified in such undertaking to ensure, so far as is reasonably practicable, that the article will be safe and without risks to the health of the workers when properly used, the undertaking shall have the effect of relieving the person designing, manufacturing, importing or supplying the article from the duty imposed by clause (a) of sub-section (1) to such extent as is reasonable having regard to the terms of the undertaking.

(6) For the purposes of this section, an article is not to be regarded as properly used if it is used without regard to any information or advice relating to its use which has been made available by the person who has designed, manufactured, imported or supplied the article.

Explanation. - For the purposes of this section, "article" shall include plant and machinery.

31. Pressure plant – (8) If in any factory, any plant or machinery or any part thereof is operated at a pressure above atmospheric pressure, effective measures shall be taken to ensure that the safe working pressure of such plant or machinery or part is not exceeded.

(2) The State Government may make rules providing for the examination and testing of any plant or machinery such as is referred to in sub-section (1) and prescribing such other safety measures in relation thereto as may in its opinion be necessary in any factory or class or description of factories.

(9) The State Government may, by rules, exempt, subject to such conditions as may be specified therein, any part of any plant or machinery referred to in sub-section (1) from the provisions of this section.

36. Precautions against dangerous fumes, gases, etc. - (1) No person shall be required or allowed to enter any chamber, tank, vat, pit, pipe, flue or other confined space in any factory in which any gas, fume, vapour or dust is likely to be present to such an extent as to involve risk to persons being overcome thereby, unless it is provided with a manhole of adequate size or other effective means of egress.

(2) No person shall be required or allowed to enter any confined space as is referred to in sub-section (1), until all practicable measures have been taken to remove any gas, fume, vapour or dust, which may be present so as to bring its level within the permissible limits and to prevent any ingress of such gas, fume, vapour or dust unless -

(a) a certificate in writing has been given by a competent person, based on a test carried out by himself that the space is reasonably free from dangerous gas, fume, vapour or dust; or
(b) such person is wearing suitable breathing apparatus and a belt securely attached to a rope the free end of which is held by a person outside the confined space.]

(11)[38. Precautions in case of fire. - (1) In every factory, all practicable measures shall be taken to prevent outbreak of fire and its spread, both internally and externally, and to provide and maintain-

(a) Safe means of escape for all persons in the event of a fire, and

(b) the necessary equipment and facilities for extinguishing fire.

(2) Effective measures shall be taken to ensure that in every factory all the workers are familiar with the means of escape in case of fire and have been adequately trained in the routine to be followed in such cases.

(3) The State Government may make rules, in respect of any factory or class or description of factories, requiring the measures to be adopted to give effect to the provisions of sub-sections (1) and (2).

(4) Notwithstanding anything contained in clause (a) of sub-section (1) or subsection (2), if the Chief Inspector, having regard to the nature of the work carried on in any factory, the construction of such factory, special risk to life or safety, or any other circumstances, is of the opinion that the measures provided in the factory, whether as prescribed or not, for the purposes of clause (a) of sub-section (1) or sub-section (2), are inadequate, he may, by order in writing, require that such additional measures as he may consider reasonable and necessary, be provided in the factory before such date as is specified in the order.

4.3 Provisions Relating to Hazardous Processes

41-A. Constitution of Site Appraisal Committees:- (1) The State Government may, for purposes of advising it to consider applications for grant of permission for the initial location of a factory involving a hazardous process or for the expansion of any such factory, appoint a Site Appraisal Committee consisting of -

(a) the Chief Inspector of the State who shall be its Chairman;

(b) a representative of the Central Boards for the Prevention and Control of Water Pollution appointed by the Central Government under Section 3 of the Water (Prevention and Control of Pollution) Act, 1974;

(c) a representative of the Central Board for the Prevention and Control of Air Pollution referred to in Section 3 of the Air (Prevention and Control of Pollution) Act, 1981;

(d) a representative of the State Board appointed under Section 4 of the Water (Prevention and Control of Pollution) Act, 1974;

(e) a representative of the State Board for the Prevention and Control of Air Pollution referred to in Section 5 of the Air (Prevention and Control of Pollution) Act, 1981;

(f) a representative of the Department of Environment in the State;

(g) a representative of the Meteorological Department of the Government of India;
(h) an expert in the field of occupational health; and

(i) a representative of the Town Planning Department of the State Government,

and not more than five other members who may be co-opted by the State Government who shall be -

(i) A scientist having specialised knowledge of the hazardous process which will be involved in the factory,

(ii) A representative of the local authority within whose jurisdiction the factory is to be established, and

(iii) not more than three other persons as deemed fit by the State Government.

(2) The Site Appraisal Committee shall examine an application for the establishment of a factory involving hazardous process and make its recommendation to the State Government within a period of ninety days of the receipt of such applications in the prescribed form.

(3) Where any process relates to a factory owned or controlled by the Central Government or to a corporation or a company owned or controlled by the Central Government, the State Government shall co-opt in the Site Appraisal Committee a representative nominated by the Central Government as a member of that Committee.

(4) The site Appraisal Committee shall have power to call for any information from the person making an application for the establishment or expansion of a factory involving a hazardous process.

(5) Where the State Government has granted approval to an application for the establishment or expansion of a factory involving a hazardous process, it shall not be necessary for an applicant to obtain a further approval from the Central Board or the State Board established under the Water (Prevention and Control of Pollution) Act, 1974-(6 of 1974 and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981).

41-B. Compulsory disclosure of information by the occupier. - (1) The occupier of every factory involving a hazardous process shall disclose in the manner prescribed all information regarding dangers, including health hazards and the measures to overcome such hazards arising from the exposure to or handling of the materials or substances in the manufacture, transportation, storage and other processes, to the workers employed in the factory, the Chief Inspector, the local authority within whose jurisdiction the factory is situated and the general public in the vicinity.

(2) The occupier shall, at the time of registering the factory involving a hazardous process, lay down a detailed policy with respect to the health and safety of the workers employed therein and intimate such policy to the Chief Inspector and the local authority and, thereafter, at such intervals as may be prescribed, inform the Chief Inspector and the local authority of any change made in the said policy.

(3) The information furnished under sub-section (1) shall include accurate information as to the quantity, specifications and other characteristics of waste and the manner of their disposal.

(4) Every occupier shall, with the approval of the Chief Inspector, draw up an on-site emergency plan and detailed disaster control measures for his factory and make known to the workers employed therein and to
the general public living in the vicinity of the factory the safety measures required to be taken in the event
of an accident taking place.

(5) every occupier of a factory shall,-

(a) if such factory engaged in a hazardous process on the commencement of the Factories (Amendment)
Act, 1987, within a period of thirty days of such commencement; and

(b) if such factory proposes to engage in a hazardous process at any time after such commencement,
within a period of thirty days before the commencement of such process,

inform the Chief Inspector of the nature and details of the process in such form and in such manner as
may be prescribed.

(6) Where any occupier of a factory contravenes the provisions of sub-section (5), the licence issued
under Section 6 to such factory shall, notwithstanding any penalty to which the occupier of factory shall
be subjected to under the provisions of this Act, be liable for cancellation.

(7) The occupier of a factory involving a hazardous process shall, with the previous approval of the Chief
Inspector, lay down measures for the handling, usage, transportation and storage of hazardous substances
inside the factory premises and the disposal of such substances outside the factory premises and publicize
them in the manner prescribed among the workers and the general public living in the vicinity.

41-C. Specific responsibility of the occupier in relation to hazardous processes. - Every occupier of a
factory involving any hazardous process shall -

(a) maintain accurate and up-to-date health records or, as the case may be, medical records, of the workers
in the factory who are exposed to any chemical, toxic or any other harmful substances which are
manufactured, stored, handled or transported and such records shall be accessible to the workers subject
to such conditions as may be prescribed;

(b) appoint persons who possess qualifications and experience in handling hazardous substances and are
competent to supervise such handling within the factory and to provide at the working place all the
necessary facilities for protecting the workers in the manner prescribed:

Provided that where any question arises as to the qualifications and experience of a person so appointed,
the decision of the Chief Inspector shall be final;

(c) provided for medical examination of very worker -

(i) before such worker is assigned to a job involving the handling of, or working with, a hazardous
substance, and

(ii) while continuing in such job, and after he has ceased to work in such job, at intervals not exceeding
twelve months, in such manner as may be prescribed.

41-D. Power of Central Government to appoint Inquiry Committee. - (1) The Central Government may, in
the event of the occurrence of an extraordinary situation involving a factory engaged in a hazardous
process, appoint an Inquiry Committee to inquire into the standards of health and safety observed in the
factory with a view to finding out the causes of any failure or neglect in the adoption of any measures or standards prescribed for the health and safety of the workers employed in the factory or the general public affected, or likely to be affected, due to such failure or neglect and for the prevention and recurrence of such extraordinary situations in future in such factory or elsewhere.

(2) The Committee appointed under sub-section (1) shall consist of a Chairman and two other members and the terms of reference of the Committee and the tenure of office of its members shall be such as may be determined by the Central Government according to the requirements of the situation.

(3) The recommendations of the Committee shall be advisory in nature.

41-E. Emergency standards. - (1) Where the Central Government is satisfied that no standards of safety have been prescribed in respect of a hazardous process or class of hazardous processes, or where the standard so prescribed are inadequate, it may direct the Director-General of Factory Advice Service and Labour Institutes or any institution specialised in matters relating to standards of safety in hazardous processes, to lay down emergency standards for enforcement of suitable standards in respect of such hazardous processes.

(2) The emergency standards laid down under sub-section (1) shall, until they are incorporated in the rules made under this Act, be enforceable and have the same effect as if they had been incorporated in the rules made under this Act.

(12)41-E. Permissible limits of exposure of chemical and toxic substances - (1) The maximum permissible threshold limits of exposure of chemical and toxic substances in manufacturing processes (whether hazardous or otherwise) in any factory shall be of the value indicated in the Second Schedule.

(2) The Central Government may, at any time, for the purpose of giving effect to any scientific proof obtained from specialised institutions or experts in the field, by notification in the Official Gazette, make suitable changes in the said Schedule.

41-G. Workers' participation in safety management. - (1) The occupier shall, in every factory where a hazardous process takes place, or where hazardous substances are used or handled, set up a Safety Committee consisting of equal number of representatives of workers management to promote co-operation between the workers and the management in maintaining proper safety and health at work and to review periodically the measures taken in that behalf:

Provided that the State Government may, by order in writing and for reasons to be recorded, exempt the occupier of any factory or class of factories from setting up such Committee.

(2) The composition of the Safety Committee, the tenure of office of its members and their rights and duties shall be such as may be prescribed.

41-H. Right of workers to warn about imminent danger. - (1) Where the workers employed in any factory engaged in a hazardous process have reasonable apprehension that there is likelihood of imminent danger to their lives or health due to any accident, they may bring the same to the notice of the occupier, agent, manager or any other person who is incharge of the factory or the process concerned directly or through their representatives in the Safety Committee and simultaneously bring the same to the notice of the inspector.
It shall be the duty of such occupier, agent, manager or the person in charge of the factory or process to take immediate remedial action if he is satisfied about the existence of such imminent danger and send a report forthwith of the action taken to the nearest Inspector.

If the occupier, agent, manager or the person in charge referred to in sub-section (2) is not satisfied about the existence of any imminent danger as apprehended by the workers, he shall, nevertheless, refer the matter forthwith to the nearest Inspector whose decision on the question of the existence of such imminent danger shall be final.

(13)[87-A. Power to prohibit employment on account of serious hazard. - (1) Where it appears to the Inspector that conditions in a factory or part thereof are such that they may cause serious hazard by way of injury or death to the persons employed therein or to the general public in the vicinity, he may, by order in writing to the occupier of the factory, state the particulars in respect of which he considers the factory or part thereof to be the cause of such serious hazard and prohibit such occupier from employing any person in the factory or any part thereof other than the minimum number of persons necessary to attend to the minimum tasks until the hazard is removed.

(2) Any order issued by the Inspector under sub-section (1) shall have effect for a period of three days until extended by the Chief Inspector by a subsequent order.

(3) Any person aggrieved by an order of the Inspector under sub-section (1), and the Chief Inspector under sub-section (2), shall have the right to appeal to the High Court.

(4) Any person whose employment has been affected by an order issued under sub-section (1), shall be entitled to wages and other benefits and it shall be the duty of the occupier to provide alternative employment to him wherever possible and in the manner prescribed.

(5) The provisions of sub-section (4) shall be without prejudice to the rights of the parties under the Industrial Disputes Act, 1947 (14 of 1947).

(14)[96-A. Penalty for contravention of the provisions of Sections 41, 41-C and 41-H. - B (1) Whoever fails to comply with or contravenes any of the provisions of Sections 41-B, 41-C or 41-H or the rules made thereunder, shall, in respect of such failure or contravention, be punishable with imprisonment for a term which may extend to seven years and with fine which may extend to two lakh rupees, and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.

(2) If the failure or contravention referred to in sub-section (1) continues beyond a period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which may extend to ten years.

(15)[104-A. Onus of proving limits of what is practicable, etc. - In any proceeding for an offence for the contravention of any provision of this Act or rules made thereunder consisting of a failure to comply with a duty or requirement to do something, it shall be for the person who is alleged to have failed to comply with such duty or requirement, to prove that it was not reasonably practicable or, as the case may be, all practicable measures were taken to satisfy the duty or requirement.]

111-A. Right of workers, etc. – Every worker shall have the right to –

(i) obtain from the occupier, information relating to worker’s health and safety at work.
(ii) get trained within the factory wherever possible, or, to get himself sponsored by the occupier for getting trained at a training centre or institute, duly approved by the Chief Inspector, where training is imparted for workers’ health and safety at work.

(iii) represent to the Inspector directly or through his representative in the matter of inadequate provision for protection of his health or safety in the factory.

118-A. Restriction on disclosure of Information. – (1) Every Inspector shall treat as confidential the source of any complaint brought to his notice on the breach of any provision of this Act.

(2) No Inspector shall, while making an inspection under this Act, disclose to the occupier, manager or his representative that the inspection is made in pursuance of the receipt of a complaint:

Provided that noting in this sub-section shall apply to any case in which the person who has made the complaint has consented to disclose his name.

1. Omitted by Act 20 of 1987 (w.e.f. 1-12-1987)
2. Ins. by Act 20 of 1987 (w.e.f. 1-12-1987)
4. Subs. by Act 20 of 1987 (w.e.f. 1-12-1987)
5. Ins. by Act 20 of 1987 (w.e.f. 1-12-1987)
7. Ins. by Act 20 of 1987, S.4(w.e.f. 1-6-1988)
8. Subs. by Act 20 of 1987, S.15 (w.e.f. 1-12-1987)
10. Subs. by Act 20 of 1987, S.17 (w.e.f. 1-12-1987)
11. Subs. by Act 20 of 1987, S.19(w.e.f. 1-12-1987)
12. Enforced along with Second Schedule w.e.f. 1-6-1988.
13. Ins. by Act 20 of 1987, S.26 (w.e.f. 1-12-1987)
15. Ins. by Act 20 of 1987, S.34(w.e.f. 1-12-1987)

Review Questions
1. What is Factories Act, 1948?
2. Explain the various provisions of Factories Act, 1948?
3. What are the amendments to this act?
4. What are the responsibilities of employers?

Discussion Questions

Discuss the Factories Act, 1948 and its provisions in detail? Do this act is sufficient in present day?
To define the social security.

To explain the various forms of social security.

To explain the social security legislation.

5.1 Laws relating to Social Security and Compensation

Social Security is increasingly viewed as an integral part of the development process because it helps to create a more positive attitude to the challenge of globalisation and the consequent structural and technological changes. It envisages that the employees shall be protected against all types of social risks that may cause undue hardships to them in fulfilling their basic needs. The workers do not have enough financial resources to face such risks arising due to sickness, accidents, old age, diseases, unemployment, etc. and also do not have alternative source of livelihood to help them in the period of adversity. Hence, it becomes the obligation of the State to help the workers by providing them the social safety cover. This fact has been recognised by our policymakers and accordingly, the matters relating to social security are listed in the Directive Principles of State Policy and the Concurrent List.

Under Directive Principles of State Policy:-

- Article 41 provides for right to work, to education and to public assistance in certain cases. It means, the State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, and in other cases of undeserved want.
- Article 42 provides for just and humane conditions of work and maternity relief. It means, the State shall make provision for securing just and humane conditions of work and for maternity relief.

The social security issues mentioned in the Concurrent List of the Constitution of India are:-

- Social Security and insurance, employment and unemployment.
- Welfare of Labour including conditions of work, provident funds, employers' liability, workmen's compensation, invalidity and old age pension and maternity benefits.

Thus, the provision for social security has occupied a very important place in our industrial set up. The 'State' bear the primary responsibility for developing an appropriate system for protecting and assisting its workforce. This system includes various legislations, policies and schemes which provide different types of social security benefits to the workers. It may also include payment of compensation by the employer to the employees for injuries sustained by them in the course of their employment. Hence, Ministry of Labour and Employment has set up a Social Security Division which deals with framing and implementation of social security policy and schemes for the workers as well as administration of all the legislations relating to social security.

5.2 Payment of Gratuity Act, 1972

The umbrella legislation relating to gratuity is the Payment of Gratuity Act, 1972. The Act was enacted to
provide for a scheme for the payment of gratuity to employees engaged in factories, mines, oilfields, plantations, ports, railway companies, shops or other establishments employing ten or more persons and for matters connected therewith or incidental thereto. The appropriate Government may, by notification, and subject to such conditions as may be specified in the notification, exempt any establishment to which this Act applies or any employee or class of employees employed therein, from the operation of the provisions of this Act, if in the opinion of the appropriate Government, the employees in such establishment are in receipt of gratuity or pensionary benefits not less favourable than the benefits conferred under this Act.

The Act is administered by the Central Government in:- (i) establishments which are under its control; (ii) establishments having branches in more than one State; and (iii) major ports, mines, oil fields and the railways. While, in all other cases, it is administered by the State Governments and the Union Territory administrations. The appropriate Government may, by notification, appoint any officer to be a controlling authority, who shall be responsible for the administration of this Act and different controlling authorities may be appointed for different areas.

Besides, here is Central Industrial Relation Machinery (CIRM) in the Ministry of Labour which is responsible for enforcing this Act. It is also known as the Chief Labour Commissioner (Central) [CLC(C)] Organisation. It is headed by the Chief Labour Commissioner (Central).

The main provisions of the Act are:-

- Gratuity shall be payable to an employee on the termination of his employment after he has rendered continuous service for not less than five years:- (i) on his superannuation; or (ii) on his retirement or resignation; or (iii) on his death or disablement due to accident or disease, provided that the completion of continuous service of five years shall not be necessary where the termination of the employment of any employee is due to death or disablement.
- The employer shall pay gratuity to an employee at the rate of fifteen days' wages based on the rate of wages last drawn by the employee concerned for every completed year of service or part thereof in excess of six months.

In the case of a monthly rated employee, the fifteen days' wages shall be calculated by dividing the monthly rate of wages last drawn by him by twenty-six and multiplying the quotient by fifteen. While, in the case of a piece-rated employee, daily wages shall be computed on the average of the total wages received by him for a period of three months immediately preceding the termination of his employment, and, for this purpose, the wages paid for any overtime work shall not be taken into account.

- The amount of gratuity payable to an employee shall not exceed three lakhs and fifty thousand rupees.
- For the purpose of computing the gratuity payable to an employee who is employed, after his disablement, on reduced wages, his wages for the period preceding his disablement shall be taken to be the wages received by him during that period, and his wages for the period subsequent to his disablement shall be taken to be the reduced wages.
- The gratuity of an employee, whose services have been terminated for any act, willful omission or negligence causing any damage or loss to, or destruction of, property belonging to the employer, shall be forfeited to the extent of the damage or loss so caused. The gratuity payable to an employee may be wholly or partially forfeited:- (i) if the services of such employee have been terminated for his riotous or disorderly conduct or any other act of violence on his part; or (ii) if the services of such employee have been terminated for any act which constitutes an offence.
involving moral turpitude, provided that such offence is committed by him in the course of his employment.

- If the amount of gratuity payable under this Act is not paid by the employer, within the prescribed time, to the person entitled thereto, the controlling authority shall, on an application made to it in this behalf by the aggrieved person, issue a certificate for that amount to the Collector, who shall recover the same, together with compound interest thereon at such rate as the Central Government may, by notification, specify, from the date of expiry of the prescribed time, as arrears of land revenue and pay the same to the person entitled thereto.

- Whoever, for the purpose of avoiding any payment to be made by himself under this Act or of enabling any other person to avoid such payment, knowingly makes or causes to be made any false statement or false representation, shall be punishable with imprisonment or with fine or with both. Also, if an employer contravenes or makes default in complying with any of the provisions of this Act or any rule or order made thereunder, shall be punishable with imprisonment or with fine or with both.

5.3 Workmen's Compensation Act, 1923

The Workmen’s Compensation Act, 1923 provides for payment of compensation to workmen and their dependants in case of injury and accident (including certain occupational disease) arising out of and in the course of employment and resulting in disablement or death. The Act applies to railway servants and persons employed in any such capacity as is specified in Schedule II of the Act. The schedule II includes persons employed in factories, mines, plantations, mechanically propelled vehicles, construction works and certain other hazardous occupations.

The amount of compensation to be paid depends on the nature of the injury and the average monthly wages and age of workmen. The minimum and maximum rates of compensation payable for death (in such cases it is paid to the dependents of workmen) and for disability have been fixed and is subject to revision from time to time.

A Social Security Division has been set up under the Ministry of Labour and Employment, which deals with framing of social security policy for the workers and implementation of the various social security schemes. It is also responsible for enforcing this Act. The Act is administered by the State Governments through Commissioners for Workmen's Compensation.

The main provisions of the Act are:-

- An employer is liable to pay compensation:-(i) if personal injury is caused to a workman by accident arising out of and in the course of his employment; (ii) if a workman employed in any employment contracts any disease, specified in the Act as an occupational disease peculiar to that employment.

- However, the employer is not liable to pay compensation in the following cases:
  - If the injury does not result in the total or partial disablement of the workman for a period
exceeding three days.

- If the injury, not resulting in death or permanent total disablement, is caused by an accident which is directly attributable to:
  - (i) the workman having been at the time of the accident under the influence of drink or drugs; or
  - (ii) the willful disobedience of the workman to an order expressly given, or to a rule expressly framed, for the purpose of securing the safety of workmen; or
  - (iii) the willful removal or disregard by the workman of any safety guard or other device which has been provided for the purpose of securing safety of workmen.

- The State Government may, by notification in the Official Gazette, appoint any person to be a Commissioner for Workmen's Compensation for such area as may be specified in the notification. Any Commissioner may, for the purpose of deciding any matter referred to him for decision under this Act, choose one or more persons possessing special knowledge of any matter relevant to the matter under inquiry to assist him in holding the inquiry.

- Compensation shall be paid as soon as it falls due. In cases where the employer does not accept the liability for compensation to the extent claimed, he shall be bound to make provisional payment based on the extent of liability which he accepts, and, such payment shall be deposited with the Commissioner or made to the workman, as the case may be.

- If any question arises in any proceedings under this Act as to the liability of any person to pay compensation (including any question as to whether a person injured is or is not a workman) or as to the amount or duration of compensation (including any question as to the nature or extent of disablement), the question shall, in default of agreement, be settled by a Commissioner. No Civil Court shall have jurisdiction to settle, decide or deal with any question which is by or under this Act required to be settled, decided or dealt with by a Commissioner or to enforce any liability incurred under this Act.

- The State Government may, by notification in the Official Gazette, direct that every person employing workmen, or that any specified class of such persons, shall send at such time and in such form and to such authority, as may be specified in the notification, a correct return specifying the number of injuries in respect of which compensation has been paid by the employer during the previous year and the amount of such compensation together with such other particulars as to the compensation as the State Government may direct.

- Whoever, fails to maintain a notice-book which he is required to maintain; or fails to send to the Commissioner a statement which he is required to send; or fails to send a report which he is required to send; or fails to make a return which he is required to make, shall be punishable with fine.

5.4 Employees' Provident Fund and Miscellaneous Provisions Act, 1952

The umbrella legislation relating to provident fund is the Employees' Provident Funds & Miscellaneous Provisions Act, 1952 (EPF & MP Act). The Act was enacted with the main objective of making some provisions for the future of industrial workers after their retirement and for their dependents in case of death. It provides insurance to workers and their dependents against risks of old age, retirement, discharge, retrenchment or death of the workers. It is applicable to every establishment which is engaged in any one or more of the industries specified in Schedule I of the Act or any activity notified by Central Government in the Official Gazette and employing 20 or more persons.
However, the Act shall not apply to any establishment:

- Registered under the Co-operative Societies Act 1912 or under any other law for the time being in force in any State relating to co-operative societies employing less than fifty persons and working without the aid of power; or
- Belonging to or under the control of the Central Government or a State Government and whose employees are entitled to the benefits of contributory provident fund or old age person in accordance with any scheme or rule framed by the Central Government or the State Government governing such benefits; or
- Set up under any Central Provincial or State Act and whose employees are entitled to the benefits of contributory provident fund or old age person in accordance with any scheme or rule framed under that Act governing such benefits; or
- Newly set up until the expiry of a period of three years from the date on which such establishment has been set up.

The Act is administered by the Government of India through the Employees' Provident Fund Organisation (EPFO). EPFO is one of the largest provident fund institutions in the world in terms of members and volume of financial transactions that it has been carrying on. It is an autonomous tripartite body under the control of Ministry of Labour with its head office in New Delhi. It aims to extend the reach and quality of publicly managed old-age income security programs through its consistent efforts and ever-improving standards of compliance and benefit delivery system to its members. This way it seeks to contribute to the economic and social well-being of the country.

EPFO functions under the overall superintendence of the policies framed by the Central Board of Trustees, headed by Union Minister for Labour as Chairman. The main functions of the Board are:

- Administering the funds created and vested in the Board and performing other works incidental thereto.
- Maintaining accounts of income and expenditure in prescribed form and manner.
- Delegation of powers for administration of the schemes.
- Submitting audited accounts with comments and annual report on performance of the Organisation to Government.

The main provisions of the Act are:

- The Act aims to provide for institution of provident funds, family pension funds and deposit linked insurance funds for the employees in the factories and other establishments. Accordingly, three schemes are in operation under the Act. These schemes taken together provide to the employees an old age and survivorship benefits, a long term protection and security to the employee and after his death to his family members, and timely advances including advances during sickness and for the purchase/ construction of a dwelling house during the period of membership. These three schemes are as follows:
  - Employees' Provident Fund Scheme, 1952
  - Employees' Deposit Linked Insurance Scheme, 1976
  - Employees' Pension Scheme, 1995 (replacing the Employees' Family Pension Scheme, 1971)
- The Central Government may by notification in the Official Gazette constitute a Central Board of Trustees for the territories to which this Act extends. Also, the Government may constitute an
Executive Committee to assist the Board in the performance of its functions.

- The contribution which shall be paid by the employer to the fund shall be eight and one-third per cent of the basic wages, dearness allowances and retaining allowance (if any) for the time being payable to each of the employees. While, the employees' contribution shall be equal to the contribution payable by the employer in respect of him and may if any employee so desires and if the Scheme makes provision therefore be an amount not exceeding eight and one-third per cent of his basic wages, dearness allowances and retaining allowance (if any), subject to the condition that the employer shall not be under an obligation to pay any contribution over and above his contribution payable under the Act.

- The Central Government may by notification in the Official Gazette constitute one or more Employees' Provident Funds Appellate Tribunal to exercise the powers and discharge the functions conferred on such Tribunal by this Act and every such Tribunal shall have jurisdiction in respect of establishments situated in such area as may be specified in the notification constituting the Tribunal.

- No employer in relation to an establishment to which any scheme applies, shall by reason only of his liability for the payment of any contribution to the fund, or any charges under this Act or the scheme, reduce whether directly or indirectly, the wages of any employee to whom the scheme applies or the total quantum of benefits in the nature of old age pension gratuity provident fund or life insurance to which the employee is entitled.

- Whoever for the purpose of avoiding any payment to be made by himself under this Act or of enabling any other person to avoid such payment, knowingly makes or causes to be made any false statement or false representation, shall be punishable with imprisonment or with fine or with both.

5.5 Employees' State Insurance Act, 1948

The Employees' State Insurance Act, 1948 (ESI Act) provides for health care and cash benefit payments in the case of sickness, maternity and employment injury. The Act applies to all non-seasonal factories run with power and employing 10 or more persons and to those factories which run without power and employing 20 or more persons. The appropriate Government may after notification in the Official Gazette, extend the provision of the Act to any other establishment or class of establishments, industrial, commercial, agriculture or otherwise.

Under the Act, cash benefits are administered by the Central Government through the Employees State Insurance Corporation (ESIC), whereas the State Governments and Union Territory Administrations are administering medical care.

The Employees' State Insurance Corporation (ESIC) is the premier social security organization in the country. It is the highest policy making and decision taking authority under the ESI Act and oversees the functioning of the ESI Scheme under the Act. The corporation comprises members representing Central and State Governments, employers, employees, Parliament and the medical profession. Union Minister of Labour functions as the Chairman of the Corporation. A Standing Committee constituted from among the members of the Corporation acts as the Executive Body for the administration of the Scheme.

The basic provisions of the Act are :-
Every factory or establishment to which this Act applies shall be registered within such time and in such manner as may be specified in the regulations made in this behalf.

It provided for an integrated need based social insurance scheme that would protect the interest of workers in contingencies such as sickness, maternity, temporary or permanent physical disablement, death due to employment injury resulting in loss of wages or earning capacity.

It also provided for six social security benefits:-

- Medical Benefit
- Sickness Benefit (SB)
- Maternity Benefit (MB)
- Disablement Benefit
- Dependents' Benefit (DB)
- Funeral Expenses

The Central Government may, by notification in the Official Gazette, establish a Corporation to be known as the 'Employees' State Insurance Corporation' for the administration of the scheme of Employees' State Insurance in accordance with the provisions of the Act.

The Corporation may, in addition to the scheme of benefits specified in this Act, promote measures for the improvement of the health and welfare of insured persons and for the rehabilitation and re-employment of insured persons who have been disabled or injured and may incur in respect of such measures expenditure from the funds of the Corporation within such limits as may be prescribed by the Central Government.

The contribution payable under this Act in respect of an employee shall comprise contribution payable by the employer and contribution payable by the employee and shall be paid to the Corporation. The contributions shall be paid at such rates as may be prescribed by the Central Government.

All contributions paid under this act and all other moneys received on behalf of the Corporation shall be paid into a fund called the 'Employees' State Insurance Fund' which shall be held and administered by the Corporation for the purposes of this Act.

Whoever, for the purpose of causing any increase in payment or benefit under this Act, or for the purpose of causing any payment or benefit to be made where no payment or benefit is authorised by or under this Act, or for the purpose of avoiding any payment to be made by himself under this Act or enabling any other person to avoid any such payment, knowingly makes or causes to be made any false statement or false representation, shall be punishable with imprisonment or with fine or with both.

If the person committing an offence under this Act is a company, every person, who at the time the offence was committed was in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly.

**Review Questions**

1. What is the basic purpose of social security?
2. Explain the idea of social security?
3. What is the present status of social security?
4. What are the various types of social security act?

Discussion Questions

Discuss in detail the various types of social security legislation and their provisions? Do these legislations are sufficient in present day environment?

Lesson 6 – Safety, Health and Environment related Legislation

Learning Objectives

- To define and describe the safety related legislation.
• To explain the objectives of health related legislation.
• To explain the idea of environment related legislation.
• Discover ways to make the use of these legislation more comprehensive.

6.1 What is Occupational health?

Working conditions and nature of employment tend to have major repercussions on the health of a workman. The concept of ‘Occupational health’ has evolved from work-related ailments. Occupational health broadly means any injury, impairment or disease affecting a worker or employee during his course of employment.

Further, it not only deals with work-related disorders but also encompasses all factors that affect community health within it. The inadequate surveillance of employees is the most important reason for increased prevalence of work related and other non-communicable life style diseases at work place1.

Since seventy-five percent of the global workforce lives in the third world countries, more than 125 million workers are victims of occupational accidents and diseases every year2. With the changing job patterns, working relationships, the rise in self-employment, outsourcing of work, etc. there has been a problem in the management of occupational safety and health risks. Nevertheless particular attention needs to be paid to the health and safety of workers in ‘hazardous occupations’ and especially the migrant workers and other vulnerable persons. Work related hazards and occupational diseases in small-scale industries and agriculture are likely to increase as the occupational safety and health services are out of reach in these occupations. However, with increasing Public Interest Litigations (PILs), Proactive legislations and continual struggle by environmental activists, the awareness with respect to occupational health concerns are gaining more ground.

6.1.2 The Constitutional aspects of Employees’ right to health:

Article 21 of the Indian Constitution guarantees the protection of life and personal liberty of a person. Various Supreme Court judgments have, under this "right to life" upheld the right to employees’ health. For instance, in the case of Consumer Education Research Center Vs. Union Of India3 the Supreme Court has held that, "Occupational accidents and diseases remain the most appalling human tragedy of modern industry and one of its most serious forms of economic waste." Further the judgment says, "Therefore, we hold that right to health, medical aid to protect the health and vigor to a worker while in service or post retirement is a fundamental right under Article21, read with Articles 39(e), 41, 43, 48A and all related Articles and fundamental human rights to make the life of the workman meaningful and purposeful with dignity of person."

The Indian Constitution has shown notable concern to workmen in factories and industries as envisaged in its Preamble and the Directive Principles of State Policy. The Directive Principles of State Policy provide:

a) For securing the health and strength of workers, men and women,
b) That the tender age of children is not abused,
c) That citizens are not forced by economic necessity to enter avocations unsuited to their age or strength,
d) Just and humane conditions of work and maternity relief are provided and,
e) That the Government shall take steps, by suitable legislation or in any other way, to secure the participation of workers in the management of undertakings, establishments or other organizations engaged in any industry.
Hence, the Government, Central or State, while drafting policies for the safety and health of workers must keep in mind the Directive Principles in accordance with the nature of employment and must be in consultation with workers' welfare organisations, environmental activists, etc.

6.1.3 Occupational health Laws:
The Factories Act, 1948, the Mines Act, 1952, The Dock Workers (Safety, Health & Welfare) Act, 1986 are some of the laws, which contain provisions regulating the health of workers in an establishment. Whereas the Employees State Insurance Act, 1948 and the Workmen’s Compensation Act, 1923 are compensatory in nature.

6.1.4 Health Provisions under the Factories Act, 1948:
The Factories Act, 1948 was enacted with the object of protecting workers from subjecting to unduly long hours of bodily strain or manual labour. It lays down that employees should work in healthy and sanitary conditions so far as the manufacturing will allow and that precautions should be taken for their safety and for the prevention of accidents.

The Act defines a ‘worker’ as any person employed directly or through any agency (including a contractor), whether for remuneration or not in any manufacturing process or in any work incidental to or connected with the manufacturing process. It is required that work performed should be connected with the product which is produced in the manufacturing process.

Section 10 of the Act lays down that a State Government may appoint qualified medical practitioners as ‘certifying surgeons’ to discharge the following duties:

a) Examination and certification of young persons and examination of persons engaged in ‘hazardous occupation’.

b) Exercising medical supervision where the substances used or new manufacturing processes adopted may result in a likelihood of injury to the workers.

c) Exercising medical supervision in case of young persons to be employed in work likely to cause injury.

Chapter IX of the Act lays down in detail the provisions relating to the health, safety and welfare measures, namely, cleanliness, level of ventilation, diversion of dust and fumes, provision of artificial humidification, sanitation, fencing of machinery, among others. There are also provisions that prohibit women and children from working in certain occupations.

27 processes and operations have been identified as dangerous in The Maharashtra Factories Rules, 1963. These Rules lay down detailed instructions regarding preventive measures, protective devices, cautionary notices as well as medical examination of workers. The State Governments have adopted these rules depending on their local needs. The Act lists 29 occupational diseases and obliges the manager of a factory and medical practitioners to notify the Chief Inspector of Factories if any worker contracts any of the diseases. The Rules are very comprehensive in laying down special provisions with respect to health, safety and welfare of workers including medical examinations, setting up of Occupational Health Centers, etc. The only lapse has been its ineffective implementation since most of the discretionary powers lie in the hands of the Inspectors and occupiers. Although very few cases of occupational diseases are reported in factories, the working conditions in most of the factories handling hazardous chemicals have higher risk potential.

6.1.5 The Employees’ State Insurance (ESI) Act, 1948:
It is a social security legislation enacted with the object of ameliorating various risks and contingencies sustained by workers while serving in a factory or establishment.
It is designed to provide cash benefit in the case of sickness, maternity and employment injury, payment in the form of pension to the dependents of workers who died of employment injury and medical benefit to workers. It recognizes the contributory principle against such contingencies, provides protection against sickness, replaces lumpsum payments by pension in the case of dependents benefit and places the liability for claims on a statutory organization.

The Act does not cover ‘seasonal employments’. It defines ‘employment injury’ as personal injury to employees, caused by accident or occupational diseases, in an insurable employment.

The Act lays down provisions to set up an ESI Corporation, to promote measures to improve health and welfare of insured persons and a Medical Benefit Council to advise the Corporation on medical benefits, certification, etc. The Medical Boards have to ascertain the percentage of disability of injured workers before submitting their report to the Corporation in order to grant compensation to the workers. An injured worker has to wait for months before the Medical Board calls him for a check-up.

The main source of revenue for the ESI Fund is the Contribution paid by the employers and the employees. The purposes for which the Fund is to be used are numerous. It includes payment of benefits, provision of medical treatment to insured families, meet charges in connection with medical treatment, maintenance of hospitals, dispensaries, etc. In existing conditions there is gross misuse of these funds.

The discretionary powers with respect to using the Fund amount lie solely with the Corporation along with the State Governments. According to the Occupational Health and Safety Center, Mumbai, the Corporation has only 4 occupational disease centers for workers.

Section 39 of the Act makes the employer primarily liable for the payment of contribution on behalf of himself and his employees towards the ESI Fund. In case of misuse of the contribution by employer, the employee can sue the employer in the Employees’ State Insurance Court set up by the respective State Government.

Where an employee makes a claim on the grounds of sickness, disablement or maternity, it has to be made against the ESI Corporation and not against the employer. The process involved to obtain the compensation, is tedious. Such a lapse renders the very object of the Act to provide for quick claims as unreal.

Under the Workmen’s Compensation Act, 1923, there exists a legal obligation on the employer to pay compensation to workmen involved in accidents arising during the course of their employment. The prerequisites for payment of compensation to such workmen are as follows:

* Personal injury must be caused.
* There must be temporary, total or partial disablement due to an accident, which also includes occupational diseases.

The State Government is to appoint a Commissioner to decide the liability of an employer to pay compensation, the amount and duration of compensation, among other issues. An appeal may lie to the High Court in case the applicant is grieved with the Commissioner’s orders.

Compensation is decided on the nature of injury caused. Where the injury from an accident results in the death of the workman, the minimum compensation payable is around Rs.50,000 and the maximum may extend to Rs. 3 lacs. In case of permanent total disablement and permanent partial disablement, compensation may extend to Rs.60,000, depending on its nature. Further the amount of compensation is calculated on the wage-group to which the workman belongs and the time-period for which he has worked.
There is no comprehensive law on occupational health, though the Central Government has in its various policies stressed the need to effectively implement the existing laws.

6.1.6 Conclusion:
A broad insight into the existing occupational health laws in India explicably brings out the verity of non-implementation of such laws, considering the present scenario with respect to the workmen’s health conditions. The workmen in dangerous employments are exposed to substances like asbestos, chromium and silica dust and are vulnerable to respiratory diseases and cancer. There is need to preserve the good health of workmen by ensuring safe and healthy working conditions and provide prompt compensation on account of injury or occupational disease.

6.2 Health, Safety and Environment – its Importance and Legislation

Health, Safety and Environment is not only required by law in the workplace, it's also vitally important to all workers no matter their standing. In India there is plenty of legislation that exists in order to protect workers' rights. However, India still has a very poor health and safety record. Many aspects of India's HSE guidelines only seem to protect an elite number of workers. In order to change the current views regarding Health, Safety and Environment in India, more awareness and review is needed about the importance of laws and legislation.

The workforce in India is abundant and easily available. According to the International Labour Organization (ILO), it estimates more than 125 million workers are victims of work related accidents and disease in a single year. Of these approximately, they estimate 220,000 workers die and 10 million are seriously disabled. In order for India to be truly successful in its future investments, a positive outlook is needed on HSE, employee safety and current laws and legislation.

6.2.1 Health, Safety and Environment Legislation

Do you know what Legislation applies to you?

The Health, Safety and Environment legislation provides a fundamental foundation for safe work conditions across the country. In order for the laws and regulations to be truly affective, all legislation regarding HSE should be reviewed and updated regularly. As you well know, scientific and technological advancements continually rise year after year. As scientific knowledge develops, so should improvements to all aspects of HSE. India established legislation on occupational health and safety over 50 years ago. The Factories Act of 1948 is changed from time to time, especially after the Bhopal Gas disaster. This disaster could have been easily prevented, but because of its implications a shift in attitudes changed in dealing with these types of occurrences. No matter how small or large your business, Health, Safety and Environment must be in place to ensure a safe work place and more importantly, it's the law. If
you employ anyone, according to current legislation your organization must supply HSE documentation and guidelines to each employee.

6.2.3 OSH Legislation drafted for the welfare of workers includes:
The Mines Act, 1952
The Dock workers (safety, health and welfare) Act, 1986
The Plantation Labour Act, 1951
The Explosives Act, 1884
The Petroleum Act, 1934
The Insecticide Act, 1968
The Indian Boilers Act, 1923
The Indian Electricity Act, 1910
The Dangerous Machines (Regulations) Act, 1983
The Indian Atomic Energy Act, 1962
The Radiological Protection Rules, 1971
The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989

The Construction Industry in India
The Construction Industry is in fact one of the driving forces currently stimulating India's economic growth. This industry alone is responsible for developing much needed structures such as Hospitals, factories, schools, dams, irrigation, basic houses and many other areas. This industry provides employment opportunities and produces major revenue on capital goods.

Review Questions
1. What is the basic purpose of safety, health and environment legislations?
2. Explain the different types of safety, health and environment legislations?
3. What is the present status of these legislation?

Discussion Questions
Discuss in detail the various types of safety, health and environment legislations? What are the various provisions of these acts?
Lesson 7 – Indian Boilers Act, 1923

Learning Objectives

- To define and describe Indian Boilers Act.
- To explain the objectives of Indian Boilers Act.
- To explain the different provisions of said Act
Discover ways to make the use of the Said Act more effective.

7.1 Beginning of Boiler Legislation in India

Steam Boilers are of very ancient origin. The introduction of famous James Watt's improved steam engine from 1769 to 1775 onwards resulted in great improvement in steam plants.

In the year 1863, a very serious boiler explosion occurred in Calcutta which caused the loss of several lives. As a result of this explosion, the necessity of inspection of boilers was widely recognised and a bill was introduced in the Bengal Council to provide for the inspection of steam boilers. In the year 1864, the Bengal Act VI of 1864 was passed which provided for the inspection of steam boilers and prime movers in the town and suburbs of Calcutta. This is the beginning of boiler legislation in India.

Following the Bengal Act of 1864, each of the other provinces framed legislation. At that time there were seven different Acts and seven different sets of rules and regulations. Those Acts and rules & regulations were inconsistent with one another. As the differences in the Acts and rules and regulations among the various provinces in India gave rise to many difficulties and hampered the development of industries, the Central Government appointed a committee called "The Boiler Law Committee" in 1920 to examine and report on the general question of boiler legislation in India.

The Boiler Laws Committee, 1920-21, the first to review the boiler laws on a national scale reported in March, 1921. The report criticised the differences in the Acts, rules and regulations. The report also pointed out that in the inspection of boilers the personal element was a weighty factor, and the difference in regulations resulted in what was termed as "provincial jealousy". The report stressed that all provinces should be subject to the same regulations and work done in one province should be accepted as correct in another province. The Committee recommended that regulations to cover the standard conditions for material, design and construction of boilers should be framed by Government of India and make applicable to all the provinces. The report also pointed out that regulations were entirely of technical nature and there was no reason for which these regulations would be affected by local conditions. The Committee prepared a draft Act on the lines of which, the basic All-India Act was passed in 1923. The Boiler Laws Committee also prepared a uniform set of technical regulations and a model set of administrative rules. A sharp distinction was drawn between the regulations and the rules. The regulations referred entirely to technical matters where as the rules referred to questions concerning the administration of the Act. Indian Boiler act, 1923 provides for the safety of life and property of persons from the danger of explosion of boilers.

The Government of India Act, 1935 assigned the subject 'Boilers' to the concurrent field. The provision for constituting Central Boilers Board having the authority to make regulations consistent with the Act was made in the Indian Boilers (Amendment) Act, 1937. A Board called the Central Boilers Board was accordingly constituted in the year 1937.

The Central Boilers Board in exercise of the powers conferred under section 28 of the said Act, formulated regulations on boilers. The current version of these regulations is known as the Indian Boiler Regulations, 1950 with amendments up to 22nd February, 2005.

7.2 THE INDIAN BOILERS ACT, 1923
7.2.1 PROCEDURES FOR REGISTRATIONS OF BOILERS AND ECONOMISERS.

Package Boiler

Submit following Original documents pertaining to the Boiler intended for registration to the concerned Divisional Inspector.

i. Form-II, Form-III and Form-IVA

ii. Form-IIIC of all mountings and fittings

iii. Boiler drawings in original

iv. Form-IIIA of feed pipe

v. Registration fee paid in challan

The registration of the Boiler will be done within 30 days or shorter period as may be prescribed from the date of the receipt for examination of the boiler giving not less than 10 days notice of the date fixed.

After satisfactory completion of open inspection and hydraulic test provisional order will be issued pending steam test.

7.2.2 Water tube Boiler

- Obtain permission to erect the Boiler through an authorised Boiler repairer from the Chief Inspector of Boilers.

- Submit following Original documents pertaining to the Boiler intended for

- Registration to the concerned divisional Inspector.

i. Form-II, Form-III, and Form-IVA

ii. Form-IIIC of all mountings and fittings

iii. Form-IIIC of all mountings and fittings

iv. Boiler Drawings in original

v. Form-IIIA of feed pipe

vi. Registration fee paid in challan
• Offer the Boiler for carrying out stage inspection to the concerned divisional inspector and obtain his clearance at every stage

7.2.3 PROCEDURES FOR REGISTRATIONS OF STEAM LINE

a. Obtain approval of the proposed steam line drawing from the Chief Inspector of Boilers by submitting following documents.

i. Steam line drawing in triplicate showing clearly welding details, materials specifications, working pressure of boilers and feed pipeline and registration Number of Boilers

ii. Steam line drawing scrutiny fee paid in challan (Fee is Rupees 30/- for every 30 meters or part thereof)

iii. Mention the authorised boiler repairer through whom you are getting the same erected

b. After obtaining approval of proposed steam line drawing from the Chief Inspector of Boilers make application for registration of proposed steam line with the divisional inspector by submitting the following original documents

i. steam line certificates in Form-IIIA

ii. Mounting And fittings certificates in Form-IIIC

iii. Welders certificate

iv. Registration fee paid in challan.

c. Offer steam pipe and fittings for material inspection and obtain clearance for erection from the inspector of boilers.

d. Offer the weld set up and weld edge preparation for inspection and obtain clearance for erection from the inspector of boilers.

e. Subject the weld joint joints for radiographic examination if needed

f. Subject the erected steam line for hydraulic test to the inspector of boiler

g. Submit revised steam line drawing incorporating any deviations caused during the erection due to site condition for approval to the Chief Inspector of boiler through inspector of Boiler drawing scrutiny fee.
7.2.4 ANNUAL INSPECTION OF BOILERS ECONOMISERS AND STEAM LINES

a. Make application to the Divisional Inspector and Inspection fee paid in challen.

The inspection of the Boiler, Economiser and steam line will be done within 30 days or shorter period as may be prescribed from the date of the receipt for examination of the Boiler giving not less than 10 days notice of the date fixed.

After satisfactory completion of open inspection and hydraulic test certificate for the use of Boiler, Economiser will be issued within 48 hours of making such examination.

7.2.5 REPAIRS TO BOILER ECONOMISER AND STEAM LINE.

a. The Inspector of Boiler after making examination of the Boiler, Economiser and Steam line will suggest any structural alteration. Addition or renewal will intimate the owner within 48 hours of making the examination.

b. After receiving the suggestions from the Inspector of Boilers for carrying out needful repairs, make the boilers, Economisers and steam line serviceable, the owner shall make application to the Chief Inspector of Boilers seeking permission to carryout the repairs mentioning the authorised Boiler repairer name through whom he is getting the same repaired.

c. After obtaining approval from the Chief Inspector of Boilers the owner should offer the Boiler Economiser and steam line for which repairs are being carried out for inspection to the inspector of Boilers and obtain his clearance.

d. After satisfactory completion of open inspection and hydraulic test, after repairs. Certificates for the use of Boilers and Economiser will be issued within 48 hours of making examination.

7.2.6 PERSONS TO BE INCHARGE OF BOILERS:

A certificate of Second class shall qualify the boiler thereof to be incharge of a single boiler of any kind, the heating surface of which does not exceed 140 sq. Mt. a second class boiler attendant may, however, attendant to a battery of boilers (not consisting of more than three connected boilers and not exceeding 140 sq. Mt. in aggregate of total heating surface) provided he is assisted by the number of firemen considered necessary by the Chief Inspector of Boilers.
A certificate of first class shall qualify the older thereof to be in charge of a single boiler of any kind or capacity or two or more boilers in a battery or of so many separate individual boilers, the total heating surface of which does not exceed 700 sq. Mts. A Person in charge of boiler shall be deemed to be in direct & immediate attendance and charge of the same when he is within 46 meters of such boiler.

7.2.7 PROCEDURES FOR APPEARING FIRST CLASS AND SECOND CLASS BOILER ATTENDANT EXAMINATION;

Requirement to appear for Second class examination

1. Age - shall not be less than 20 years

2. Experience - Has served for not less than 3 years as an engine fitter where boiler and engines are repaired or made and worked under steam. 1 year at least of which he should have worked as an assistant firemen, or

3. Has served for not less than 3 years in the capacity of a fireman or an assistant firemen on a steam boiler or a combined steam engine and boiler or

4. Produces from the head of an industrial or technical institution a certificate stating that he has completed a three years course of training, one year of which must have been as an apprentice in a steam power plant of a mill or factory or an engineering workshop for the maintenance of boilers.

b. Requirement to appear for first class examination:

1. Age - shall not be less than 21 years

2. Experience - Has served for not less than two years as a boiler attendant with second class certificate of competency in sole of working charge of boiler whose rated heating surface is not less than 46.0 sq. Mt. or

3. Produces from the head of an industrial or technical institution a certificate stating that he has completed a three years course of training one of which must have been as an apprentice in a steam power plant of a mill or factory or an engineering workshop where engines and boilers or repaired or made and in addition as served for not less than one year in sole working charge of a boiler not less than 46.0 of heating surface with a second class boiler attendants certificate.
c. Procedures for making application for first class and second class examination

I. FIRST CLASS;

1. Application shall be made in Form-A duly attested by the Gazetted officer.
2. Service certificate in original with copy.
3. Character certificate issued by employer in original with a copy.
4. Two copies of recent bust photographs.
5. Fee of Rs.40 paid in challan.

II. SECOND CLASS

1. Application shall be made in a Form-A duly attested by a Gazetted officer.
2. Service certificate in original with copy.
3. Character certificate issued by employer in original with copy.
4. Two copies of recent bust photographs.
5. Fee of Rs.30 paid in challan.

7.2.8 BOILER PROFICIENCY ENGINEER EXAMINATION:

The qualified Boiler Operation Engineers are required to maintain a boiler or battery of boilers having a total heating surface area of more than 700 m². The requirements are:

<table>
<thead>
<tr>
<th>Age</th>
<th>First class Boiler proficiency engineer</th>
<th>Second class Boiler proficiency engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 years</td>
<td>21 years</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational qualification</th>
<th>First class Boiler proficiency engineer</th>
<th>Second class Boiler proficiency engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>should have completed apprentice engineers course in a recognised workshop engaged in making or repairing of Boilers and Accessories OR should possess a degree in mechanical or electrical engg., or possess a diploma recognised by the Institute of Engineers.</td>
<td>should have completed apprentice engineers course in a recognised workshop engaged in making or repairing of Boilers and Accessories OR should possess a degree in mechanical or electrical engg., or possess a diploma recognised by the Institute of Engineers.</td>
<td></td>
</tr>
</tbody>
</table>
Experience should have served not less than 2 years as Second class Boiler proficiency Engineer + one year experience as engineer in steam plant. 
Engineer/Asst. Engineer in running and maintenance of battery of boilers not less than two in number and each boiler not having less than 46 m² heating surface.

Method of examination
Written examination consists of one paper in Mathematics, applied mechanics, heat engines in each subject and one paper of drawing followed by oral examination.

Written examination consists of one paper in Mathematics, applied mechanics, heat engines in each subject and followed by oral examination.

Mode of application
Prescribed application duly filled in

1. Form A attested by gazetted officer
2. Service certificate in original along with a copy
3. Educational Qualification certificate in original with copy
4. Character original certificate from the employer with copy
5. Two recent passport size bust photographs
6. Rs.80 paid in challan for first class & Rs. 50 for second class

Contact person for further details : Ex-officio chairman or the Ex-officio secretary to the board of examiners.

7.2.9 REGISTERS TO BE MAINTAINED

Register in Form A of all boilers registered in the state or the registry of which has been transferred from another state.

Registration book and Memorandum of Inspection book of all Boilers in Form no.1;

Register of appeals

Register of accidents

Register of registration and inspection fees received.

Review Questions
1. What is the basic purpose of Indian Boilers Act?
2. Explain the history of Indian Boilers Act?
3. What is the present status of Indian Boilers Act?
4. What are the different provisions of the said Act?
Discussion Questions

Discuss in detail the need of Indian Boilers Act with present day need?

Lesson 8 – Environment Protection Legislation

Learning Objectives

- To define the Environment.
- To explain the objectives of Environment Protection Legislation.
To explain the different provision of said act
Discover ways to make the more efficient use of the said legislations.

8.1 The legal and regulatory framework for environmental protection in India

8.1.1 Introduction

Over the years, together with a spreading of environmental consciousness, there has been a change in the traditionally-held perception that there is a trade-off between environmental quality and economic growth as people have come to believe that the two are necessarily complementary. The current focus on environment is not new—environmental considerations have been an integral part of the Indian culture. The need for conservation and sustainable use of natural resources has been expressed in Indian scriptures, more than three thousand years old and is reflected in the constitutional, legislative and policy framework as also in the international commitments of the country.

Even before India’s independence in 1947, several environmental legislation existed but the real impetus for bringing about a well-developed framework came only after the UN Conference on the Human Environment (Stockholm, 1972). Under the influence of this declaration, the National Council for Environmental Policy and Planning within the Department of Science and Technology was set up in 1972. This Council later evolved into a full-fledged Ministry of Environment and Forests (MoEF) in 1985 which today is the apex administrative body in the country for regulating and ensuring environmental protection. After the Stockholm Conference, in 1976, constitutional sanction was given to environmental concerns through the 42nd Amendment, which incorporated them into the Directive Principles of State Policy and Fundamental Rights and Duties.

Since the 1970s an extensive network of environmental legislation has grown in the country. The MoEF and the pollution control boards (CPCB i.e. Central Pollution Control Board and SPCBs i.e. State Pollution Control Boards) together form the regulatory and administrative core of the sector.

A policy framework has also been developed to complement the legislative provisions. The Policy Statement for Abatement of Pollution and the National Conservation Strategy and Policy Statement on Environment and Development were brought out by the MoEF in 1992, to develop and promote initiatives for the protection and improvement of the environment. The EAP (Environmental Action Programme) was formulated in 1993 with the objective of improving environmental services and integrating environmental considerations in to development programmes.

Other measures have also been taken by the government to protect and preserve the environment. Several sector-specific policies have evolved, which are discussed at length in the concerned chapters.

This chapter attempts to highlight only legislative initiatives towards the protection of the environment.

8.2 Legislation for environmental protection in India

8.2.1 Water

Water quality standards especially those for drinking water are set by the Indian Council of Medical Research. These bear close resemblance to WHO standards. The discharge of industrial effluents is regulated by the Indian Standard Codes and recently, water quality standards for coastal water marine
outfalls have also been specified. In addition to the general standards, certain specific standards have been
developed for effluent discharges from industries such as, iron and steel, aluminium, pulp and paper, oil
refineries, petrochemicals and thermal power plants. Legislation to control water pollution are listed
below.

8.2.2 Water (Prevention and Control of Pollution) Act, 1974

This Act represented India’s first attempts to comprehensively deal with environmental issues. The Act
prohibits the discharge of pollutants into water bodies beyond a given standard, and lays down penalties
for non-compliance. The Act was amended in 1988 to conform closely to the provisions of the EPA,
1986. It set up the CPCB (Central Pollution Control Board) which lays down standards for the prevention
and control of water pollution. At the State level, the SPCBs (State Pollution Control Board) function
under the direction of the CPCB and the state government.

8.2.3 Water (Prevention and Control of Pollution) Cess Act, 1977

This Act provides for a levy and collection of a cess on water consumed by industries and local
authorities. It aims at augmenting the resources of the central and state boards for prevention and control
of water pollution. Following this Act, The Water (Prevention and Control of Pollution) Cess Rules
were formulated in 1978 for defining standards and indications for the kind of and location of meters that every
consumer of water is required to install.

8.3 Air

8.3.1 Air (Prevention and Control of Pollution) Act, 1981

To counter the problems associated with air pollution, ambient air quality standards were established,
under the 1981 Act. The Act provides means for the control and abatement of air pollution. The Act seeks
to combat air pollution by prohibiting the use of polluting fuels and substances, as well as by regulating
appliances that give rise to air pollution. Under the Act establishing or operating of any industrial plant in
the pollution control area requires consent from state boards. The boards are also expected to test the air
in air pollution control areas, inspect pollution control equipment, and manufacturing processes.

National Ambient Air Quality Standards (NAAQS) for major pollutants were notified by the CPCB in
April 1994. These are deemed to be levels of air quality necessary with an adequate margin of safety, to
protect public health, vegetation and property (CPCB 1995 cited in Gupta, 1999). The NAAQS prescribe
specific standards for industrial, residential, rural and other sensitive areas. Industry-specific emission
standards have also been developed for iron and steel plants, cement plants, fertilizer plants, oil refineries
and the aluminium industry. The ambient quality standards prescribed in India are similar to those
prevailing in many developed and developing countries.

To empower the central and state pollution boards to meet grave emergencies, the Air (Prevention and
Control of Pollution) Amendment Act, 1987, was enacted. The boards were authorized to take immediate
measures to tackle such emergencies and recover the expenses incurred from the offenders. The power to
cancel consent for non-fulfilment of the conditions prescribed has also been emphasized in the Air Act
Amendment.

The Air (Prevention and Control of Pollution) Rules formulated in 1982, defined the procedures for
conducting meetings of the boards, the powers of the presiding officers, decision-making, the quorum;
manner in which the records of the meeting were to be set etc. They also prescribed the manner and the purpose of seeking assistance from specialists and the fee to be paid to them.

Complementing the above Acts is the Atomic Energy Act of 1982, which was introduced to deal with radioactive waste. In 1988, the Motor Vehicles Act, was enacted to regulate vehicular traffic, besides ensuring proper packaging, labelling and transportation of the hazardous wastes. Various aspects of vehicular pollution have also been notified under the EPA of 1986. Mass emission standards were notified in 1990, which were made more stringent in 1996. In 2000 these standards were revised yet again and for the first time separate obligations for vehicle owners, manufacturers and enforcing agencies were stipulated. In addition, fairly stringent Euro I and II emission norms were notified by the Supreme Court on April 29, 1999 for the city of Delhi. The notification made it mandatory for car manufacturers to conform to the Euro I and Euro II norms by May 1999 and April 2000, respectively, for new non-commercial vehicle sold in Delhi.

8.4 Forests and wildlife

8.4.1 The Wildlife (Protection) Act, 1972, Amendment 1991

The WPA (Wildlife Protection Act), 1972, provides for protection to listed species of flora and fauna and establishes a network of ecologically-important protected areas. The WPA empowers the central and state governments to declare any area a wildlife sanctuary, national park or closed area. There is a blanket ban on carrying out any industrial activity inside these protected areas. It provides for authorities to administer and implement the Act; regulate the hunting of wild animals; protect specified plants, sanctuaries, national parks and closed areas; restrict trade or commerce in wild animals or animal articles; and miscellaneous matters. The Act prohibits hunting of animals except with permission of authorized officer when an animal has become dangerous to human life or property or so disabled or diseased as to be beyond recovery (WWF-India, 1999). The near-total prohibition on hunting was made more effective by the Amendment Act of 1991.

8.4.2 The Forest (Conservation) Act, 1980

This Act was adopted to protect and conserve forests. The Act restricts the powers of the state in respect of de-reservation of forests and use of forestland for non-forest purposes (the term non-forest purpose includes clearing any forestland for cultivation of cash crops, plantation crops, horticulture or any purpose other than re-afforestation).

8.5 General

8.5.1 Hazardous wastes

There are several legislation that directly or indirectly deal with hazardous waste. The relevant legislation are the Factories Act, 1948, the Public Liability Insurance Act, 1991, the National Environment Tribunal Act, 1995 and some notifications under the Environmental Protection Act of 1986. A brief description of each of these is given below.

Under the EPA 1986, the MoEF has issued several notifications to tackle the problem of hazardous waste management. These include:
• **Hazardous Wastes (Management and Handling) Rules, 1989**, which brought out a guide for manufacture, storage and import of hazardous chemicals and for management of hazardous wastes.

• **Biomedical Waste (Management and Handling) Rules, 1998**, were formulated along parallel lines, for proper disposal, segregation, transport etc. of infectious wastes.

• **Municipal Wastes (Management and Handling) Rules, 2000**, whose aim was to enable municipalities to dispose municipal solid waste in a scientific manner.

• **Hazardous Wastes (Management and Handling) Amendment Rules, 2000**, a recent notification issued with the view to providing guidelines for the import and export of hazardous waste in the country.

8.5.2 Factories Act, 1948 and its Amendment in 1987

The Factories Act, 1948 was a post-independence statute that explicitly showed concern for the environment. The primary aim of the 1948 Act has been to ensure the welfare of workers not only in their working conditions in the factories but also their employment benefits. While ensuring the safety and health of the workers, the Act contributes to environmental protection. The Act contains a comprehensive list of 29 categories of industries involving hazardous processes, which are defined as a process or activity where unless special care is taken, raw materials used therein or the intermediate or the finished products, by-products, wastes or effluents would:

• Cause material impairment to health of the persons engaged

• Result in the pollution of the general environment

8.5.3 Public Liability Insurance Act (PLIA), 1991

The Act covers accidents involving hazardous substances and insurance coverage for these. Where death or injury results from an accident, this Act makes the owner liable to provide relief as is specified in the Schedule of the Act. The PLIA was amended in 1992, and the Central Government was authorized to establish the Environmental Relief Fund, for making relief payments.

8.5.4 National Environment Tribunal Act, 1995

The Act provided strict liability for damages arising out of any accident occurring while handling any hazardous substance and for the establishment of a National Environment Tribunal for effective and expeditious disposal of cases arising from such accident, with a view to give relief and compensation for damages to persons, property and the environment and for the matters connected therewith or incidental thereto.[2]

8.5.5 International agreements on environmental issues

India is signatory to a number of multilateral environment agreements (MEA) and conventions. An overview of some of the major MEAs and India’s obligations under these is presented below. These are discussed at length in the respective chapters.
8.5.6 Convention on International Trade in Endangered Species of wild fauna and flora (CITES), 1973

The aim of CITES is to control or prevent international commercial trade in endangered species or products derived from them. CITES does not seek to directly protect endangered species or curtail development practices that destroy their habitats. Rather, it seeks to reduce the economic incentive to poach endangered species and destroy their habitat by closing off the international market. India became a party to the CITES in 1976. International trade in all wild flora and fauna in general and species covered under CITES is regulated jointly through the provisions of The Wildlife (Protection) Act 1972, the Import/Export policy of Government of India and the Customs Act 1962 (Bajaj, 1996).

8.5.7 Montreal Protocol on Substances that deplete the Ozone Layer (to the Vienna Convention for the Protection of the Ozone Layer), 1987

The Montreal Protocol to the Vienna Convention on Substances that deplete the Ozone Layer, came into force in 1989. The protocol set targets for reducing the consumption and production of a range of ozone depleting substances (ODS). In a major innovation the Protocol recognized that all nations should not be treated equally. The agreement acknowledges that certain countries have contributed to ozone depletion more than others. It also recognizes that a nation’s obligation to reduce current emissions should reflect its technological and financial ability to do so. Because of this, the agreement sets more stringent standards and accelerated phase-out timetables to countries that have contributed most to ozone depletion (Divan and Rosencrantz, 2001).

India acceded to the Montreal Protocol along with its London Amendment in September 1992. The MoEF has established an Ozone Cell and a steering committee on the Montreal Protocol to facilitate implementation of the India Country Program, for phasing out ODS production by 2010.

To meet India’s commitments under the Montreal Protocol, the Government of India has also taken certain policy decisions.

- Goods required to implement ODS phase-out projects funded by the Multilateral Fund are fully exempt from duties. This benefit has been also extended to new investments with non-ODS technologies.
- Commercial banks are prohibited from financing or refinancing investments with ODS technologies.

The Gazette of India on 19 July 2000 notified rules for regulation of ODS phase-out called the Ozone Depleting Substances (Regulation and Control) Rules, 2000. They were notified under the Environment (Protection) Act, 1986. These rules were drafted by the MoEF following consultations with industries and related government departments.

8.5.8 Basel Convention on Transboundary Movement of Hazardous Wastes, 1989

Basel Convention, which entered into force in 1992, has three key objectives:
To reduce transboundary movements of hazardous wastes;
• To minimize the creation of such wastes; and
• To prohibit their shipment to countries lacking the capacity to dispose hazardous wastes in an environmentally sound manner.


8.5.9 UN Framework Convention on Climate Change (UNFCCC), 1992

The primary goals of the UNFCCC were to stabilize greenhouse gas emissions at levels that would prevent dangerous anthropogenic interference with the global climate. The convention embraced the principle of common but differentiated responsibilities which has guided the adoption of a regulatory structure.

India signed the agreement in June 1992, which was ratified in November 1993. As per the convention the reduction/limitation requirements apply only to developed countries. The only reporting obligation for developing countries relates to the construction of a GHG inventory. India has initiated the preparation of its First National Communication (base year 1994) that includes an inventory of GHG sources and sinks, potential vulnerability to climate change, adaptation measures and other steps being taken in the country to address climate change. The further details on UNFCC and the Kyoto Protocol are provided in Atmosphere and climate chapter.

8.5.10 Convention on Biological Diversity, 1992

The Convention on Biological Diversity (CBD) is a legally binding, framework treaty that has been ratified until now by 180 countries. The CBD has three main thrust areas: conservation of biodiversity, sustainable use of biological resources and equitable sharing of benefits arising from their sustainable use.

The Convention on Biological Diversity came into force in 1993. Many biodiversity issues are addressed in the convention, including habitat preservation, intellectual property rights, biosafety, and indigenous peoples’ rights.

India’s initiatives under the Convention are detailed in the chapter on Biodiversity. These include the promulgation of the Wildlife (Protection) Act of 1972, amended in 1991; and participation in several international conventions such as CITES.

8.5.11 UN Convention on Desertification, 1994

Delegates to the 1992 UN Conference on Environment and Development (UNCED) recommended establishment of an intergovernmental negotiating committee for the elaboration of an international convention to combat desertification in countries experiencing serious drought and/or desertification. The UN General Assembly established such a committee in 1992 that later helped formulation of Convention on Desertification in 1994.

The convention is distinctive as it endorses and employs a bottom-up approach to international environmental cooperation. Under the terms of the convention, activities related to the control and alleviation of desertification and its effects are to be closely linked to the needs and participation of local
land-users and non-governmental organizations. Seven countries in the South Asian region are signatories to the Convention, which aims at tackling desertification through national, regional and sub-regional action programmes. The Regional Action Programme has six Thematic Programme Networks (TPN's) for the Asian region, each headed by a country task manager. India hosts the network on agroforestry and soil conservation. For details refer to the land resource chapter.

8.5.12 International Tropical Timber Agreement and The International Tropical Timber Organisation (ITTO), 1983, 1994

The ITTO established by the International Tropical Timber Agreement (ITTA), 1983, came into force in 1985 and became operational in 1987 [3]. The ITTO facilitates discussion, consultation and international cooperation on issues relating to the international trade and utilization of tropical timber and the sustainable management of its resource base. The successor agreement to the ITTA (1983) was negotiated in 1994, and came into force on 1 January 1997. The organization has 57 member countries. India ratified the ITTA in 1996.

8.6 An assessment of the legal and regulatory framework for environmental protection in India

The extent of the environmental legislation network is evident from the above discussion but the enforcement of the laws has been a matter of concern. One commonly cited reason is the prevailing command and control nature of the environmental regime. Coupled with this is the prevalence of the all-or-nothing approach of the law; they do not consider the extent of violation. Fines are levied on a flat basis and in addition, there are no incentives to lower the discharges below prescribed levels.

Some initiatives have addressed these issues in the recent past. The Government of India came out with a Policy Statement for Abatement of Pollution in 1992, before the Rio conference, which declared that market-based approaches would be considered in controlling pollution. It stated that economic instruments will be investigated to encourage the shift from curative to preventive measures, internalise the costs of pollution and conserve resources, particularly water. In 1995, the Ministry of Environment and Forest (MoEF) constituted a task force to evaluate market-based instruments, which strongly advocated their use for the abatement of industrial pollution. Various economic incentives have been used to supplement the command-and-control policies. Depreciation allowances, exemptions from excise or customs duty payment, and arrangement of soft loans for the adoption of clean technologies are instances of such incentives. Another aspect that is evident is the shift in the focus from end-of-pipe treatment of pollution to treatment at source. The role of remote sensing and geographical information systems in natural resource management and environmental protection has also gained importance over time.

An important recent development is the rise of judicial activism in the enforcement of environmental legislation. This is reflected in the growth of environment-related public litigation cases that have led the courts to take major steps such as ordering the shut-down of polluting factories.

Agenda 21 highlights the need for integration of environmental concerns at all stages of policy, planning and decision-making processes including the use of an effective legal and regulatory framework, economic instruments and other incentives. These very principles were fundamental to guiding environmental protection in the country well before Rio and will be reinforced, drawing on India’s own experiences and those of other countries.
8.7 Environment Protection Laws in the British Era

8.7.1 Introduction
Environment Degradation - One of the biggest problems the world is facing today. The problem of environment pollution is as old as the evolution of Homo sapiens on this planet. Man's ambition for limitless enjoyment and comfort has led him towards the exploitation of nature's wealth so indiscriminately and so shamelessly as to reduce nature's capacity for self-stabilization. Man's voracious appetite for resources and his desires to conquer nature has put him in collision course with the environment. The demand for his explosive technological society imposes intense stress on the state of equilibrium with the environment. The relationship between human beings and his environment has varied from time to time. It has also been varying from place to place at a given point of time. This statement is quite legitimate as far as India and its environment protection policy is concerned. It was a statement of one of the great personality in the field of law Prof. Upendra Baxi that "In India, Environment protection and management started only after 1972 i.e. after the Stockholm Conference. In my view this statement is wrong, as the Environment protection in India started long before from the time of Ancient India. In the early stages of human history in India, human beings considered the environment as very dominant and that was why, they worshipped different aspects like trees, forest, animals, mountains, rivers etc. All of these held a special place of reverence in Hindu theology. The Vedas, Puranas, Upanishads, and other scriptures of the Hindu religion gave a detailed description of Trees, plants and wildlife and their importance to the people. The Rig Veda highlighted the potentialities of nature in controlling the climate, increasing fertility and improvement of human life emphasizing on intimate kinship with nature. Atharva Veda considered trees as abode of various gods and goddesses. Yajur Veda Emphasized that the relationship with nature and the animals should not be that of dominion and subjugation but of mutual respect and kindness. Many animals and plants were associated with Gods and Goddesses so that they were preserved for the future generations. As they were associated with supernatural powers, no one dared to misuse the resources and therefore there was a check on the excess utilization of resources. King Ashoka of the Mauryan Empire did as much as he could to protect environment. He made several laws for the preservation of the ecology of India. Same trend continued even at the time of medieval India when Mughals ruled India though not at the same pace which was expected from them. However, the strongest steps for the same came only from British. They contributed a lot for the conservation of the ecological system of India by enacting several laws, which really were missing in the ancient era. Therefore this project of mine is to give you a glimpse of all the environment protection laws, which were made by the Britishers along with the other steps taken by them.

8.7.2 Arrival of the British and the formation of Environmental Laws in India
British arrived in India at 1600 with the mission of trading goods from India in the form of East India Company. But, after seeing the immense amount of natural resources and plunders of opportunity to exploit the resources present here, they changed their game plan and started applying coercion so as to complete their aim of exploiting natural resources in India. At the time when British arrived in India, India was divided into several princely states ruled by different rulers. It was quite an easy task for the British to establish itself gradually and astutely. They very cleverly implemented the policy of Divide and Rule in India and took benefit of the diversity as on the basis of different rulers as well as due to multiplicity of religion in the country. The early days of British rule in India were days of plunder of natural resources. They started exploiting the rich resources present India by employing the policy of imperialism. By around 1860, Britain had emerged as the world leader in deforestation, devastation its own woods and the forests in Ireland, South Africa and northeastern United States to draw timber for shipbuilding, iron-smelting and farming. Upon occasion, the destruction of forests was used by the British to symbolize political victory.
Thus, the early nineteenth century, and following its defeat of the Marathas, the East India Company razed to the ground teak plantation in Ratnagiri nurtured and grown by the legendary Maratha Admiral Kanhoji Angre. There was a total indifference to the needs of the forest conservancy. They caused a fierce onslaught on Indian Forests. The onslaught on the forests was primarily because of the increasing demand for military purposes, for British navy, for local construction (such as roads and railways), supply of teak and sandalwood for export trade an extension of agriculture in order to supplement revenue.

The British government started control over forest in the year 1806 when a commission was appointed to enquire into the availability of teak in Malabar and Travancore by way of appointment of Conservator of Forest. This moved failed to conserve forest as the appointed conservator plundered the forest wealth instead of conserving it. Consequently, the post of conservator of forest was abolished in the year 1823.

Their early treatment of the Indian forest also reinforces the claim that destructive energy of the British race all over the world was rapidly converting forest into desert. Until the later decades of nineteenth century, the British Raj carried out a immense onslaught on the subcontinent's forest. With the Oaks forest vanishing in England, a permanent supply of durable timber was required for the British Navy because the safety and defense of the British Empire depended primarily on its navy. In the period of fierce competition between the colonial powers, Indian teak, the most durable of shipbuilding, saved British during a war with Napoleon and the later maritime expansion. To tap the likely sources supply, search parties were sent to teak forests of India's west coast. Ships were built in the dockyards in the Surat and the Malabar Coast, as well as in England by importing teak from India.

The revenue orientation of colonial land policy also worked towards the denudation of forests. As their removal added to the class of land assessed for revenue, forests were considered as an obstruction to agriculture and consequently a bar to the prosperity of the British Empire. The dominant thrust of agrarian policy was to extend cultivation and the watchword of the time was to destroy the forest with this end in view.

This process greatly intensified in the early years of the building of the railways network after about 1853. While great chunks of forests were destroyed to meet the demand for railway sleepers, no supervision was exercised over the felling operation in which a large number of trees was felled and lay rotting on the road. The sub-Himalayan forests of Garhwal and Kumaon, for example were all felled in even to desolation and thousands of trees were felled which were never removed, nor was their removal possible.

As early as 1805, the British government requested the British East India Company, which already controlled large parts of the coastal regions, to investigate the feasibility of harvesting Malabar teak in Madras to meet the needs of British shipbuilding during the Napoleonic war. Although the East India Company was a private trading company commissioned in 1600, in India it functioned as a state entity, enjoying a monopoly of trade in the areas it ruled. Acting at the direction of the British parliament, it shared authority in India with government officials. The company appointed a former police officer, Captain Watson, as India's first conservator of forests in 1806. Watson's two-pronged plan involved placing a tax on teak in order to simultaneously slow its harvest by private interests and raise money for the government, and then purchasing the teak from the private dealers. Together, these measures would guard against over-exploitation and ensure a steady supply of teak.

On 3 August 1855, Lord Dalhousie, the governor general of India, reversed previous laissez-faire policy to establish the India Forest Department and annex large areas of sparsely populated lands in India. These
lands were declared protected areas and staffed by foresters, fireguards, rangers, and administrators. Over the next decades, forestry in India became an international profession with global specialists ruling an empire of trees and grasslands.

The new environmental policies served in turn to support British imperialism in India. Unlike the conservative French and English royal forests reserved for hunting by the privileged elite, or the later American concept of total protection in national parks, the new colonial environmentalism was intended to generate income for the imperial British state through strict control of India's natural resources. Lord Dalhousie's new forest policies greatly expanded British authority over the land and people of India, a colonial empire that the British had procured piecemeal over the course of several centuries of mercantile and military exploitation. Thus, environmentalism and imperialism have a shared past, and the newly protected forests marked a symbiotic alliance of environmental concern with expansion of state power in India.

After Napoleon's defeat at Waterloo in 1815, however, the navy had less need of teak, and a new governor of Madras, Thomas Munro, felt that the timber royalty unnecessarily raised the opposition of Indian princes who objected to the tax placed on forests under their authority. Munro also felt pressure from Indian merchants who objected strenuously to a tax that cut severely into their profits and from peasants who saw traditional access to the forest sharply curtailed. The new governor rescinded the teak regulations, abolished Captain Watson's position, and allowed the free market to operate as it had before. Lord Dalhousie's tenure as governor-general from 1848 to 1856 saw the acquisition of territory and implementation of administrative reforms for which posterity dubbed Dalhousie "the great Proconsul." Dalhousie's support for conservation was unapologetically imperialist. Upon reaching the capital at Calcutta for his inauguration in 1848, he proclaimed, "we are Lords Paramount of India, and our policy is to acquire as direct a dominion over the territories in possession of the native princes, as we already hold over the other half of India."

The British government in India made it clear that "all the forests are the property of Government, and no general permission to cut timber therein will be granted to anyone."

The second half of the 19th century marked the beginning of an organized forest management in India with some administrative steps taken to conserve forest; the formulation of forest policy and the legislations to implement the policy decision. The systematic management of forest resources began with the appointment of the First Inspector General of Forest in 1964. Dietrich Brandis was the first Inspector General of India. Lord Canning appointed Dietrich Brandis as the first inspector general of the India-wide Indian Forest Department, a post he held from 1864 to 1883. The immediate task of the forest department was under the supervision of Inspector General was that of exploration of resources, demarcation of reserves, protection of the forest from fire and assessment of the growing stock in valuable reserve by sample enumeration and prescription of yields which could be sustained. The objective of management of forest thus changed from obtaining of timber for various purposes to protecting and improving forests and treating them as a biological growing entity. Forest conservators had already been appointed in Bombay (1847), Madras (1856), and the United Burma Provinces (1857); Brandis in turn appointed forest conservators to the Northwestern Provinces and Central Provinces in 1860, Oudh in 1861, Punjab in 1864, Coorg and Bengal in 1864, Assam in 1868, and Berar in 1868. By the end of 1868, the Forest Department had administrators in every province of the subcontinent. In 1871, the Forest Department was placed under the newly established Department of Revenue and Agriculture, itself under the umbrella of the Home Department. Brandis was followed by Wilhelm Schlich (1883-88), Berthold Ribbentrop (1888-1900), and E. P. Stebbings (1900-17).
The first step of the British Government to assess state monopoly right over the forest was the enactment of the Forest Act, 1865. The act was revised after about thirteen years later in 1878 and extended to most of the territories under the British rule. It also expanded the powers of the state by providing for reserved forest, which were closed to the people and by empowering the forest administration to impose penalties for any transgression of the provision of the Act. Yet the latter act was passed only after a prolonged and bitter debate within the protagonist of the earlier debate put forth arguments strikingly similar to those advanced by participants in the contemporary debate about the environment of India.

Hurriedly drafted, the 1865 act was passed to facilitate the acquisition of those forest areas that were earmarked for railway supplies. It merely sought to establish the claims of the state to the forests in immediately required, subject to the proviso that existing rights would not be abridged. Almost immediately, the search commenced for a more stringent and inclusive piece of legislation. A preliminary draft, prepared by Brandis in 1969, was circulated among the various presidencies. A conference of forest officers, convened in 1874, then went into defects of the 1865 act and the details of the new one.

8.7.3 The British Government declared its first Forest Policy by a resolution on the 19th October 1884. The policy statement had the following objectives:
1. Promoting the general well being of the people in the country;
2. Preserving climatic and physical condition in the country; and
3. Fulfilling the need of the people

8.7.4 The policy also suggested a rough functional classification of forest into the following four categories:
1. Forests, the preservation of which was essential for climatic and physical grounds;
2. Forests which offered a supply a valuable timber for commercial purposes;
3. Minor forest which produced only the inferior sort of timber; and
4. Pastures, which were forest only in name.

To implement the Forest policy of 1884, the Forest act of 1927 was enacted. Till 1935, the government of India enacted the Forest Act. In 1935, the British Parliament through the Government of India created provincial legislature and the subject of the forest as included in the provincial legislature list. Thereafter, several provinces made their own laws to regulate forest. Most of these laws were within the framework laid down in the 1927 Act. The British all along their reign in India formed many other Acts from time to time.

8.7.5 Main Acts in the field of Environment in the British Era Acts controlling Water Pollution
# The Shore Nuisance (Bombay and Kolaba) Act, 1853
# The Orient Gas Company Act, 1857
# Indian Penal Code, 1860
# The Serais Act, 1867
# The North India Canal and Drainage Act, 1873
# The Obstruction in Fairways Act, 1881
# The Indian Easement Act, 1882
# The Indian Fisheries Act, 1897
# The Indian Ports Act, 1908
# The Indian Steam Vessels Act, 1917
8.7.6 The Shore Nuisance (Bombay and Kolaba) Act, 1853
This is the earliest Act on the statute book concerning control of water pollution in India. It was the first act in the field of Environment protection in India, which was enacted by the British for the British India. This act was passed so as to regulate the waste materials discharged in the coastal area of Bombay (Now Mumbai) and Colaba area, from various industries functioning in these areas.

8.7.7 Oriental Gas Company Act, 1857
This law imposed restrictions on fouling of water by the Oriental Gas Company. The Oriental Gas Company provided fine of Rs. 1000, for fouling water and for the subsequent continuation of the offence, Rs. 500 per day. Oriental Gas Company (OGC) Act was among the first act in the field of water pollution.

8.7.8 Indian Penal Code, 1860
As regards to water pollution, Indian Penal Code says that whoever voluntarily corrupts or fouls the water of any public spring or reservoir, so as to make it less fit for the purpose for which it is ordinarily used, shall be punished with simple or rigorous imprisonment for a term exceeding to three months or fine of five hundred rupees or both. The definition is confined to a voluntary act and acts committed without any knowledge or accidentally would not be covered under the present law. Moreover, it has limited operation to the water of public spring or reservoir. Further, looking to the gravity of the offence it attracts only minor punishment. It is surprising to know that in spite of the fact that this provision was incorporated to protect the public health, the cast ridden society wanted to enforce this provision against the lower cast person taking water from a public cistern but the Bombay High Court did not allow the above interpretation (R v Bhagi 2 Bom LR 1078). Chapter 14th of the Indian Penal Code (IPC) is for Public Nuisance from section 268 to 291.

8.7.9 The Serais Act, 1867
The Act enjoined upon a keeper of Serai or an inn to keep a certain quality of water fit for consumption by "persons and use of it by the animals" to the satisfaction of the District magistrate or his nominees. Failure for maintaining the standard entailed a liability of rupees twenty. It is to be understood that the amount twenty rupees was a very big amount at that time and therefore should not be compared to the value of twenty rupees prevailing now in the country.

8.7.10 The North India Canal and Drainage Act, 1873
Certain offences have been listed under the Act contained in Section 70. It was to regulate the way canals for the purpose of irrigation as well as to discharge the effluents from various industries as well as drainage system is to be controlled.

8.7.11 Obstruction in Fairways Act, 1881
Section 8 of the Act empowered the Central Government to make Rules to regulate or prohibit the throwing of rubbish in any fairway leading to a port causing or likely to give rise to a bank or shoal.

8.7.12 Indian Easements Act, 1882
It protected riparian owners against unreasonable pollution by upstream officer. Illustrations (f), (h) and (j) of Section 7 of the Act deal with pollution of waters. Section 28(d) of the Easement Act, 1882 on the one hand allowed a prescriptive right to pollute the water but it was not an absolute right. The illustrations (f), (g), and (j) of this Section, limited this prescriptive right not to unreasonably pollute or cause material injury to other.
8.7.13 **The Indian Fisheries Act, 1897**
The Indian Fisheries Act, 1897 contains seven sections. This act penalized the killing of fish by poisoning water and by using explosive. Section 5 of the Act prohibits destruction of fish by poisoning waters.

8.7.14 **Indian Ports Act, 1908**
The Indian Ports Act, 1908, has regulated water pollution caused by the use of oil or discharging of oil in the port waters.

8.7.15 **The Indian Forest Act, 1927**
This act was very comprehensive and contained all the major provisions of the earlier act and amendments made thereto including those relating to the duty on timber. The Act of 1927 also embodied land-using policy whereby the British could acquire all forestland, village forest and other Common Property Resources. Section 26(i) of the Act makes it punishable if any person, who, in contravention of the rules made by the State Government, poisons water of a forest area. The State Government has been empowered under Section 32(f) to make rules relating to poisoning of water in forests. This act is still in force, together with several amendments made by the State Governments.

8.7.16 **ACTS FOR THE PROTECTION OF THE INDIAN ENVIRONMENT**
- The Orient Gas Company Act, 1857
- The Serais Act, 1857
- The Northern India Canal and Drainage Act, 1873
- The Obstruction in Airways Act, 1881
- The Indian Fisheries Act, 1897
- The Indian Ports Act, 1901
- The Bengal Smoke Nuisance Act, 1905
- The Explosives Act, 1908
- The Bombay Smoke Nuisance Act, 1912
- The Inland Stream Vessel Act, 1917
- The Mysore Destructive Insects & Pests Act, 1917
- The Poison Act, 1919
- The Andhra Pradesh Agricultural, Pest & Diseases Act, 1919
- The Indian Boilers Act, 1923
- The Workmen's Compensation Act, 1923
- The Indian Forest Act, 1927
- The Motor Vehicles Act, 1939
- The Bihar Wastelands (Reclamation, Cultivation & Improvement) Act, 1946.

8.7.17 **Air Pollution Acts**
- Indian Penal Code, 1860
- The Indian Boilers Act, 1923
- Motor Vehicle Act, 1939 (Repealed by Act No.59 of 1988)
- The Poison Act, 1919

8.7.18 **Municipality Laws**
- Uttar Pradesh Municipality Laws, 1916
- Bihar and Orissa Municipality Laws, 1922

Both of these laws were amongst the earliest laws for regulating the environment conditions in the cities by the help of municipality laws.
8.7.19 Wildlife Protection Act
# Forest act of Madras 1873
# Elephant Preservation Act, 1879
# World Birds Protection Act, 1887
# World Birds and Animal Protection Act, 1912
# Hailey National Park Act, 1936 (Now Called Corbett National Park)

8.7.20 In the field of wildlife protection, the first wildlife statute was enacted in Madras (Chennai) for the protection of wild elephants. The law introduced a general prohibition on destruction of wild elephants and imposed penalty on those who violated the embargo. The first effort by the Central Government came after six years later by the passing of the Elephant Preservation Act in 1879. In 1887, central government enacted the Wild Birds Protection Act prohibiting the possession or sale of wild birds recently killed or taken during the notified breeding season. In 1912, the Central Government enacted a broader Wild Life and Animal Protection Act. Extending to most of the British India, this law specified a closed hunting season and regulated the hunting of designated species through licenses. Indeed, all the statutes related primarily to the regulation of hunting and did not regulate trade in wildlife and wildlife products- both major factors in the decline of Indian Wildlife. As a consequence, wildlife depredation continued and many species became extinct.

The first comprehensive law for the protection of wildlife and its habitat was perhaps the Hailey National Park Act of 1936, which established the Hailey (now Corbett) National park in Uttar Pradesh.

8.7.21 Miscellaneous
# The Indian Fisheries Act, 1897
# The Indian Forest Act, 1927
# Criminal Procedure Code, 1893

8.7.22 Criminal Procedure Code, 1893.
Criminal Procedure Code, 1893 was one of the major acts, which provided some of the very strict punishments for the environmental offences under the criminal law. Sections 133 to 144 in the Chapter XII of the Criminal Procedure under the heading Public Nuisance provided for the punishment under criminal procedure for the commission of any nuisance, which affected the public at large. The environmental degradation was also included in it as any degradation of the environment is automatically supposed to be affecting the public at large.

8.7.23 Conclusion
Thus, it can be held hereby that some of the very strong steps were taken by the British in order to protect environment from degrading and to preserve it for the future generations. But, some of these laws showed their capability on paper and not on the practical grounds. Many laws and acts enacted by the British in our country proved out to be more useful for them (British) as compared to us. They made several laws so as to make their task easy as by that they were able to make use of the resources and degrade environment comfortably and lawfully. Some of the laws were so as to protect the resources from the natives itself, so that the British can utilize them for their own needs which were to gain as much capital from India as possible. Introduction of Railways in India is thought to be major reward for the Indians by the British and there is no doubt that it is one of the very valuable gift of the British for India. But, the British never brought rail to India with the thought of benefitting us but for their own benefit. They introduced rail in India so that the resources present in India, especially environmental resources that they were harnessing, can reach easily and quickly to their destination. They made laws for conserving the forest and in the process marked much of the area as the property of the government so that no one could object as to he
use of these forest by the British. Even if some laws were present which were beneficial for the environment conservation, then they were not implemented properly for them. The punishments prescribed under the laws were not very strict and so the offender was very easily allowed to escape. Moreover, most of the time, the British themselves depleted the resources. The theories like Sovereign Immunity always saved the government from being sued under public offence. The maxims like ?King can do no wrong? were applied to its full extent. But still to say that the British always thought of their own benefit would be a wrong statement. The laws like Indian Penal Code 1860, and Criminal Procedure Code 1893, were very effective. Moreover, the laws made by the British paved a way for the Indian to think and implement new laws in this field itself. These laws were one of the first lessons for the Indians to make laws for the protection of the environment in a more polished fashion in the future.

Lesson 9– The Environment Protection Act, 1986 and Rules
Learning Objectives

- To define the The Environment Protection Act, 1986.
- To explain the The Environment Protection Rules.
- To explain the powers in said act
- Discover ways to make the use of the said Act more relevant.

9.1 THE ENVIRONMENT (PROTECTION) ACT, 1986

An Act to provide for the protection and improvement of environment and for matters connected there with:

WHEREAS the decisions were taken at the United Nations Conference on the Human Environment held at Stockholm in June, 1972, in which India participated, to take appropriate steps for the protection and improvement of human environment;

AND WHEREAS it is considered necessary further to implement the decisions aforesaid in so far as they relate to the protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property;

BE it enacted by Parliament in the Thirty-seventh Year of the Republic of India as follows:-

9.2 PRELIMINARY

9.2.1 SHORT TITLE, EXTEND AND COMMENCEMENT

(1) This Act may be called the Environment (Protection) Act, 1986.

(2) It extends to the whole of India.

(3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint and different dates may be appointed for different provisions of this Act and for different areas.

9.2.3 DEFINITIONS

In this Act, unless the context otherwise requires,--

(a) "environment" includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property;

(b) "environmental pollutant" means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be, injurious to environment;

(c) "environmental pollution" means the presence in the environment of any environmental pollutant;
(d) "handling", in relation to any substance, means the manufacture, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of such substance;

(e) "hazardous substance" means any substance or preparation which, by reason of its chemical or physico-chemical properties or handling, is liable to cause harm to human beings, other living creatures, plant, micro-organism, property or the environment;

(f) "occupier", in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation to any substance, the person in possession of the substance;

(g) "prescribed" means prescribed by rules made under this Act.

9.2.4 GENERAL POWERS OF THE CENTRAL GOVERNMENT

POWER OF CENTRAL GOVERNMENT TO TAKE MEASURES TO PROTECT AND IMPROVE ENVIRONMENT

(1) Subject to the provisions of this Act, the Central Government, shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing controlling and abating environmental pollution.

(2) In particular, and without prejudice to the generality of the provisions of sub-section (1), such measures may include measures with respect to all or any of the following matters, namely:--

(i) co-ordination of actions by the State Governments, officers and other authorities--

   (a) under this Act, or the rules made thereunder, or

   (b) under any other law for the time being in force which is relatable to the objects of this Act;

(ii) planning and execution of a nation-wide programme for the prevention, control and abatement of environmental pollution;

(iii) laying down standards for the quality of environment in its various aspects;

(iv) laying down standards for emission or discharge of environmental pollutants from various sources whatsoever:

Provided that different standards for emission or discharge may be laid down under this clause from different sources having regard to the quality or composition of the emission or discharge of environmental pollutants from such sources;

(v) restriction of areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards;

(vi) laying down procedures and safeguards for the prevention of accidents which may cause environmental pollution and remedial measures for such accidents;
(vii) laying down procedures and safeguards for the handling of hazardous substances;

(viii) examination of such manufacturing processes, materials and substances as are likely to cause environmental pollution;

(ix) carrying out and sponsoring investigations and research relating to problems of environmental pollution;

(x) inspection of any premises, plant, equipment, machinery, manufacturing or other processes, materials or substances and giving, by order, of such directions to such authorities, officers or persons as it may consider necessary to take steps for the prevention, control and abatement of environmental pollution;

(xi) establishment or recognition of environmental laboratories and institutes to carry out the functions entrusted to such environmental laboratories and institutes under this Act;

(xii) collection and dissemination of information in respect of matters relating to environmental pollution;

(xiii) preparation of manuals, codes or guides relating to the prevention, control and abatement of environmental pollution;

(xiv) such other matters as the Central Government deems necessary or expedient for the purpose of securing the effective implementation of the provisions of this Act.

(3) The Central Government may, if it considers it necessary or expedient so to do for the purpose of this Act, by order, published in the Official Gazette, constitute an authority or authorities by such name or names as may be specified in the order for the purpose of exercising and performing such of the powers and functions (including the power to issue directions under section 5) of the Central Government under this Act and for taking measures with respect to such of the matters referred to in sub-section (2) as may be mentioned in the order and subject to the supervision and control of the Central Government and the provisions of such order, such authority or authorities may exercise and powers or perform the functions or take the measures so mentioned in the order as if such authority or authorities had been empowered by this Act to exercise those powers or perform those functions or take such measures.

9.2.5 APPOINTMENT OF OFFICERS AND THEIR POWERS AND FUNCTIONS

(1) Without prejudice to the provisions of sub-section (3) of section 3, the Central Government may appoint officers with such designation as it thinks fit for the purposes of this Act and may entrust to them such of the powers and functions under this Act as it may deem fit.

(2) The officers appointed under sub-section (1) shall be subject to the general control and direction of the Central Government or, if so directed by that Government, also of the authority or authorities, if any, constituted under sub-section (3) of section 3 or of any other authority or officer.

9.2.6 POWER TO GIVE DIRECTIONS

Notwithstanding anything contained in any other law but subject to the provisions of this Act, the Central Government may, in the exercise of its powers and performance of its functions under this Act, issue directions in writing to any person, officer or any authority and such person, officer or authority shall be bound to comply with such directions.
Explanation—For the avoidance of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct--

(a) the closure, prohibition or regulation of any industry, operation or process; or

(b) stoppage or regulation of the supply of electricity or water or any other service.

9.2.7 RULES TO REGULATE ENVIRONMENTAL POLLUTION

(1) The Central Government may, by notification in the Official Gazette, make rules in respect of all or any of the matters referred to in section 3.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:--

(a) the standards of quality of air, water or soil for various areas and purposes;\(^4\)

(b) the maximum allowable limits of concentration of various environmental pollutants (including noise) for different areas;

(c) the procedures and safeguards for the handling of hazardous substances;\(^5\)

(d) the prohibition and restrictions on the handling of hazardous substances in different areas;\(^6\)

(e) the prohibition and restriction on the location of industries and the carrying on process and operations in different areas;\(^7\)

(f) the procedures and safeguards for the prevention of accidents which may cause environmental pollution and for providing for remedial measures for such accidents.\(^8\)

9.3 PREVENTION, CONTROL, AND ABATEMENT OF ENVIRONMENTAL POLLUTION

9.3.1 PERSONS CARRYING ON INDUSTRY OPERATION, ETC., NOT TO ALLOW EMISSION OR DISCHARGE OF ENVIRONMENTAL POLLUTANTS IN EXCESS OF THE STANDARDS

No person carrying on any industry, operation or process shall discharge or emit or permit to be discharged or emitted any environmental pollutants in excess of such standards as may be prescribed.\(^9\)

9.3.2 PERSONS HANDLING HAZARDOUS SUBSTANCES TO COMPLY WITH PROCEDURAL SAFEGUARDS

No person shall handle or cause to be handled any hazardous substance except in accordance with such procedure and after complying with such safeguards as may be prescribed.\(^10\)

9.3.4 FURNISHING OF INFORMATION TO AUTHORITIES AND AGENCIES IN CERTAIN CASES
(1) Where the discharge of any environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event, the person responsible for such discharge and the person in charge of the place at which such discharge occurs or is apprehended to occur shall be bound to prevent or mitigate the environmental pollution caused as a result of such discharge and shall also forthwith--

(a) intimate the fact of such occurrence or apprehension of such occurrence; and

(b) be bound, if called upon, to render all assistance,

to such authorities or agencies as may be prescribed.\(^{11}\)

(2) On receipt of information with respect to the fact or apprehension on any occurrence of the nature referred to in sub-section (1), whether through intimation under that sub-section or otherwise, the authorities or agencies referred to in sub-section (1) shall, as early as practicable, cause such remedial measures to be taken as necessary to prevent or mitigate the environmental pollution.

(3) The expenses, if any, incurred by any authority or agency with respect to the remedial measures referred to in sub-section (2), together with interest (at such reasonable rate as the Government may, by order, fix) from the date when a demand for the expenses is made until it is paid, may be recovered by such authority or agency from the person concerned as arrears of land revenue or of public demand.

**9.3.5 POWERS OF ENTRY AND INSPECTION**

(1) Subject to the provisions of this section, any person empowered by the Central Government in this behalf\(^{12}\) shall have a right to enter, at all reasonable times with such assistance as he considers necessary, any place--

(a) for the purpose of performing any of the functions of the Central Government entrusted to him;

(b) for the purpose of determining whether and if so in what manner, any such functions are to be performed or whether any provisions of this Act or the rules made thereunder or any notice, order, direction or authorisation served, made, given or granted under this Act is being or has been complied with;

(c) for the purpose of examining and testing any equipment, industrial plant, record, register, document or any other material object or for conducting a search of any building in which he has reason to believe that an offence under this Act or the rules made thereunder has been or is being or is about to be committed and for seizing any such equipment, industrial plant, record, register, document or other material object if he has reason to believe that it may furnish evidence of the commission of an offence punishable under this Act or the rules made thereunder or that such seizure is necessary to prevent or mitigate environmental pollution.

(2) Every person carrying on any industry, operation or process of handling any hazardous substance shall be bound to render all assistance to the person empowered by the Central Government under sub-section (1) for carrying out the functions under that sub-section and if he fails to do so without any reasonable cause or excuse, he shall be guilty of an offence under this Act.
(3) If any person wilfully delays or obstructs any persons empowered by the Central Government under sub-section (1) in the performance of his functions, he shall be guilty of an offence under this Act.

(4) The provisions of the Code of Criminal Procedure, 1973, or, in relation to the State of Jammu and Kashmir, or an area in which that Code is not in force, the provisions of any corresponding law in force in that State or area shall, so far as may be, apply to any search or seizures under this section as they apply to any search or seizure made under the authority of a warrant issued under section 94 of the said Code or as the case may be, under the corresponding provision of the said law.

9.3.6 POWER TO TAKE SAMPLE AND PROCEDURE TO BE FOLLOWED IN CONNECTION THEREWITH

(1) The Central Government or any officer empowered by it in this behalf, shall have power to take, for the purpose of analysis, samples of air, water, soil or other substance from any factory, premises or other place in such manner as may be prescribed.13

(2) The result of any analysis of a sample taken under sub-section (1) shall not be admissible in evidence in any legal proceeding unless the provisions of sub-sections (3) and (4) are complied with.

(3) Subject to the provisions of sub-section (4), the person taking the sample under sub-section (1) shall--

(a) serve on the occupier or his agent or person in charge of the place, a notice, then and there, in such form as may be prescribed, of his intention to have it so analysed;

(b) in the presence of the occupier of his agent or person, collect a sample for analysis;

(c) cause the sample to be placed in a container or containers which shall be marked and sealed and shall also be signed both by the person taking the sample and the occupier or his agent or person;

(d) send without delay, the container or the containers to the laboratory established or recognised by the Central Government under section 12.

(4) When a sample is taken for analysis under sub-section (1) and the person taking the sample serves on the occupier or his agent or person, a notice under clause (a) of sub-section (3), then,--

(a) in a case where the occupier, his agent or person wilfully absents himself, the person taking the sample shall collect the sample for analysis to be placed in a container or containers which shall be marked and sealed and shall also be signed by the person taking the sample, and

(b) in a case where the occupier or his agent or person present at the time of taking the sample refuses to sign the marked and sealed container or containers of the sample as required under clause (c) of sub-section (3), the marked and sealed container or containers shall be signed by the person taking the samples, and the container or containers shall be sent without delay by the person taking the sample for analysis to the laboratory established or recognised under section 12 and such person shall inform the Government Analyst appointed or recognised under section 12 in writing, about the wilfull absence of the occupier or his agent or person, or, as the case may be, his refusal to sign the container or containers.
9.3.7 ENVIRONMENTAL LABORATORIES

(1) The Central Government may, by notification in the Official Gazette,--

(a) establish one or more environmental laboratories;

(b) recognise one or more laboratories or institutes as environmental laboratories to carry out the functions entrusted to an environmental laboratory under this Act.

(2) The Central Government may, by notification in the Official Gazette, make rules specifying--

(a) the functions of the environmental laboratory;

(b) the procedure for the submission to the said laboratory of samples of air, water, soil or other substance for analysis or tests, the form of the laboratory report thereon and the fees payable for such report;

(c) such other matters as may be necessary or expedient to enable that laboratory to carry out its functions.

9.3.8 GOVERNMENT ANALYSTS

The Central Government may by notification in the Official Gazette, appoint or recognise such persons as it thinks fit and having the prescribed qualifications to be Government Analysts for the purpose of analysis of samples of air, water, soil or other substance sent for analysis to any environmental laboratory established or recognised under sub-section (1) of section 12.

9.3.4 REPORTS OF GOVERNMENT ANALYSTS

Any document purporting to be a report signed by a Government analyst may be used as evidence of the facts stated therein in any proceeding under this Act.

9.3.5 PENALTY FOR CONTRAVENTION OF THE PROVISIONS OF THE ACT AND THE RULES, ORDERS AND DIRECTIONS

(1) Whoever fails to comply with or contravenes any of the provisions of this Act, or the rules made or orders or directions issued thereunder, shall, in respect of each such failure or contravention, be punishable with imprisonment for a term which may extend to five years with fine which may extend to one lakh rupees, or with both, and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.

(2) If the failure or contravention referred to in sub-section (1) continues beyond a period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which may extend to seven years.
9.3.6 OFFENCES BY COMPANIES

(1) Where any offence under this Act has been committed by a company, every person who, at the time the offence was committed, was directly in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation--For the purpose of this section,--

(a) "company" means any body corporate and includes a firm or other association of individuals;

(b) "director", in relation to a firm, means a partner in the firm.

9.3.7 OFFENCES BY GOVERNMENT DEPARTMENTS

(1) Where an offence under this Act has been committed by any Department of Government, the Head of the Department shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly.

Provided that nothing contained in this section shall render such Head of the Department liable to any punishment if he proves that the offence was committed without his knowledge or that he exercise all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a Department of Government and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any officer, other than the Head of the Department, such officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

9.4 MISCELLANEOUS

9.4.1 PROTECTION OF ACTION TAKEN IN GOOD FAITH

No suit, prosecution or other legal proceeding shall lie against the Government or any officer or other employee of the Government or any authority constituted under this Act or any member, officer or other
employee of such authority in respect of anything which is done or intended to be done in good faith in pursuance of this Act or the rules made or orders or directions issued thereunder.

**9.4.2 COGNIZANCE OF OFFENCES**

No court shall take cognizance of any offence under this Act except on a complaint made by--

(a) the Central Government or any authority or officer authorised in this behalf by that Government, or

(b) any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Central Government or the authority or officer authorised as aforesaid.

**9.4.3 INFORMATION, REPORTS OR RETURNS**

The Central Government may, in relation to its function under this Act, from time to time, require any person, officer, State Government or other authority to furnish to it or any prescribed authority or officer any reports, returns, statistics, accounts and other information and such person, officer, State Government or other authority shall be bound to do so.

**9.4.4 MEMBERS, OFFICERS AND EMPLOYEES OF THE AUTHORITY CONSTITUTED UNDER SECTION 3 TO BE PUBLIC SERVANTS**

All the members of the authority, constituted, if any, under section 3 and all officers and other employees of such authority when acting or purporting to act in pursuance of any provisions of this Act or the rules made or orders or directions issued thereunder shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code (45 of 1860).

**9.4.5 BAR OF JURISDICTION**

No civil court shall have jurisdiction to entertain any suit or proceeding in respect of anything done, action taken or order or direction issued by the Central Government or any other authority or officer in pursuance of any power conferred by or in relation to its or his functions under this Act.

**9.4.6 POWERS TO DELEGATE**

Without prejudice to the provisions of sub-section (3) of section 3, the Central Government may, by notification in the Official Gazette, delegate, subject to such conditions and limitations as may be specified in the notifications, such of its powers and functions under this Act [except the powers to constitute an authority under sub-section (3) of section 3 and to make rules under section 25] as it may deem necessary or expedient, to any officer, State Government or other authority.

**9.4.7 EFFECT OF OTHER LAWS**
(1) Subject to the provisions of sub-section (2), the provisions of this Act and the rules or orders made therein shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than this Act.

(2) Where any act or omission constitutes an offence punishable under this Act and also under any other Act then the offender found guilty of such offence shall be liable to be punished under the other Act and not under this Act.

9.4.8 POWER TO MAKE RULES

(1) The Central Government may, by notification in the Official Gazette, make rules for carrying out the purposes of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely--

(a) the standards in excess of which environmental pollutants shall not be discharged or emitted under section 7;\(^{21}\)

(b) the procedure in accordance with and the safeguards in compliance with which hazardous substances shall be handled or caused to be handled under section 8;\(^{22}\)

(c) the authorities or agencies to which intimation of the fact of occurrence or apprehension of occurrence of the discharge of any environmental pollutant in excess of the prescribed standards shall be given and to whom all assistance shall be bound to be rendered under sub-section (1) of section 9;\(^{23}\)

(d) the manner in which samples of air, water, soil or other substance for the purpose of analysis shall be taken under sub-section (1) of section 11;\(^{24}\)

(e) the form in which notice of intention to have a sample analysed shall be served under clause (a) of sub section (3) of section 11;\(^{25}\)

(f) the functions of the environmental laboratories,\(^{26}\) the procedure for the submission to such laboratories of samples of air, water, soil and other substances for analysis or test;\(^{27}\) the form of laboratory report; the fees payable for such report and other matters to enable such laboratories to carry out their functions under sub-section (2) of section 12;

(g) the qualifications of Government Analyst appointed or recognised for the purpose of analysis of samples of air, water, soil or other substances under section 13;\(^{28}\)

(h) the manner in which notice of the offence and of the intention to make a complaint to the Central Government shall be given under clause (b) of section 19;\(^{29}\)

(i) the authority of officer to whom any reports, returns, statistics, accounts and other information shall be furnished under section 20;

(j) any other matter which is required to be, or may be, prescribed.
9.4.9 RULES MADE UNDER THIS ACT TO BE LAID BEFORE PARLIAMENT

Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

9.5 The Environment (Protection) Rules, 1986

These rules lay down the procedures for setting standards of emission or discharge of environmental pollutants. The Rules prescribe the parameters for the Central Government, under which it can issue orders of prohibition and restrictions on the location and operation of industries in different areas. The Rules lay down the procedure for taking samples, serving notice, submitting samples for analysis and laboratory reports. The functions of the laboratories are also described under the Rules along with the qualifications of the concerned analysts.

9.5.1 The National Environment Appellate Authority Act, 1997

This Act provided for the establishment of a National Environment Appellate Authority to hear appeals with respect to restriction of areas in which any industry operation or process or class of industries, operations or processes could not carry out or would be allowed to carry out subject to certain safeguards under the Environment (Protection) Act, 1986.

In addition to these, various Acts specific to the coal sector have been enacted. The first attempts in this direction can be traced back to the Mines Act, 1952, which promoted health and safety standards in coal mines. Later the Coal Mines (Conservation and Development) Act (1974) came up for conservation of coal during mining operations. For conservation and development of oil and natural gas resources a similar legislation was enacted in 1959.

Review Questions

1. What is Environment?
2. Explain the Environment Protection Act, 1986?
3. What is the present status of said Act?
4. What are the different provisions of the said act?

Discussion Questions

Discuss in detail the different provisions of Environment Protection Act, 1986? Are these provisions are sufficient for present day?
Lesson 10 – Chemical accidents

Learning Objectives

- To define and describe the Chemical accidents.
- To explain the Hazards.
- To explain the factors of Vulnerability
- Discover ways to reduce Chemical accidents.

10.1 The Hazard

Chemical incidents can be defined as accidental or intentional events that threaten to expose or do expose responders and/or members of the public to a chemical hazard.

Incidents can be sudden and acute, when hazardous chemicals are ‘overtly’ released into the environment. Incidents can also have an apparently slow onset, when there is a ‘silent’ release. The main scenarios are:

- a detected release from a known chemical from a fixed site;
- a detected release of a known chemical from a non-fixed site;
- a detected release of an unknown chemical – typically, this will involve releases from sites not on a hazardous site inventory, illegal/uncontrolled dumping of chemicals, or unknown combustion products from a chemical fire; and
- a silent release, where the release was usually unrecognised.

Chemical incidents may manifest their presence in one of two ways:

- a failure in the containment of chemicals, with or without exposure of the public; and
- an outbreak of illness.

The factors leading up to an incident include poor maintenance of manufacturing and storage equipment, lack of regulation and/or poor enforcement of safety regulations, road traffic accidents, human error, natural events such as heavy rain, earthquakes, hurricanes, floods, and terrorism.

Chemical incidents range from small releases to full-scale major emergencies.

10.2 Factors of Vulnerability

Most incidents occur at the interfaces between transport, storage, processing, use, and disposal of hazardous chemicals, where these systems are more vulnerable to failure, error or manipulation.

Common measure to reduce vulnerability and health risks of chemical incidents are:
Exposure levels will in general be quite different for different people involved in a chemical incident:

- employees and other on-site persons -- usually more than one exposure pathway, often inhalation of vapour and skin contact from splashing and clean-up;
- emergency services – usually close to the emergency and involved in rescue, containment of chemicals, putting out fires; primary and secondary contamination of fire officers, ambulance officers, other emergency staff; secondary contamination of medical staff and other hospital patients of incomplete decontamination of causalities;
- public – exposure via air, water, food, soil etc.

Factors that affect the vulnerability of responders and the public include the nature of the hazard, the level of exposure, availability and quality of shelter, availability of Personal Protection Equipment (PPE), access into and out of the site, the degree to which employees and responders (and possibly the public) are prepared and trained to deal with an chemical release and the amount of training provided. Vulnerability can be reduced by ensuring that information is available on:

- the incident;
- measures being taken to contain the release;
- who is currently under threat;
- what the health effects might be from exposure;
- what the public can actually do to protect themselves; and
- how to get further information; when, where and how it will be available.

Some individuals and sub-populations can also be at increased risk because they are more susceptible to the adverse effects of a given exposure. Among the potential causes of enhanced susceptibility are inherent genetic variability, age, gender, pre-existing disease (e.g. diabetes, asthma), inadequate diet, occupational, environmental or lifestyle factors (e.g. smoking), stress and inadequate access to health care.

- locating chemical sites away from centres of population;
- registration of all chemicals in commercial establishments with a hazard inventory to ensure rapid identification of the released chemical;
- regular evaluation of plans and their implementation;
- inspection/monitoring and enforcement of safety measures;
- reducing the amounts of chemicals stored;
- appropriate labelling of all chemicals;
- rapid notification of the chemical incident emergency services in the event of a chemical release;
- regular surveillance and standardized reporting of incidents, including the small “routine” ones;
- measures to decontaminate land or water already contaminated by waste disposal;
- measures to prevent or contain fire-fighting water run-off;
- construction of drainage ditches or holding tanks to contain liquid chemicals.

10.3 Main causes of Mortality and Morbidity

In most cases the mechanisms and health outcomes of exposure are unknown. Symptoms may present themselves differently depending upon the chemical involved. In general, the adverse health outcomes to toxic chemical exposure may be:

- effects that are local or arise at the site of contact with the chemical, such as bronchoconstriction from respiratory irritants, or irritation of the skin and eyes by gases, liquids and solids;
effects that are systemic or affect organ systems remote from the site of absorption, such as depression of the central nervous system from inhalation of solvents, or necrosis of the liver from the inhalation of carbon tetrachloride; and
effects on mental health arising from real or perceived releases, which depend on the psychosocial stress associated with an incident.

The time elapsing between exposure and the onset of symptoms can vary:

- Some effects, for example eye and respiratory irritation or central nervous system depression, can occur rapidly, within minutes or hours of exposure (acute effects).
- Other effects, for example congenital malformations or cancers, may take months or years to appear (delayed effects).

The duration of the symptoms can also vary, from short term, to long term or chronic.

Chemical incidents (especially acts of terrorism) may also cause fear and anxiety in populations.

10.4 Foreseeable Needs

In any chemical incident, there are a number of essential steps to go through as part of the chemical incident plan. These are in an approximate chronological order:

- alerting the health care services;
- best outcome assessment of actions and management options;
- public information and public warnings;
- advice on protection;
- sheltering or evacuation;
- other restrictions to protect public health;
- organizing registers and samples;
- collections of (human) samples;
- environmental monitoring.

10.5 Don’t Forget

10.5.1 Preparedness:

That careful planning and thorough preparedness are prerequisites for an effective response to chemical incidents.

That public authorities, at all levels, and the management staff of installations where hazardous chemicals are produced, stored etc. should establish emergency preparedness plans.

That all responsible parties should ensure that manpower equipment, and financial and other resources necessary to carry out emergency plans are readily available for immediate activation in the event, or imminent threat of an accident.

That all personnel involved in the emergency response process should be adequately educated and trained.
10.5.2 Response:

That depending on the level of potential exposure, risk zones are usually established around an incident:

- The hot zone, is the area where first responders must use protective equipment to prevent primary contamination;
- The warm zone, which surrounds the hot zone, is the area where appropriate personal protective equipment must be worn to prevent secondary contamination;
- The decontamination line separates the warm from the cold zone; and

That a vulnerable zone (in effect a potential hot zone) can be declared, which is the area likely to be contaminated if the emergency response action are not successful. The population within the vulnerable zone includes the resident population as well as the working population (in the plant and in the area), and other populations in the area at certain times, such as motorist, tourists and visitors to entertainment facilities.

To set-up a public health team which, in case of a chemical incident, will provide accident and emergency departments with information about the nature of the chemicals(s), any precautions to be taken, and information about secondary contamination and how to decontaminate causalities, staff and equipment.

- information needed in preparing, or responding to, chemical incidents;
- advice in establishing emergency response centres or programmes; and
- technical assistance in dealing with a response to a particular incident.

The importance of communication in a crisis situation to avoid unnecessary panic and fear.

10.5.3 Inappropriate Response

Ignorance and poor preparedness e.g. in not understanding the importance of adequate decontamination so that ‘dirty’ victims are allowed into clean zones, thereby increasing the number of people exposed to the chemical.

Panicking, and evacuating the public when it would be better to advise them to stay indoors and close all windows etc.

Ignorance and poor investigation of potential delayed and long-term effects and to assume that once the acute incident phase is over and the acute health effects are dealt with there are no additional potential health problems in exposed populations.

10.6 Case study on Major Chemical Disasters

Accidents in Chemical process industries constitute major threat to property and population because of the magnitude. With the rapid development in science and technology, several new innovations have come up and Chemical process industries deal with thousands of new chemicals and several processes. Nevertheless, there are innumerable causes that lead to disasters of major or minor in nature. So it would be of great use if we could collate and categorize all the disasters, which occurred in the past, so that the analysis results of these disasters are not only a useful lesson but also is helpful to prevent their recurrence.
Disaster is an accident / event that can lead to tremendous destruction to the environment, equipment, plant and people. The consequences of the chemical disaster in the chemical toxic gas release and dispersion. The various accidents due to these consequences are well known and gives prominent caution to prepare, practice and amend the / Toxic Disaster Management plans for each and every hazardous process industries and their material storage / Handling location. As per amended factory act in 1985 after Bhopal incidents. Each chemical industry aims to achieve totally zero accidents potential. Therefore prevention, protection and suppression techniques have been applied to reduce the probability disaster.

Some of the worst disasters of toxic releases have occurred in toxic chemicals like MIC, Ammonia, and Chlorine cyclohexane etc. Some data’s on past planning in details which explains the various stages of Disaster Management plan. The various stages of Disaster Management are, Planning, Prevention, Preparedness, Response and Recovery.

We learn best through our own experiences in different phases of our life. Mistakes could be catastrophic in a chemical plant, but it is a great opportunity to learn and design a safer plant in the future. We must learn from previous incidents and develop design a safer plant in the future. We must learn from previous incidents and develop new procedures, practices and management systems.

These incidents have much learning which reveal many hidden facts about safety and provide efficient tools for prevention of similar incidents in the future. In spite of these lessons Indian industry continues to suffer.

Let us take up the case of major disasters that had happened in our country. Ammonia & Chlorine are the toxic gases used in our industries, by many fertilizer plant and water treatment, chlore alkali plants bleaching in paper industries.

Let us take up the toxic gas release of Ammonia & Chlorine resulted in Fatal accidents.

**10.7 BHOPAL TRAGEDY**

If we see the history of worst chemical disasters, in industries the first thing that comes to our memory is one at Bhopal

On the night of Dec. 2nd and 3rd, 1984, a Union Carbide plant in Bhopal, began leaking, due to run-away reactions, temperature and pressure rise and the safety valve lifted to the atmosphere. About 25-27 tons of the deadly gas methyl isocyanate spread through the city of Bhopal.

Half a million people were exposed to the gas. Protective systems that should have prevented or minimized discharge were out of service. Refrigeration system to cool the reactor was down. Scrubbing system to absorb the released vapour was not immediately available. Flare system to burn vapours getting past the scrubber was out of service.

Lessons we learned form Bhopal Tragedy

1)Reduce inventory of hazardous material (MIC)

2)Keep all the safety related equipment in order

3)Keep residential areas away from the plant

4) Proper Management

Another worst chemical disaster: that comes to our mind was;
10.8 Flixborough Disaster – A CASE STUDY.

On 1st June 1974 the Nypro (UK) site at Flixborough was severely damaged by a large explosion. Twenty-eight workers were killed and a further 36 suffered injuries. Offsite consequences resulted in fifty-three reported injuries. Property in the surrounding area was damaged to a varying degree.

A 20 inch bypass system ruptured, which may have been caused by a fire on a nearby 8 inch pipe. This resulted in the escape of a large quantity of cyclohexane. The cyclohexane formed a flammable mixture and subsequently found a source of ignition. At about 16:53 hours there was a massive vapour cloud explosion, which caused extensive damage and started numerous fires on the site.

Eighteen fatalities occurred in the control room as a result of the windows shattering and the collapse of the roof. No one escaped from the control room.

The fires burned for several days and after ten days those that still raged were hampering the rescue work.

10.9 CASE STUDY 1

Mangalore Chemicals and Fertilizers Limited

There was a chemical accident in the Urea Plant at M/s. Mangalore Chemicals and Fertilizers Limited, Panambur, Mangalore on 9.2.2000. An 8” dia high-pressure pipeline housing a weldolet was connected between autoclave (urea reactor) of 108MT capacity and the stripper to carry ammonium carbamate (Urea Solution). The pressure of pipe line was of the order of 141kg/cm2 and the temperature of 180°C. The Solution had contained 29% of ammonia, 18% carbon dioxide and 32% of urea.

On 9th February 2000, a substantial quantity of ammonium carbamate solution leakage was noticed at the weldolet joint of the pipeline. A maintenance manager along with two operators, an engineer and two contract workmen were trying to plug the leakage by providing a proper clamping. In the process, the weldolet joint gave way resulting in sudden release of pressurized hot ammonium carbamate solution. As a result, the personnel on the job were exposed to hot solution and toxic gas. Consequent to which, 8 persons were affected amongst them 2 died on the spot and the other two at the hospital amounting to death of 4 persons including the maintenance manager and an engineer.

Investigation conducted by the department under the guidance of an expert committee revealed that the weldolet used in the high pressure pipe line had high carbon content which is not suggested for that kind of a process, maintenance Repair works was undertaken on line even after noticing the hazardous solution which amounts of non implementation of shutting down procedures. Further the high-pressure pipeline was not subjected to hydrostatic test, ultrasonic tests and examinations as required under relevant provisions of law for its soundness. The personnel who were on the job were not wearing any personal protective equipment in addition to non-adherence to work to permit system.

The expert committee investigated made the following recommendations to prevent any incident in future.

The pipeline, connected equipment and the accessories must be subjected to hydrostatic test as required under the relevant provision of law;

Weldolet must be subjected to 100% examination to detect corrosion and the soundness;

Maintenance/repair works shall not be undertaken on line, it shall be done only as per standard maintenance procedure drawn up before hand; Permit to work system shall be strictly adhered to along with suitable personal protective equipment; The on site emergency plan rehearsals shall be put to rigorous tests and practiced by updating the weaknesses noticed from time to time; The personnel
including the contract workmen shall be put to rigorous training in handling chemical emergencies particularly to bring a change in their attitudinal behaviour of over confidence;

10.10 CASE STUDY 2

National Fertilisers Limited (NFL) at Panipat.

The Panipat tragedy: what went wrong?

Liquid ammonia burst out at the high pressure of 23 kg per sq cm, vaporising within seconds to form suffocating clouds of deadly gas. This hit and choked to death eleven persons and injured ten even as their colleagues sprung into action to diffuse the gas with water sprays.

Liquid ammonia hit workers Coughing and choking, with lungs bursting, scrambled for fresh air.

It is a Freak accident? This was the first major incident in any of the NFL plants. When working on the ammonia pipelines. It was admitted to down to earth that for such work "Need to take extra precautions to ensure that workers other than those doing the hazardous task, are not present in the vicinity,"

10.11 CASE STUDY 3

The Chlorine Gas Leak at Jamshedpur

People of Jamshedpur were caught unaware when they were exposed to a dense, pale green, pungent and poisonous gas, Chlorine. This gas had leaked from an unused cylinder lying in the Tata Motor’s water treatment plant for the past 10 years. By the next day, around 150 to 200 people had been hospitalised. The affected people also included company employees and their family members. So far no deaths have been reported. Later, in a statement, Tata Motors claimed that the chlorine leak has been plugged and about 60 to 70 residents who reported breathing difficulty were admitted to the Tata Motors hospital in Jamshedpur. The Chief Minister of Jharkahnd, Madhu Koda, alleged that negligence by Tata Motors had led to the leakage of chlorine gas.

As we know Chlorine gas has strong oxidising properties. Its toxicity irritates the respiratory system. Severe exposure to the gas may cause pulmonary edema within 30 to 60 minutes and die’. There is no available prophylactic or post exposure therapy for chlorine.

10.12 CASE STUDY 4

SPIC ammonia unit shut due to leakage problem

Southern Petrochemical Industries Corporation (SPIC) at Tuticorin has been shut down due to a leakage in the pipeline. When the repair works were going on, a fatal accident occurred on October 1, company sources told Business Line.

Sources said that after the southern grid failure last month, technical problems arose in SPIC's plant, causing a leakage in the pipeline. The plant has been shut down since September 27.

While trying to do the repair work, Mr Thiraviyaraj, Joint Manager (Operations) slipped and fell. The gas mask he was wearing came off and he died of asphyxiation, it is learnt.

It is understood that it would take at least another 10 days to restart the plant.
None of the senior officials of the company was available for comment, and therefore, no estimate of the value of loss in production is readily available.

Only last year, the Tuticorin plant of SPIC had been shut down between May 1 and June 22 for a "routine turnaround maintenance", which caused a loss of production of 1.03 lakh tonnes of urea.

CONCLUSIONS

We learn best through our own experiences in different phases of our life.

Mistakes could be catastrophic in a chemical plant, but it is a great opportunity to learn and design a safer plant in the future.

We must learn from previous incidents and develop new procedures, practices and management systems.

These incidents have much learning which reveal many hidden facts about safety and provide efficient tools for prevention of similar incidents in the future.

### 10.13 MAJOR CHEMICAL DISASTERS IN INDIA

<table>
<thead>
<tr>
<th>Origin of accident</th>
<th>Year</th>
<th>Date</th>
<th>Location</th>
<th>Products involved</th>
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<tr>
<td></td>
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<td>Deaths</td>
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**Review Questions**

1. What is Chemical accidents?
2. Explain the hazards associated?
3. What is the present status of Catalogues in libraries?
4. What is AACR2 1978 Catalogue Act?

**Discussion Questions**

Discuss the basic physical forms of Catalogues as present in libraries? Do these forms of Catalogues gives benefits to students with respect to Information?

- To define and describe the Chemical accidents.
- To explain the Hazards.
- To explain the factors of Vulnerability
- Discover ways to reduce Chemical accidents.
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