

Lesson - 13

ACCIDENT AND SAFETY

13.0 Objective:

After completion of this lesson, you should be able to understand:

- * meaning
- * causes of accidents
- * proneness to accidents
- * accident costs
- * measurement of accident
- * prevention programmes
- * steps to prevent

Structure:

- 13.1 Introduction
- 13.2 Meaning
- 13.3 Causes of Accidents
 - 13.3.1 Unsafe Conditions
 - 13.3.1.1 Job itself
 - 13.3.1.2 Work schedules
 - 13.3.1.3 Psychological Climate
 - 13.3.2 Un-Safe Acts
 - 13.3.3 Other Causes
- 13.4 Accident Proneness
- 13.5 Causes of Accident Proneness
- 13.6 Accident Costs
 - 13.6.1 Direct Costs
 - 13.6.2 Indirect Costs
- 13.7 Measurements of Accidents
 - 13.7.1 Frequency Rate
 - 13.7.2 Severity Rate
- 13.8 Reports and Records

13.9 Prevention Programmes**13.10 Steps to Prevent Accidents****13.11 Summary****13.12 Self-Assessment Questions****13.13 Essay-Type Questions****13.14 Reference Books****13.1 Introduction:**

Today's large scale industrialisation is mainly the result of automation and mechanism. No doubt, large scale industrialisation brought in the benefits of mass production of goods for the welfare of the society but at the same time it also brought in dangerous industrial risks like accidents. These industrial accidents occur due to a number of factors. Due to globalisation, Liberalisation and Privatisation, the employee safety and accidents have been attracting the attention of the psychologists, sociologists and industrial engineers.

Psychologists are concerned with the theoretical consideration of accident causes and the research into accident control. The psychologists are interested in knowing whether the industrial accidents occur due to accidental causes or due to any other specific variables.

Engineers and safety officers usually render necessary practical advice on certain aspects of industrial safety. They consider these accidents as engineering problem basically and try to evolve suitable measures for the prevention of accidents.

Prevention of accidents and safety are interrelated and require a multidimensional approach.

13.2 Meaning:

An industrial accident may be defined as, "an occurrence which interrupts or interferes with the orderly progress of work in an industrial establishment".

The Factories Act of 1948 defined accident as, "an occurrence in an industrial establishment causing bodily injury to a person which makes him un-fit to resume his duties in the next 48 hours".

As per this Act, every occurrence which may injure, a worker is not an accident. The injury caused must be serious and should make unfit for work atleast for two days. Accident does not cover mere injury.

An industrial injury may also be defined as, "a personal injury to an employee which has been caused by an accident or an occupational disease and which would entitle such employee to compensation under the Workmen's Compensation Act 1923.

Even though several measures are initiated by employers and the government to prevent and avoid accidents, but still they occur because of situations and events which are beyond one's control.

Psychologists view an accident as an unexpected occurrence resulting in actual physical damage to a living being or to a non-living entity.

Psychologists are concerned more about the theoretical aspect of accident and they try to find out the behaviour that leads to an accident. They define accident behaviour or unsafe behaviour

as a behaviour which may lead to actual or near damage to living or inanimate things.

13.3 Causes of Accidents:

Industrial accidents are a result of a combination of factors. They are:

13.3.1 Unsafe Conditions:

The unsafe conditions are also called Technical causes of accidents. These may be the result of defective plans, equipment, tools, materials etc.

- * defective equipment
- * inadequate safety devices
- * faulty layout
- * improper ventilation
- * unsafe storage
- * poor house - keeping etc.

In addition to the causes mentioned above, the following causes are also responsible for industrial accidents.

13.3.1.1 The Job Itself: Some are dangerous and complicated than others. For example, the job of a crane man. Similarly, work some departments are safe when compared to others in the same company.

For example, work in accounts department is safer than in production department.

13.3.1.2 Work Schedules: They also affect the occurrence of accidents. They do not happen in the early hours of the work day but occur late in the day.

13.3.1.3 Psychological Climate: Psychological climate of the work place also affect in accident rate. The most cause for accidents are psychological mental and emotional imbalances. All these factors affect the alertness of the employee and make him lose his concentration on the job.

13.3.2 Unsafe Acts: These may be the result of in-experience deficiency of knowledge, inadequate training etc. For example:

- * casual behaviour of the worker
- * lack of interest in the job
- * wrong of placement of workers i.e. not placing right man in the right job
- * lack of experience
- * longer hours of work
- * operating without authority
- * Lifting improperly
- * abusing, quarreling etc.

13.3.3 Other Causes: Accidents may also occur not only due to direct causes but also due to indirect causes like:

- * less trained workers and child labour who are unexperienced.
- * unmarried rather than married are more prone
- * men are unsafe when compared to women workers
- * persons under stress and strain
- * persons addicted to intoxicants etc.

In most cases, the accidents are the result of these causes. But, these factors can not be identified with and describe the accidents as the Act of God.

13.4 Accident Proneness:

The hypothesis of Accident proneness was first put forward by the German Psychologists may be. His hypothesis attracted the attention of psychologists all over the world since then. The concept of accident proneness is now being replaced by the concept of 'accident repeater'. An accident repeater has more than normal share of accidents during a particular period of time.

13.5 Causes of Accident Proneness:

- * If accident occurs by chance only, their every one equally subject to them and that happening of an accident can be attributed to mere bad luck or ill luck.
- * If a person meets with an accident, then in future the same person will be more careful.
- * Sometimes, an accident may make that person less confident this may result in further accidents.
- * It is believed that some are prone to accidents because of their biological and psychological making.

The above implication may be tested in the following ways:

- * If accidents occur by chance, only a few people will have small number of accidents.
- * If the accident records of two periods are examined, then the number of accidents occurring in two different periods may be different.
- * The accidents in the first period is likely to be more than the second period because of the experience in accident make him more careful in future.
- * Those who lose confidence may have more accidents in the second period.
- * Finally, if accidents are the result of biological and psychological factors, the accidents in number will be equal in both the periods.

Studies revealed that accidents occur to people because of their behavioural characteristics only.

13.6 Accident Costs:

There are two types of accident costs. They are:

13.6.1 Direct Costs:

Wages of employees during the period of absence. The amount of compensation payable in case of death or injury.

- * cost of medical facilities provided to the injured.
- * cost of recruitment in case of replacement of the injured.
- * loss due to wastage of materials

13.6.2 Indirect Costs:

Un-productive time for which payment is made at the time of accident.

- * The cost of time lost by the investigating team to know the actual cause of the accident.
- * The cost of repairs to machinery due to accidents.
- * The loss of production due to lower productivity of employees because of low morale as a result of accident.
- * Increase in overhead costs due to lower productivity
- * Cost of measures taken by Government to reduce accidents etc.

13.7 Measurement of Accidents:

To measure the accident rate, the following statistical ratios are used:

13.7.1 Frequency Rate: In this case, it is the number of hours lost in accidents for 10,00,000 manhours worked. The formula is :

$$\text{Frequency Rate} = \frac{\text{Number of injuries} \times 10,00,000}{\text{Total number of man hours worked}}$$

13.7.2 Severity Rate: It is the total number of days charge or lost because of accidents per 10,00,000 manhours worked. The formula is:

$$\text{Severity Rate} = \frac{\text{Number of man-day lost} \times 10,00,000}{\text{Total number of man - hours worked}}$$

13.8 Accident Reports and Records:

Proper reports and records containing the information relating to the accidents must be maintained by the organisations to be submitted to the Government. The accident records should contain the following information:

- * The total number of employees who are exposed to various accidents.

- * The nature of accident. That is whether resulted in death or temporary disability or permanent disability.
- * The kind of work which the employee was doing at the time of accident.
- * Personal data including age, and health of the injured.
- * The immediate cause of the accident.

13.9 Accident Prevention Programmes:

The occurrence of accidents can be prevented in a number of ways. According to the National Safety Council of USA accident prevention depends on Engineering, Education and Enforcement. In other words by three E's. The job should be engineered for safety, employees should be educated in safe procedures and safety rules should be enforced properly.

13.10 Steps to Prevent Accidents:

The following steps may be taken to prevent industrial accidents:

- * Proper Safety Measures
- * Proper Selection
- * Safety Conscious
- * Enforcement of Discipline
- * Incentive
- * Safety Committees
- * Proper maintenance of Machines and Equipment
- * Safety Training etc.

13.11 Summary:

The large scale industrialisation not only brought in the benefits of mass production but also industrial hazards. The industrial accidents not only attracted the attention of the employers and the Government but also the attention of psychologists, sociologists and industrial engineers alike. It is multidimensional in nature so should be tackled carefully to minimise accidents as total prevention is not possible.

The main causes for accidents are unsafe conditions, unsafe acts, and other causes. The main causes for accident proneness are emotional instability, stress and strain in employment, age of person, degree of supervision etc.

The accidents may result in heavy losses to the employer. In case of death compensation is to be paid. In case of disability payment for absence of worker is also to be paid. In this way, management has to bear the blunt of cost for no work. It leads to low productivity if not checked properly.

However, the managements and governments are trying their best to reduce their accidents by implanting the latest techniques available.

13.12 Self - Assessment Questions:

1. Meaning and definition of industrial accidents.
2. Accident Proneness
3. Accident Reports and Records

13.13 Essay Type Questions:

1. Explain industrial accidents and explain their causes.
2. What is meant by industrial accidents? Give suitable suggestions to reduce them.
3. What are accident costs? Explain.
4. What are the methods of accident measurement.

13.14 Reference Books:

1. Strategic Human Resource Management - Anthony, William. P.
2. Hand Book of Personnel Management Practice - Armstrong, Michael.
3. Industrial Accident Prevention - Heinrich. H.W.
4. Principles of Labour Welfare - Moorthy. M.V.

Dr. D.N.M. RAJU