

# **CHAPTER – I**

## **Introduction**

## **1.1: Employee Health**

A large number of employees' life in this world gets affected by the unpleasant work environment, as most of the time in their life, they remain associated with their workplace. The extensive period of mental and physical exertion, inadequate ventilation system, unhygienic work milieu, etc. pamper their health. Employees can work competently only under the salubrious work environment or when they are exposed to hazard with proper remedy. The symptoms of bad health are quite apparent among the employees; frequent absenteeism, indigent performance, stumpy productivity, indiscipline, and industrial discontent are few of them. Convoluted mechanisms, intricate job requirements, fast-moving production lines- these are the characteristics of the modern industry. It's true that all of these has added extra value to human life but on the other hand, these have widened the scope of dangers to the same.

### **1.1.1: Definition and Meaning of Health**

It'sarduous to define health but the understanding of it is quite easier. In general, it is an absence of ailment or infirmity, while in a wider sense it may mean sound mind, sound body with sound functioning of the body organs.

191 out of 194 member states of World Health Organisation (WHO) have recognised the statement that "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1946).

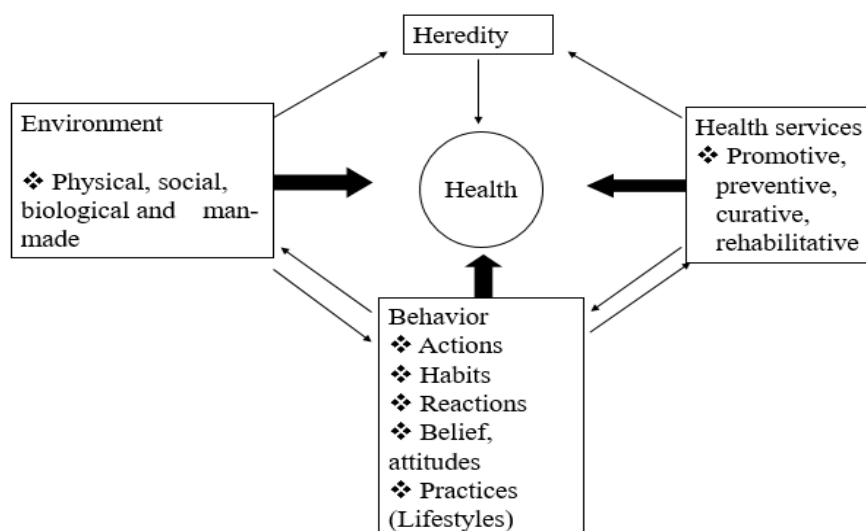
A system of public health and pre-emptive medicine which is applicable to industrial concerns is referred by industrial health. According to joint I.L.O/W.H.O Committee, the following points regarding occupational health can be considered.

- i) Emotional well-being, physical well-being and community well-being of workers in all occupations.
- ii) Ill-health prevention of workers caused by the work settings.
- iii) Employment protection of the workers from the risks which are critical to their health, and
- iv) Employing the workers in a healthy occupational environment and maintenance of such an atmosphere which is adaptable to their physical and psychological apparatus.

Thus, the modern health concept is viewed from a holistic aspect, and this concept is the product of continuous interference of an individual and the respective environment. In other words, when he or she is well adjusted to the environment then only he or she can be said as healthy. So, modern health concept forestalls and identifies potentially detrimental work settings, applies engineering control measures to impede disease or illness or infirmity. However, two types of employee health are there- physical health and mental health.

**Figure: 1.1**

**Factors Effecting Health**



However, efficiency from a workman can be expected only when the worker is healthy in terms of both- mentally, and physically. In other words, both mental and physical health are necessary for better performance, better productivity, improved morale, positive discipline, and overall satisfaction of the employees. But in industries, employees are exposed to certain hazards which affect their health. It's good that in India, all the committees, which are related to health and welfare, have accentuated upon the introduction and maintenance of healthy environment as much as possible, in all places where they assemble for work. Apart from this, recreation or amusement facilities should be provided in workplaces. A healthy environment should be maintained in their homes as well. However, various analogies associated with the health of the employees are discussed below:

- **Physical Health:** It means adequate height, body weight, and circumference as compared to sex and age with the standard level of hearing, vision, movements or locomotion, blood pressure, pulse rate, respiratory rate, head circumference, chest circumference, and waist-hip ratio. In short, it means the body functions apart from body structure indorsing laid down standards within the range of natural development and functions of all the systems.
- **Mental Health:** Mental health is something which helps the employees to work productively with better efficiency by letting them recognise their own potential, interest, and by reducing their emotional stress. A mentally normal person has the capability to get adjusted with others in his society and he behaves in a sensible manner. However, a mentally fit person is productive to the society in a smaller context and to the nation in a larger context.
- **Social Wellbeing:** The third dimension of health is social wellbeing. Human being wants to be mutually interdependent and plays their functional role according to the situations. In true sense, social wellbeing is an amalgamated function of literacy,

occupation, and income level. In one hand, it is concerned with good working conditions, happy family, and marital harmony; on the other hand, good cultural and behavioural patterns of the society play a very vital role behind it. It is also dependent on one's ability to adjust with others in his social life- at home, at the workplace, and in society.

- **Environment:** The most important element and input of health is the environment. Besides the natural environment, health is also influenced by the man-made artificial environment which includes housing, transport, industries, etc.
- **Health Services:** The availability and accessibility of health services play the principal role in health (Mcintyre & Ataguba, 2014). That is why, it is considered as another important determinants or inputs to health. But while we talk about health services, the affordability, and acceptability of such services should also be kept in our mind.
- **Health Indicators:** Tracing health indicators for individual health is quite easier than community health, as parameters of community health are very complex. The common parameters, which are quite relevant to measure community health are GNP, gross national income, per capita income, life expectancy, infant mortality, maternal mortality, literacy level, etc.
- **Healthy Community:** In a community, where people enjoy sound health, where disease, accident rate, and the death rate is acceptably low, where the economy is sound, where society is not threatened by bad environments, where health resources are easily available, that community is regarded as the healthy community. In a healthy community, literacy levels are high, demographic sex ratio is balanced, quality of life is good. Some other characteristics of a healthy community are the availability of safe drinking water, improved water supply, improved method of waste

water disposal and garbage disposal system, etc. Unfortunately, one of the fundamental human rights, health, is still an unattained social goal worldwide (Wimalasundera, 2009).

### **1.1.2: Importance of Health**

The importance of health can be understood by the well-known saying “Health is wealth”. Ill health leads to a high rate of absenteeism, accidents, turnover, low productivity, and obviously industrial discontent and indiscipline (Mazumdar, Haloi, & Mazumdar, 2011). On the other hand, the natural consequences of sound health are the reduction in the rate of absenteeism, turnover, occupational diseases, and accident. Apart from these, employee good health also paves the way for other benefits for the industries such as reduced spoilage, improved morale, and better productivity and of course satisfaction of an employee.

So, at a glance, employee health is substantial because good health helps to:

- Sustain and improve employees’ performance, both quantitatively and qualitatively.
- Lessen employee nonattendance and turnover.
- Restrain industrial turmoil and indiscipline.
- Improve employee self-esteem and motivation.

### **1.1.3: Occupational Hazards**

An occupational hazard is something unpleasant that one may experience or suffer as a result of doing his job (“hazard Definition | Englisch Cobuild Wörterbuch”, 2003). Occupational hazards can result in sickness or death. Generally, workers who work under risky environment or perform a risky job, are paid more in comparison with those workers who perform similar but less risky jobs. Workers, depending upon their occupation in various industries, are exposed to five types of hazards:

- Physical hazards
- Chemical hazards
- Biological hazards
- Mechanical hazards
- Psychosocial hazards

### **1.1.3.1: Physical Hazards**

#### **a) Heat and Cold**

one of the most problematic hazards in India is heat. In industries like glass industry, steel industry, etc. workers work in extreme temperature because of the presence of furnaces and boilers, while in jute and cotton industries, the basic problem is stagnation of heat. Burns, heat exhaustion, heat stroke, heat cramps, etc. are the unswerving effects of heat (Farhood, 2011); whereas increased fatigue, decreased efficiency, and higher accident rates can be considered as its indirect effects. Under such an environment, physical work is very hectic and harmful to workers' health and efficiency. So, the reasonable and tolerable temperature should be upheld in each workroom to get better efficiency from the workmen.

#### **b) Light**

In numerous factories, the employees are unprotected from the threat of either excessive brightness or poor illumination. The severe effects of uncomfortable illumination are a headache, eye strain or fatigue, lachrymation, pain in the eye. Discomfort, infuriation, and visual exhaustion are associated with exposure to glare or excessive brightness. Vision blurring which may lead to mishappening, also the result of extreme direct glare. Be it natural or artificial, sufficient and suitable lighting must be provided at the workplaces (ATP Instrumentation, 2016).

**c) Noise**

Noise is another health hazard in the industries. The noise effects can be categorised into two types:

- (i) Auditory effects- these involve permanent or short-term loss of hearing.
- (ii) Non-auditory effects-these involve exhaustion, nerviness, irritation and dwindled productivity.

Duration of exposure, noise intensity, noise frequency- these are the most important factors, while we talk about injury from noise.

**d) Vibration**

The toleratable frequency range of vibration is 10 to 500 Hz. Generally, tools like drills and hammers are the main vibration sources. Usually, hands as well as arms are affected by vibration. Long term vibration exposure may create problem to hands, joints, and shoulders.

**e) Ultraviolet Radiation**

Arc welding is one of the main sources of ultraviolet radiation. Such ultraviolet radiation mainly affects eyes, causing keratitis and intense conjunctivitis. The symptoms of ultraviolet radiation are eyes redness and pain. Though after a few days these usually disappear, continuous exposure may permanently damage the inner structure.

**f) Ionizing Radiation**

In pharmaceutical or other industries, where x-rays or radioactive isotopes are used, ionizing radiation is another hazardous problem there. Mainly, Cobalt 60 and Phosphorus 32 are most used radio-isotopes. More sensitive organs to ionizing radiation are bone marrow and other



tissues. Genetic changes, cancer, leukaemia, malformation, ulceration, depilation, sterility, and death in extreme cases- these are the results of radiation hazards. 5 rem per year to the whole body is the maximum permissible level of an occupational exposure which has been suggested by the International Commission of Radiological Protection (Clarke & Valentin, 2008).

### **1.3.1.2: Chemical Hazards**

It's difficult to find any industry where chemicals are not used. In the recent era, with the usage of newer and complex technologies, chemical hazards are on the upsurge. Local action, inhalation, and ingestion- in these three ways chemical agents act (Sunitha, 2011). Obviously, individual susceptibility, the duration, and the exposure quantum are the factors on which ill-effects depend. Let us discuss one by one.

#### **a) Local Action**

Eczema, dermatitis, ulcers, and cancer, in the worst case- these are the results of chemicals in Local action. Some chemicals, mainly amino compositeslike- aniline, TNT, and aromatic nitro cause ill effects after absorption through our skin. In industries, occupational dermatitis create a big problem.

#### **b) Inhalation**

(i) **Dust** – With the size, ranging from 0.1 to 150 microns, dust is finely estranged solid particles. During grinding, crushing, abrading, loading, and unloading operations dust are released into the atmosphere. In a number of industries, such as pottery, textile, foundry quarry, wood, mines, and stone working industries dust are produced. Dust particles, larger than the size of 10 microns, settle down from the air, whereas the

smaller ones remain suspended indeterminately, which are directly inhaled into the lungs and are retained there (Kumar, n.d.). The most common dust diseases are silicosis and anthracosis (Lueth, 1936).

- (ii) **Gases** – Another common threat in various industries is an acquaintance to gases. Gases are often classified as asphyxiating gases like- cyanide gas, carbon monoxide, chlorine, sulphur dioxide; simple gases like hydrogen, oxygen; and anaesthetic gases like ether, trichloroethylene, chloroform. In the steel industry and other manufacturing plants, carbon monoxide is the often reported hazard.
- (iii) **Metals**– In manufacturing, and plantation industries, metals with their amalgams are used in large scale. Inhalation as fumes or as dust is considered as the principal method of the entrance of these into our body. The industrial surgeon should be aware of the poisonous effects of antimony, lead, beryllium, arsenic, cobalt, cadmium, mercury, manganese, chromium, phosphorus, zinc, etc. The proximity of toxic effects is greatly dependent on the dose and concentration of exposure. Timely medical treatment should be done to overcome the ill effect of these.

### **c) Ingestion**

Ingestion, or in other word absorption of chemical elements like- lead, arsenic, cadmium, phosphorus chromium, etc. may also lead to occupational diseases. These substances enter into our body, usually while taking food, and smoking cigarettes with contaminated hands. Though an ignorable percentage may reach the blood, it is adverse to health.

### **1.1.3.3: Biological Hazards**

At the workplace, employees are also exposed to infective agents. Brucellosis, anthrax, infestation, zoonotic disease, rubor, flora infections, psittacosis, bilharziasis- these diseases fall under this category (Rim & Lim, 2014). Especially, the agricultural staffs and also the persons operating among animal merchandise e.g. hides, wool, hair, etc. are unprotected from organic phenomenon hazards.

### **1.1.3.4: Mechanical Hazards**

This is another problem in industries. Though about less than ten percent of total accidents happens due to mechanical causes, its consequences cannot be ignored.

### **1.1.3.5: Psychosocial Hazards**

Due to workers' inability to get acclimatised to an outlandish psychosocial environment, psychosocial hazards appear. Job dissatisfaction, frustration, poor human interactions, insecurity, and psychological tension- these psychosocial factors affect employees' both mental health and physical health. Numerous factors are there such as cultural background, education, social habits, family life, and expectations of the workers from their employment which contribute to the ability of the workers to adapt to diverse working environments.

Psychological hazards effect health in two ways:

- a) Behavioural and psychological changes, including aggressiveness, hostility, anxiety, tardiness, depression, alcoholism, drug abuse, sickness absenteeism, etc.
- b) Psychosomatic sickness, including headache, fatigue, neck pain and back pain, pain in shoulders, peptic ulcer, rapid ageing, hypertension, and heart disease.

The physical elements, like poor lighting, heat, and noise play the foremost role, which causes mental disorders among the workers. In this modern era, newer psychosocial health problems have appeared in the industries due to an increasing emphasis on automation, electronic operations, and nuclear energy. Psychosocial hazards, therefore, are assumed to be more significant and injurious to health than chemical or physical hazards.

#### **1.1.4: Occupational Disease**

##### **1.1.4.1: Meaning of Disease**

Without ease or uneasiness, can be the most appropriate meaning of “Disease”, for either psychological or physiological dysfunction. Not only the presence of illness should be regarded as a disease, but an association of an individual’s perceptions and behaviour in response to disease is also taken into thought. Social dysfunction also comes under disease.

##### **1.1.4.2: Environmental Factors Allied to Disease**

**i. Physical Factors:** Physical factors include light, air, water, radiation, heat, pressure, chemical agents, gravity, etc. Human beings always strive to cope up with these factors.

**ii. Biological Environment:** In some areas, certain diseases occur or do not occur because of the ability or inability of agents to exist in that particular environment due to various biological reasons.

**iii. Social Environment:** Social customs, socio-economic standing, ancient beliefs, etc. – these come under the social elements that are pertinent to health.

Working conditions play a very significant role in occupational diseases in industries. With a few examples, it can be exemplified.

Workers working on lead e.g. lead pipe makers, cable makers, painters, plumbers, and compositors may become the victim of ‘wrist drop’ or ‘ painter’s colic’ disease (Khanka, 2007). This disease may cause stomach pains, joint pain, loss of hungriness, and vomiting which may lead the workers to collapse. Workers work in hoofs, handling wool, animal carcasses, hair bristles, hides, etc., become the victims of anthrax. However, 29 occupational diseases are notifiable as per the Sections of 89 and 90 in the 3<sup>rd</sup> schedule of Factories (Amendment) Act, 1987 (Sinha, 2009). Also, the Workman Compensation Act, 1923 has identified the three occupational diseases (Sainy & Kumar, 1998). However, there is a great need to prevent, cure, and protect the workers against occupational hazards, as these benefit none.

#### **1.1.5: Protection Against Hazards**

Two types of measures are taken into consideration, in industrial establishments, to protect the workers against occupational health hazards:

- i) Preventive measures
- ii) Curative measures

**i. Preventive Measures:** Prevention is always better than cure- this saying is the base of this philosophy. The preventive measures that should be taken care of to protect the employee from occupational health risks are as follows.

- Medical examination before employment to check whether the employee is fit for the job responsibility.
- Periodic medical check-up after employment to confirm the employees are in good condition.
- Elimination of hazardous materials to the possible extent.

- Surveillance on women workers and child labours who are exposed to health hazards.
- In case of accidents, provision of emergency treatment.
- Regarding health and hygiene, proper education to the workers.
- Training to the workers on first aid.
- Suitable factory layout and illumination system.
- Suitable treatment of disposal effluent.
- Proper job design to eliminate monotony and fatigue.
- Proper work scheduling with adequate rest.
- Promoting well work-life balance.

**ii. Curative Measures:** The curative measures begin only after workers actually suffer from sickness or disease or ill health. The remedial measures are:

- Timely and adequate medical action.
- Adequate compensation and benefit.
- Best possible medical treatment from exterior hospitals.

### **1.1.6: Statutory Provisions Concerning Health**

#### **1.1.6.1: Employee Health Provisions as per The Factories Act, 1948**

The health provisions that are mentioned in the Factories Act 1948, are as follows (Srivastava, 1992).

- Proper cleanliness should be maintained in every factory; and factories should be free from effluvia which arise from any privy, drain or other nuisance (Section 11).

- In every factory, effective arrangements should be made for the proper treatment of effluents and wastes, generated from the manufacturing process, to make these harmless to the best possible extent (Section 12).
- In every factory, to prevent injury and to provide comfort to the workers, effective provisions should be made by maintaining adequate ventilation and reasonable temperature (Section 13).
- Effective measures, in factories, should be taken to avert inhalation of fume and dust. (Section 14).
- in any factory, where humidity is artificially increased, the authority must abide by standard humidification rules, prescribed by State Government; and proper method should be adopted in this regard (Section 15).
- Rooms in a factory should not be overcrowded which may be injurious to health. (Section 16).
- Suitable and sufficient lighting, artificial or natural, or both should be provided where workers are working or passing in a factory. (Section 17)
- Providing and maintaining suitable points, for the sufficient supply of drinking water, is mandatory in every factory (Section 18).
- Separately for male and feminine staff, the authority ought to accommodate sufficient urinal and latrine of prescribed types in factories. (Section 19).
- Spittoons ought to be provided in adequate numbers in each industrial plant in appropriate places and clean and hygienical condition of those ought to be maintained. (Section 20).

### **1.1.6.2: Health Provisions as per Plantation Labour Act, 1951**

The health provisions that are mentioned in the Plantation Labour Act 1951 are as follows (Bhowmik, Xaxa, & Kalam, 1996).

- Effective arrangements ought to be made by the management, in each plantation, for of wholesome drinking water for all staff (Section 8).
- In each plantation, separately accessible latrines and also urinals, for females and males workers, should be provided, sufficient number and situated at convenient places (Section 9).
- Medical amenities for all the workers and their families have to be made available by the employer as per the prescription of the State Government (Section 10).

In the absence of such prescribed medical facilities, the chief inspector can arrange for the provision and maintenance of medical facilities and recover the costs of these from the defaulting employer.

Qualified and capable medical practitioners will be appointed as certifying surgeons by the State Government, for within local limits of a plantation or else class of plantations (Section-7). Followings are the duties of a certifying surgeon.

- a) Examining the workers and certifying.
- b) Inplantations, where adolescents and also children are employed or are to be employed in any work, which is likely to cause injury to their health, carrying out medical supervision.

However, it is really unfortunate that nearly fifty percent of the garden dispensaries in North Eastern regions are without qualified doctors and stock life-saving drugs (Bhowmik, 2002).



### **1.1.7: Industrial Accidents: Types and Causes**

It is hard to imagine that each year, over 313 million workers suffer from non-fatal occupational injuries, equating to 8,60,000 people are injured on the job every day. 6,400 people die, each single day, from disease or occupational accident, which leads to 2.3 million deaths each year (Buehler, et al.); how shocking the figures are!

Industrial jobs have become more multifarious and intricate in this modern era, with ever increasing automation, electrification, mechanization, sophistication, and chemicalization; which has increased the probability of accidents and injuries to the workers in industries; and these have forced us to consider the significance of industrial safety.

#### **1.1.7.1: Meaning of Industrial Accident**

An industrial accident can be interpreted as a sudden unanticipated occurrence, in an establishment which leads to interruption of the pre-scheduled work. “It is an occurrence in an industrial establishment causing bodily injury to a person who makes him unfit to resume his duties in the next 48 hours” (Sharma, 2016).

In other words, it can neither be anticipated nor it is designed to occur. So, an accident is an uncontrolled sudden occurred event, in which an action or reaction of a substance, an object, or a person which results in personal injury (Chand, 2014). But we should not consider self-inflicted injuries as accidents.

To say about an industrial injury, this definition in Workmen’s Compensation Act, 1923 can be quoted- a personal injury to an employee which has been caused by an accident or an occupational disease and which arises out of or in the course of employment and which could entitle such employee to compensation.

To measure accidents, the following two main ratios are used (“Workplace Safety and Health Report, 2013).

- i. Accident Frequency Rate
- ii. Accident Severity Rate

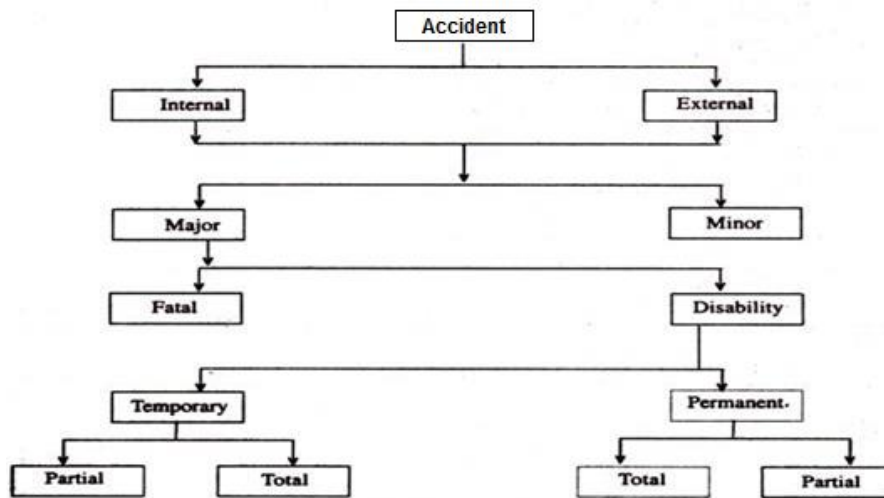
Accident Frequency Rate (AFC) = No. of injuries \* 1000000/ Total no. of man hours worked

Accident Severity Rate (ASR) = No. of man day lost \* 1000000 /Total no. of man hours  
worked

#### **1.1.7.2: Types of Accidents**

Depending on the degree of severity, durability, and injury, accidents can be classified into two different types like- major accident and minor accident. Major accidents are those accidents which are caused permanent disability or death to the injured employee; on another hand, minor accidents are those accidents makes an injured person disable temporarily. When an employee gets hurt with exterior signs, it is called external injury. Injury, without external signs, such as a fractured bone is called an internal one.

However, a major accident can be of two types- fatal accident and accident which may lead to disability. An accident which results in the death of a worker or workers is called a fatal accident. As discussed earlier, an accident may cause temporary disability for which an injured person becomes disabled for a short term period, ranging from a day to a week, and permanent disability makes an injured person disable forever. The below figure represents various types of accidents at a glance.

**Figure: 1. 2****Types of Accidents**

*Source: [http://cdn.yourarticlelibrary.com/wp-content/uploads/2014/04/clip\\_image002348.jpg](http://cdn.yourarticlelibrary.com/wp-content/uploads/2014/04/clip_image002348.jpg)*

An accident does not occur automatically. Always certain factors play roles behind every accident. That means multiple closely related factors become responsible for an accident.

### **1.1.7.3: Reasons for Industrial Accidents**

Several reasons for accidents have been classified into three comprehensive categories by industrial safety specialists.

- a) Unsafe or insecure conditions
- b) Unsafe or risky acts
- c) Other causes

#### **a) Unsafe or Insecure Conditions**

One of the biggest sources of accidents is unsafe working conditions (Seo, 2005). These are related to imperfect plant environment, equipment, tools, materials, and machines. These

causes are also known as ‘technical causes’. They occur when there are insufficient lighting arrangements, ineffective or absence of proper ventilation, improper protection, faulty equipment, faulty location or layout of plant, risky storage, inadequate safety devices, inefficient safety policies, etc. (Chand, 2014).

Apart from this, the psychological factors, like monotony, working overtime, frustration, tiredness, fatigue, and anxiety are some other causes of industrial accidents (Nkemboh, n.d.). Some high risky zones are there in industries which have been identified by safety experts, where about one-third of the total accidents occur (Chand, 2014). These are, for example, wheel-barrow, hand lifted trucks, saws and handrails, gears, pulleys, electric drop lights, chisels, screwdrivers, etc.

#### **b) Unsafe or Risky Acts**

Sometimes workers become of victim accidents, for their unsafe and risky acts which may be because of their wrong attitudes, lack of skill or knowledge, and maybe because of certain bodily defects. Followings are few of the examples of unsafe acts, for which usually accidents happen.

- Operating machinery without authority.
- Refusal of using personal protective equipment (Ahamed, 2019).
- Throwing of material at the workplace from pillar to post.
- Working at an unsafe speed, i.e., too fast or too low.
- Using unsafe equipment, or using equipment unsafely.
- Removing safety devices wilfully.
- One’s own accident-prone personality and behaviour.

### c) Other Causes

Other causes of accidents may be-unsafe situational or climatic conditions and variations. In addition, accidents may occur because of excessive temperature, unwarranted noise, insalubrious environment, damp or bad working conditions, excessive glare, oily floors, dust, arrogant behaviour of bossy supervisors, etc. (Kjellstrom, Holmer, & Lemke, 2009).

Each and every day industrial accidents are happening worldwide and it has become common phenomena; India is also not exceptional. It will be clarified with the following brief catalogue which describes the major accidents in the recent past that happened in India.

**Table 1.1: Major Industrial Accidents in India in the Last Decade**

Year	Place	Massacre
December, 1984	Bhopal	World's worst chemical tragedy, over 4000 people of the city died because of Methyl Isocyanate gas leak from the Union Carbide plant. Thousands suffered out of permanent health damage.
December, 1985	Delhi	Workers and nearby residents were severely affected by Oleum gas leak from the Sriram Foods and Fertilisers Plant.
December, 1985	Rourkela	18 workers were affected by a blast furnace accident in Rourkela Steel Plant.
June, 1987	Durgapur	Over 100 people were affected by Chlorine leak at Durgapur Chemical Factory which created panic all around. Long distance trains were halted.
November, 1988	Bombay	32 workers died because of Fire at the Bharat Petroleum Refinery Plant at Mahul, North-East Bombay.

Year	Place	Massacre
September, 1989	Ramagunaam	7 workers died because of a major gas leak at Fertilisers Corporation of India unit at Ramagundam.
November, 1990	Nagothane	35 persons died and over 50 suffered because of explosion at the Indian Petrochemicals, Nagothane complex.
July, 1991	Bombay	7 workers died because of an accident in a Hindustan Organic Chemicals, Bombay.
December, 1991	Gwalior	14 workers died and 22 workers were severely injured because of a blast at the dyeing department of GRASIM unit at Gwalior.
August, 1992	Panipat	11 workers died and many injured due to Ammonia leak at the National Fertilisers Plant, Panipat.
October, 1992	Kahalgaon	11 killed and several injured due to a boiler explosion in the National Thermal Power Corporation (NTPC).
September, 2009	Korba	In Korba, 230 km from Raipur, at the Bharat Aluminium Company (Balco), a chimney under construction collapsed. It fell down on 100 workers and killed forty-five people.
October, 2009	Jaipur	12 people died and at least 30 people injured in at Indian Oil Corporation depot in Jaipur because of fire engulfment in a tank holding 8000 kilolitres oil.

*Source: <https://www.hindustantimes.com/india-news/boiler-explodes-at-ntpc-plant-india-s-worst-industrial-disasters-bhopal-to-korba/story-a60C113OGSSvbez8lDn7wM.html>*

The following table showcases the scenario of fatal accidents in Indian establishments, registered under Factories Act-1948, from 2010-2012.

**Table: 1.2**

**State-Wise Number of Accidents**

State	2010	2011	2012	Total
Gujarat	221	249	216	686
Maharashtra	225	183	215	623
Andhra Pradesh	188	154	156	498
Tamil Nadu	75	117	110	302
Chhattisgarh	84	92	110	286
Karnataka	92	86	76	254
West Bengal	97	86	62	245
Orissa	103	60	78	241
Uttar Pradesh	64	63	72	199
Madhya Pradesh	68	53	45	166
Punjab	14	22	34	70

*Source: indianexpress.com/article/india/india-others/2010-12-over-4000-died-on-shop-floor-but-thats-fraction-of-total*

From the above table, it is quite apparent that not only in industrialised states- such as Andhra Pradesh, Gujarat, and Maharashtra, but also in resource-rich states such as Tamil Nadu, Karnataka, and Chhattisgarh, fatalities are the highest. But this is not all; numerous incidents are there that do not get documented officially. Official statistics say, from 2010 to 2012, 4275 fatalities which happened in factories in India, were documented. But according to statistics, if we consider unorganised manufacturing sectors, the actual number would be ten times higher (Sasi, 2014).

Above all, the sad reality is that in the US, where the accidents are investigated by a dedicated agency, named Occupational Safety and Health Administration (OSHA) under the wing of the Department of Labour, in India adhoc committees which are headed by labour commissioners or other bureaucrats, dish out inquiry reports which again itself lacks systematic procedure.

On the other hand, the shocking truth is that throughout the world, someone dies in every fifteen seconds because of industrial accident or disease (Buehler, et al.). It is needless to say that industrial accidents also cause huge losses to the employers and obviously to the organisations. We can get an idea about the massive losses to the Indian establishments because of industrial accidents.



**Table: 1.3****Losses Suffered for Industrial Accidents**

<b>Date of occurrence</b>	<b>Name of the organisation</b>	<b>Estimated loss (Rs in crore)</b>
29-01-87	Madras Ref. Manali	4.85
11-11-87	HPL Refinery. Vizag	3.40
09-01-88	J.K. Synthetic	6.92
20-09-88	Monica Electronics	3.86
05-05-88	Zenith Chem. Tarapur	4.00
30-08-88	IOC, Mathura	4.63
07-09-88	IEL, Gomia	5.00
09-11-88	BPCL	9.00
02-02-29	IPCL, Baroda	41.82
09-02-89	IAAI, Bombay	43.00
23.02.89	Voltas, Warora	5.00
08-01-95	ONGC,Pasarlapudi	41.44

*Source: The Economic Times, March 16, 1995*

As accidents are not desirable both from humanistic and financial aspect, it must be avoided. Now the question is how to avoid it? Here the concept of safety measurements comes into the picture.

## **1.2: Industrial Safety**

In simple words, safety means the state of being innocuous. It also can be defined as freedom from the occurrence, injury, risk of danger, and loss. In this context, industrial safety ought to be referred as protection of employees or workers from the danger or jeopardy of industrial accidents (Badekale, 2012).

The realization of the significance of industrial safety came because of occurrence of millions of occupational accidents which again leads to the loss of millions of machine hours, man hours, etc. Statistics say that due to an accident, on an average, one-fifth production time is wasted in production units; whereas, helping the accident victim by the fellow employees, increases the wastage of production time. These situations become more alarming when accidents lead to deaths. The above information is enough to recognize the importance of industrial safety. By identifying the causes of occupational accidents, proper designing of the effective workplace and industrial layout is very much necessary.

### **1.2.1: Objectives of Industrial Safety**

- To avoid accidents in working place by plummeting the menace to the lowest possible extent.
- To eliminate work stoppage because of an accident.
- To reduce the burden of giving direct and indirect costs of accidents, including insurance, workmen's compensation, etc.

- To prevent permanent disability, loss of salary, loss of workers' life by eliminating causes of mishaps to the possible extent.
- To increase employees' morale with the promotion of good working condition and safe workplace.
- To make workers competent and strongly safety minded.

### **1.2.2: Significance of Industrial Safety**

- (i) **Increases the Production Rate:** As safe conditions of workplace keep employees free from worrying about their safety, they devote more to improve the quantity and quality of output. Thus, safety promotes productivity in any industry.
- (ii) **Reduces the Cost of Production:** Occurrence of an accident involves two types of costs- direct, and indirect (Brody, Létourneau, & Poirier, 1990). The direct cost is the form of reimbursement payable to the victim employee's dependent, including medical expenditures incurred for the treatment of the patient. However, the management is exempted from bearing the direct cost if the victim worker is under the ESI scheme. On the other hand, indirect cost, also called the hidden cost, includes loss on account materials spoiled, damages to equipment, downtime of operators, slow down the production rate of other workers. Added to these, an injured employee obviously performs less than his normal efficiency. Research evidence indicates that indirect costs are three to ten times higher than the indirect costs (NARFA, 2014).
- (iii) **Saves Human Asset:** Safety prevents unwanted suffering and pain to the employees of an organization. Not only that, it prevents the premature or untimely death of the efficient workers who are assets to the enterprise and society.

- (iv) **It Develops Employee Morale:** An employee, on one hand, could be a worker in the factory and on the other hand, he is the bread earner for his family. Hence, the happiness of his family is greatly dependent on the wellbeing of the worker. Safety, therefore, is very important on humanitarian grounds as well.

### **1.2.3: Measures of Industrial Safety**

However, if certain safety measures are undertaken, then all forms of accidents can be avoided to a certain extent. Let us come one by one. First, we will focus on the safety measures to avoid accidents, occur from unsafe acts.

#### **1.2.3.1: Safety Measures to Avoid Unsafe Acts**

- a. **Personnel Adjustment:** For a job or task, if a worker is identified to be unfit, either physically or emotionally, after having discussion with the personnel department, he should be quickly taken off the work.
- b. **Method or Technique Used:** Safe methods or techniques should be introduced, replacing old methods.
- c. **Operator Training:** Sufficient training can lessen the risk of mishap, even if job method is not safe.
- d. **Publicity and Education about Accident Prevention:** Supervisors or foremen lead people with their hard skill and leadership. So, they should take the primary responsibility of educating the workers about accident prevention.

#### **1.2.3.2: Safety Measures to Avoid Unsafe Conditions**

To avoid accidents because of unsafe conditions, varied provisions are mentioned in the Factories Act, 1948 which are principally involved with moving elements of prime movers,

electrical generators, transmission machinery, fire prevention devices, management of dangerous fumes, lifting of excessive weights and safeguards over lighting machines, chains and ropes etc. (Chand, 2014).

#### **1.2.4: Safety Programmes**

Safety programmes are continuous processes which try to decrease the influence of personal and environmental factors which cause accidents.

A safety programme is very much helpful in ascertaining accident in the context of why, where, and when these occur. With the root assumption that most of the work related accidents can be avoided if the proactive approach is taken, safety programmes are intended to reduce accidents, and related losses. Usually, safety programmes consist of providing safety equipment and conducting special training for the employees. Indian Standards Institute has given praiseworthy suggestions in this context which are as follows:

- (i) Safety protections to be undertaken during operation.
- (ii) Proper arrangement of sufficient ventilation, lighting, and suitable layout in the industrial unit.
- (iii) Standardized and specified safe practices associated with industrial operations.
- (iv) Effective and efficient maintenance of tools.
- (v) Guidance and supervision on safe welding methods or cutting methods.
- (vi) Proper guidance on the usage of belt conveyors, industrial trucks, and also on handling fire protection equipment (Chand, 2014).
- (vii) Mandatory usage of PPE for ensuring safety.

- (viii) Classification, labelling, and careful handling of dangerous chemicals or dangerous items.
- (ix) Proper safety standards for industrial construction, electric work, and proper usage regulation for electrical instruments at hazardous or explosive atmosphere.

Things which are discussed above are all suggestions. But, industrial establishments in India must conform statutory provisions to carry on their day to day operation. These would be conferred later.

### **1.2.5: Safety Committee**

The safety committee, in any industry, is supposed to take care of every aspect of industrial safety. The functions of a safety committee are presented below.

#### **1.2.5.1: Functions of Safety Committee**

- Identifying, categorizing, and investigating latent workplace vulnerabilities.
- Formulating and implementing processes to eradicate or lessen identified hazards.
- Imposing safety instructions, backed by strong rules.
- Measuring performance related to safety.
- Supporting safety coordinators to implement programs related to safety and health.
- Proper monitoring of recognized safety and health programs.
- Encourage the active participation of all personnel in the safety process.

- Establishing methods to condense the probability of accident occurrence and rate of severity.
- The proliferation of awareness related to employee safety.
- Facilitating communication, and expediting cooperation, related to safety, between management and workers.
- Formulation of new safety policies, programs, and procedures.
- Demonstration of safety-related results to management and also employees (Goals, 2015).
- Evaluating accidents reports, forwarded by supervisors.
- Developing a plan to avoid reappearance of incident.
- Communicating information backed by data, gathered and learned from accident inquiries to the concerned person.
- Conducting regular walk-around check-ups and prepare a list of alternative plans.

## **1.2.6: Statutory Provisions Concerning Safety in India**

### **1.2.6.1. Safety Provisions under Factories Act, 1948**

The required provisions related to safety are mentioned in Chapter IV of the Factories Act 1948. These are discussed in brief (Malik, 1961).

- (i) **Fencing of Machinery:** Moving parts of a prime-mover and connected flywheel, head-race and tail-race of water turbine and water wheel, parts of stock-bar, parts of an electric generator, rotary converter or transmission machinery or a motor,

and dangerous parts of any other machinery should be properly fenced under Section 21.

- (ii) **Safety Measures in Case of Work on or Near Machinery in Motion:** During carrying out examination or operation of any part while it is in motion, wearing tight-fitting clothing, requires to be provided by the employer, is mandatory under Section 22 (1). Such kind of operation or examination should only be done by trained male workers. Women or young persons are prohibited from cleaning, lubricating or adjusting any transmission machinery any part of a prime-mover or any transmission machinery while the prime-mover or transmission machinery is in motion under Section 22 (2).
- (iii) **Employment of Young Persons on Dangerous Machines:** Unless imparted with sufficient training or under adequate supervision, no young person shall be allowed to work at any dangerous machinery under Section 23.
- (iv) **Striking Gear and Devices for Cutting Off the Power:** Suitable striking gears or other efficient mechanical appliances are required to be provided in every factory under Section 24. For cutting off power, suitable devices should be there in case of emergencies.
- (v) **Self-acting Machines:** Section 25 requires providing the safe safeguard for workers where there is a chance of getting injured from self-acting machines; and proper space is required to be provided for passing by for the employees.
- (vi) **The Casing of New Machinery:** Safeguards, for the casing of new machinery which are dangerous in nature, are required to be provided under Section 26. To prevent danger, every set bolt, screw, or key on any revolving wheel, spindle, and shaft shall be properly encased, sunk, or otherwise properly guarded.



- (vii) Prohibition of Employment of Woman and Children Near Cotton Openers:** Section 27 imposes restrictions on employing child or woman for pressing cotton, where a cotton-opener is at work.
- (viii) Hoists and Lifts:** Sound material, mechanical construction and adequate strength-these are required to be considered for every hoist and lift, as per Section 28. A competent person should carry out proper maintenance and thorough examination of these at least once in every six months. With the fitting of the enclosure with gates and the hoist or lift, these shall be sufficiently protected. On every hoist or lift, the maximum safe working load shall be marked.
- (ix) Lifting Machines, Chains, Ropes and Lifting Tackles:** As per Section 29, except for the testing purpose, no lifting machine, lifting tackle, chain, rope be loaded beyond the safe working load. Crane shall not approach within 6 meters of the place, while any person is working on or near the wheel track of a travelling crane.
- (x) Safety Measures in Case of Use of Revolving Machinery:** In every factory, notice mentioning maximum safe working peripheral speed of every abrasive wheel or grindstone, the speed of shaft, should be permanently affixed or placed where process of grinding is carried on.
- (xi) Pressure Plant:** Any plant and machinery, operated above atmospheric pressure, used in the manufacturing process, is required to be ensured with safe working pressure under Section 31.
- (xii) Floor, Stairs and Means of Access:** Sound construction and proper maintenance of all floors, stairs, steps, gangways, and passages are required under Section 32. Provision of handrails is also there in this section.

- (xiii) **Pits, Openings in Floors, Etc.:** Fixed vessel, sump, tank, pit or open portion in the ground or in a floor, are required to be covered under section 33, for the avoidance of any danger.
- (xiv) **Excessive Weights:** Under Section 34, workers are restricted to lift, carry or make any load so heavy as to be likely to cause him injury. Maximum permissible weights for adult men, adult women, adolescents and children may be prescribed by State Government.
- (xv) **Protection of Eyes:** For providing the suitable goggles or effective screens for the protection of the workers' eyes from excessive light or particles, the State Government is supposed to make rules as per Section 35.
- (xvi) **Precautions Against Dangerous Fumes, Gases, Etc.:** In any factory, entering into any chamber, tank, vat, pipe, pit, flu or other confined space in which any gas, vapour, dust, or fume is likely to be present, is prohibited under Section 36, unless it is provided with a manhole of proper and sufficient size or other effective means of egress.
- (xvii) **Precautions Regarding the Use of Portable Electric Light:** Unless adequate safety devices are provided, inside any chamber, pit, tank, vat, flue pipe, or other confined space, using portable electric light or any kind of electric appliance of the voltage exceeding 24 volts is prohibited under Section 37.
- (xviii) **Explosive or Inflammable Dust, Gas, Etc.:** Effective enclosure of the plant or machinery should be considered, as per Section 37 (1), if manufacturing process produces dust, fume, gas, or vapour of such character and to such extent to be likely to explode.

- (xix) **Precautions in Case of Fire:** Section 38 requires the provision of arranging emergency exit for workers and necessary equipment for extinguishing the fire, in case of fire outbreak.
- (xx) **Power to Require Specification of Defective Parts or Test to Stability:** As per section 39, if the inspector feels that the conditions in the factory are dangerous to human life, he may ask the occupier, through notice, to furnish drawings or specifications of plant, building, machinery, etc.
- (xxi) **Safety of Buildings or Machinery:** As per section 40, if an inspector finds dangerous conditions of building, machinery or plant, he can ask manager or occupier to adopt safety measures. In case the danger to human life, unless it is repaired or altered, he can order to prohibit the usage of machinery or building.
- (xxii) **Safety Officers:** Section 40-B requires the employment of the required number of safety officers by the occupier in factories, where operation or manufacturing process involves high risk of bodily injury, and 1,000 or more people are ordinarily employed.
- (xxiii) Section 45 requires keeping and maintaining well-equipped first aid box or cupboard, consisting of the prescribed contents. Not be less than one first aid box should be there in a factory for every 150 workers.

#### **1.2.6.2: Safety Provisions under The Mines Act, 1952**

In any part of a mine which is below-ground, as per Section 46 of the Act, employment of any women is prohibited. Except between the hours 6.00 am and 7.00 pm, employment prohibition is also there in any part of the mine above ground. A break of at least 11 hours is required, between the end of day work and the commencement of the next day of work (India. Directorate-General of Mines Safety, 1967).

### **1.2.6.3: Safety Provisions under Plantation Labour Act, 1951**

In any plantation, without the approval of the State Government, Section 25 of the Act imposes a ban on employment women between 7.00 pm. to 6.00 am. Women, employed in any plantation as nurses and midwives are exempted from this provision.

As per section 32A, of Plantation Labour Act, 1951, wherein any plantation, an accident occurs which causes death or which causes bodily injury to a worker by reason of which the worker injured is prevented from working for a period of forty-eight hours or more immediately following the accident, or which is of such a nature as may be prescribed in this behalf, the employer thereof shall send notice thereof to such authorities, in such form, and within such time, as may be prescribed.

Additionally, according to Section 32B, the employer shall maintain a register of all accidents which occur in the plantation in such form and in such manner as may be prescribed (Sivarethinamohan, 2010).

## **1.3: Employee Welfare**

### **1.3.1: Meaning and Definition of Labour Welfare**

Welfare indicates wellbeing or doing well. This comprehensive term refers to an individual's mental, physical, emotional, and moral wellbeing. Furthermore, welfare is a relative conception, which may vary from one region to another region, one time to another time. Basically, welfare refers to whatever is done for the employee's benefit and comfort and which is mainly provided beyond their wages.

Welfare is helpful to a great extent for keeping employees' morale and their motivation high, and it helps in the long run for retaining employees. Welfare measures, undertaken by

employers, trade unions, Government, and also non-government agencies, may be of monetary form or of any kind.

The notion of employee welfare is gigantic, in true sense. It includes monitoring and maintenance of hygienic working condition, maintaining industrial harmony through provisions of good health, undertaking measures for protection and prevention from accidents, provisions for insurance against sickness, disease, accident, and unemployment to the employees and their families (Manasa, Naik, & Andhra, 2016).

ILO Asian Regional conference gives us a clear and precise understanding of labour welfare. According to report II of ILO ARC, it is explained as such kind of facilities, amenities, and services, established inside or outside the vicinity of the undertakings, to enable the employees to perform in congenial and healthy surroundings and to undertake amenities for them to maintain their good health and also high morale (Rana, 2014).

The Labour Investigation Committee explains labour welfare activities as- anything is done for the purpose of physical, intellectual, economic, and moral betterment of the workers, whether by Government, by employers or by any other agencies. It may be normally expected as a part of the bargained contractual benefit or laid down by law (Labour Investigation Committee, 1946).

Committee on Labour welfare report explicates welfare activities as such amenities, services, and facilities as recreation and rest facilities, adequate canteens, medical facility, sanitary facility, arrangements for travel from and to work, accommodation facility, and such kind of other services including social security measures to improve workers' condition (Malviya, 1970).

### **1.3.2: Objectives of Employee Welfare**

Employee welfare could be considered as the foremost concern of the employers, in any industry. In the early twentieth century, before the labour union movements, employers were in favour of employee welfare not to that extent, instead, they thought of employee labour as something that needs to be bought at the lowest possible price. In the modern industrial era, employers should be much more serious to take care of employee welfare. In short, employee welfare comprises taking care of and look after the good of all employees. Employers should consider numerous different objectives to promote employee welfare.

Objectives of employee welfare can be discussed further as follows (Durai, 2016):

- **To Increase the Quality of Living of the Oppressed Class:** The labours in any industry are ridiculously exposed to exploitation by the capitalists. Welfare measures can improve their quality of life to a certain extent.
- **To Decrease the Labour Related Complications:** Problems like absenteeism, turnover, indebtedness, alcoholism, etc. not only make workers physically weak but also make their mind unstable, which further affect their productivity. Labour welfare measures help the employees to overcome these problems.
- **To Recognize Human Values:** No worker, in any industry, is worthless. Each and everyone has value, which needs to be found and nurtured. Welfare measures give management a wonderful opportunity to recognise and develop the employees' value and personality.
- **To Foster a Sense of Responsibility in the Industry:** In any organisation, a person works both in a group and as an individual during his working hour. A worker performs better if he is given responsibility, otherwise, he will be only a remote-controlled slave, being directed by the superiors. In this context, when a responsible

employer takes up welfare measures for the wellbeing of the workers, it makes the workers realize their responsibility towards the organisation.

- **To Improve Industrial Relations and Reduce Industrial Disputes:** Dissatisfaction among the employees, in any industry, lead to an industrial dispute. Labour welfare measures are considered as one of the most effective preventive tools for most of these disputes.
- **To Retain the Employees:** For long term growth of any organisation, long term retention of any employees is very much necessary. Formulating a part of organisational policies based on welfare measures such as conducting various training programmes, having different motivational schemes, etc. help to generate interest among the employees in their jobs.
- **To Transform Employees Mind Towards Positive Direction:** Various welfare measures help the employees to transform their mind from negative direction towards a positive direction, which ultimately makes the employees more productive.
- **To Keep the Employees' Morale High:** Labour welfare helps to transform one's personality through enhancing their different skills like – presentation skills, communication skills, interpersonal relationships, etc. This is best achieved when, through different welfare schemes, their morale is kept high.
- **To Increase the Employees' Bargaining Power:** Extracting something favourable through the systemic method from the opponent is called bargaining. There is a positive relationship between bargaining power, influence on the opponent. Different statutory and non-statutory labour welfare measures such as the formation of the works committee, worker's participation in management, trade unionism, etc., obviously help them for having better bargaining power.

### **1.3.3: Scope of Labour Welfare**

In true sense, labour welfare's scope is very extensive, as it covers all amenities, services and facilities. We can give a look to its classification, to get a clear idea of its scope. Labour welfare measures can be broadly classified into two categories (Rao, 1995).

- a. Statutory and non-statutory or voluntary
- b. Intramural and extramural

#### **1.3.3.1: Statutory and Non-Statutory or Voluntary Welfare Activities**

##### **1.3.3.1.1: Statutory Welfare Provision**

In this category of welfare services, provided by employers, are enforced by various laws, such as the Factories Act- 1948, the Plantation Labour Act- 1951, The Mines Act- 1952, The Contract Labour Act- 1970, The Motor Transport Workers Act- 1961, Dock Workers Scheme 1961; Inter-state Migrant Workers Act, 1979, and the Merchant Shipping Act, 1958. The provisions as per the acts are discussed below (Biswas, 2013).

##### **1.3.3.1.1.1: Labour Welfare Facilities under the Factories Act, 1948**

- a) Easily accessible separate adequate facilities of washing clothes for male and female workers (Sec. 42).
- b) Suitable places to store clothes and also suitable facilities to dry clothes (Sec. 43).
- c) Workers, those who work standing, adequate facilities for their occasional rest (Sec. 44).
- d) The obligatory facility of first-aid boxes or cupboards, one for each and every 150 workers with the recommended contents for first aid treatment and also additional ambulance facility where more than 500 workers work (Sec. 45).



- e) Provision for canteen facility if more than 250 workers are employed (Sec. 46).
- f) Provision for shelters, restrooms, and lunch rooms for taking the meal, if 150 workers are employed (Sec. 47).
- g) Provision for clean, adequately lighted, and well ventilated crèche, with the facility of free milk, washing and changing cloth if more than 30 women workers are employed (Sec. 48).
- h) Provision for employing welfare officer, if 500 or more workers are employed (Sec. 49).

#### **1.3.3.1.1.2: Labour Welfare Facilities under the Mines Act, 1952**

- a) If an employer employs 50 or more women workers, provision for maintaining crèches for the children of the workers.
- b) If the employer employs 150 or more workers, provisions for providing shelters to take food and rest.
- c) Where an employer employs 250 or more workers, provision of providing canteen facility.
- d) Where an employer employs more than 150, provisions for providing first aid facility and maintaining first aid boxes.
- e) Provision provisions for lockers, pithead baths, and sanitary latrines separately provided to male and female workers.
- f) To look after labour welfare related matters, provision of appointing welfare officer, if an employer employs more than 500 workers.

#### **1.3.2.1.1.3: Labour Welfare Facilities under the Plantations Labour Act, 1951**

- a) Provision of providing canteen facility, if 150 or more workers are employed. (Sec. 11)

- b) If the employer employs 50 or more women workers, provisions for crèche facility for the children of the women workers. (Sec. 12)
- c) For the workers employed in plantations and for their children, provision for providing recreational facilities, as suggested by State Government. (Sec. 13)
- d) If the number of children between the age group of 6 to 12, exceeds 25, the employer is bound to provide educational facilities to the children, as per the State Government suggests (Sec.14).
- e) Provision for providing and maintaining housing accommodation facility to the workers and their families those who reside in the plantation; also there is provision for providing housing facility to the workers, including their families, those who reside outside the plantation but rendered 6 months of continuous service (Sec. 15).
- f) Liability of employer to provide blanket, umbrella, raincoat and other like niceties as suggested by the State Government for protection from cold or rain (Sec. 17)
- g) If an employer employs more than 300 or more workers, provision for employing welfare officer as suggested by the State Government.

#### **1.3.3.1.1.4: Labour Welfare Facilities under the Motor Transport Workers Act, 1961**

Following welfare services should be provided in Motor Transport undertakings.

- a) If 100 or more workers are employed, provision of canteens facility, as prescribed (Sec. 8)
- b) Wherein workers of motor transport are needed to halt at night, provision for properly lighted, clean, and well-ventilated restroom at every place (Sec. 9).
- c) For protection against cold and rain, provision for providing raincoat, winter uniform to the line checking staff, conductors and drivers as prescribed manner. (Sec. 10)

- d) At operating centres and stations, provision for providing medical facility to the workers who are working in motor transport. (Sec. 11)
- e) In transport vehicles, provision for first-aid services equipped with the suggested contents (Sec. 12)

#### **1.3.3.1.1.5: Labour Welfare Facilities under the Contract Labour Act, 1970**

Under this Act, contractors are required to undertake the following welfare measures for the contract labours.

- a) Provision of providing canteen facility, if 100 or more workers are employed (Sec. 16).
- b) Where contract labours are needed to halt at night, provision of providing restroom or any other substitute accommodation. (Sec 17).
- c) Provision of adequate number of latrines and toilets of suggested types with washing facilities and an adequate supply of wholesome drinking water for the contract labours (Sec.18)
- d) Provision of providing the first-aid facility and keeping first aid boxes containing suggested contents (Sec.19)

The principal employer is also liable to provide the above-discussed amenities, under this Act, to the contract labours, working in his establishment, if in any case, the contractor becomes a defaulter.

#### **1.3.3.1.1.6: Labour Welfare Facilities under the Merchant Shipping Act, 1958**

- (i) Provisions of accommodation for crew members (ii) Provisions of sufficient drinking water supply (iii) Supply of medicines, medical stores, and provision of surgical, and medical advice (iv) While on board, maintenance of proper weights and undertaking proper measures,

and grant of relief to the distressed seamen. (v) If the Govt. thinks necessary, provision for welfare officer at the ports, situated in or outside India. (vi) Provision of the qualified medical officer, if any foreign-going ship carries more than the number of persons, which is prescribed. The total number of persons includes the number of crews. (vii) Establishment of canteens for taking a meal, the establishment of hostels for staying and taking rest, and establishment of clubs, for recreational purpose (viii) Establishment libraries along with other educational facilities.

#### **1.3.3.1.1.7: Labour Welfare Facilities under the Dock Workers (Safety, Health, and Welfare) Scheme, 1961**

This Act requires some welfare measures to be undertaken for the dock workers. These are as follows.

i. drinking water, ii. toilets, iii. washing facilities, iv. bathing facilities, v. call stand, vi. rest shelters, vii. canteens, viii. first-aid arrangements, ix. housing facility, x. schooling and other educational facilities, xi. libraries, xii. grant of scholarships, xiii. co-operative societies, xiv. sports and recreation, and xv. fair price shops.

#### **1.3.3.1.2: Voluntary Welfare Activities**

In addition to statutory measures, employers undertake few welfare activities for the wellness of the employees, these are called voluntary welfare. These welfare activities come under the philanthropic approach. Followings are important examples of voluntary welfare activities.

i. Housing facilities, ii. Recreational facilities, iii. Children's education, iv. Transportation facility, v. Cooperative societies, vi. Travel concessions, vii. Loans for purchasing vehicle and grains, viii. Library, ix. Paid leave, x. Arrangement of uniforms, and xi. Gifts, etc.

### **1.3.3.2: Intramural and Extramural Welfare Activities**

ILO constituted an expert committee, in the year 1963, of which the primary focus was to look into the matter of welfare facilities for the workers who are engaged in the industries. This committee has categorised welfare services in two groups i.e. intramural, and extramural (Kumar, 2010).

**i. Intramural:** Intramural welfare activities are those kinds of activities which are available and accessible within the establishment. Few of these kind of activities are- crèches facility, canteens facility, drinking water, washing facilities, bathing facilities, first aid appliances, etc.

**ii. Extramural:** Employees enjoy few welfare services outside the establishment; these are called extramural welfare activities. Few examples of this kind of activities are- transportation facilities, playground, holiday homes, maternity benefits, housing accommodation, etc.

### **1.3.4: Theories of Labour Welfare**

From our earlier discussion, it is clear that labour welfare is of different forms. It is not static; rather it is elastic and flexible. Another characteristic of labour welfare is – it is greatly dependent on region, industry, value system, education level, social norms, and also time. Followings are the seven theories of labour welfare on the basis of the above factors (Sivarethinamohan, 2010).

**iii. The Police Theory:** This theory focuses on the negative facets of human being, assuming it is the natural tendency of the human being to be selfish and self-centred. So, employers cannot be relied on, for taking welfare activities voluntarily. But these kinds of activities are required to be taken for the employees so that they lead a healthy and comfortable life. So,

policing or compulsion is mandatory in that case, according to this theory, so that employers do not get any scope of exploiting the employees.

- iv. The Religious Theory:** Since, till date, the procedure of creation of the universe and many other things remain untraced, it is natural for a human being to be religious minded. Few people believe that if he or she does good things for others, it will come back to him or her one day; and the same goes for the negative side also. This religious belief motivates some employers to take up welfare activities for the employees.
- v. The Philanthropic Theory:** We, the human beings have emotions and feelings. Loving for the human being is one of the greatest things in the world and the theory is entrusted on it. The urge to undertaking welfare activities, according to this theory, comes from the love for mankind. In reality, philanthropists played a very important role in the labour welfare movement.
- vi. The Trusteeship Theory:** The another name of trusteeship theory is paternalistic theory. According to this theory, in a trust, employers hold the industrial estate, properties, materials, equipment, and profit which are earned from these. Basically, employers should hold industrial assets not only for him but should provide funds for employees and for society also.
- vii. The Placating Theory:** It is a natural tendency of most of the workers to outrage against the employers and the system when they fail to lead a normal and healthy life. In this situation, to make place them, restoring the healthy working environment, paying good wages, and providing various other kinds of facilities are important. Basically, this theory is in favour of appeasing the workers by providing various welfare facilities.

- viii. **The Public Relation Theory:** We, being the social animal, seek goodwill in our society. We constantly try to maintain good relations with the others, try to help others, for the sake of our recognition in our society. The same thing is done by a few of the employers, according to this theory. When employers take up welfare measures, it works as an advertisement for them in another way.
- ix. **The Functional Theory:** Profitability depends on employees' productivity, employees' productivity is highly dependent on efficiency workers' efficiency, and workers are expected to work efficiently only when their mind and body function properly. To keep the functioning of their mind and body normal, taking care of the employees or the workers, in terms of providing them with various welfare measures, is very important and rational in the modern context.

### **1.3.5: Principles of Labour Welfare**

Approaches and principles behind undertaking welfare activities mean a lot towards the success of any establishment or industry. If welfare measures are perceived by the employers as a painful legal obligation, then the probability of success is bound to go down. The employers will be able to fulfil their objectives through various welfare measures, only when the obligation will be perceived as a moral obligation and the basis of it will be giving value to the human being. However, followings are the basic principles on which labour welfare activities depend (Murugan, 2013).

- i. **Adequacy of Wages:** The primary motivation to work comes from wages, it's true. But the workers have right on it. Wages must not be considered as all about motivation. To motivate employees and to keep their efficiency level high, the

appropriate blending of adequate wages with social, emotional, and economic welfare is very much essential.

- ii. Social Liability of Industry:** Due to the industrial revolution, as in one hand, employment opportunity got increased, but in another hand, oppression of labour class got also high. So, it is the duty or obligation of industrialists or employers towards the employees and towards the society in greater context, to take up welfare measures for them.
- iii. Impact on Efficiency:** A large portion of profitability comes from the output of efficient employees. To maintain their efficiency level it is very much essential, apart from giving reasonable wages, to provide them various facilities like education and training, housing facility, canteen facility, provision for taking rest, etc. Undertaking these kinds of facilities are of great need in developing and underdeveloped countries.
- iv. Increase in Personality:** When employees enjoy various intramural welfare facilities, blended with extramural welfare facilities, their personality gets developed. Therefore it is considered as one of the important labour welfare principles.
- v. Totality of Welfare:** In any establishment, employee welfare services should not be implemented in such a way that a certain portion of employees is getting its benefit. Rather, during policy formulation and implementation, the totality concept should be adopted, which means the benefit of it should be enjoyed by the employees of all the hierarchy level.
- vi. Co-ordination or Integration:** An integrative approach is required to be adopted for the successful implementation of welfare measures. Welfare activities should be coordinated with other activities for a healthy work-life balance of the workers.



- vii. **Democratic Values:** The success probability of every programme is largely dependent on the degree of cooperation from concerned people, and this principle is based on it. While formulation and implementation of welfare measures, consultation with employees or the workers is necessary.
- viii. **Responsibility:** Welfare measures are such kind of activities for which both employer and employee should be responsible. Trade union should take the responsibility in this regard. Sharing of responsibility to different groups or departments, make the welfare activities simpler, faster, and easier.
- ix. **Accountability:** Behind every successful initiative, effective follow-up and evaluation by the accountable people, plays a significant role. In the same way, for welfare measures, periodical assessment and timely reporting to the higher authority are very much essential.
- x. **Timeliness:** Timeliness is probably the most important thing which plays major role in the success of any activity. Labour welfare programme should be planned properly in prior taking into consideration the problems faced by the workers or the employees, and timely action is required for its success.

### **1.3.6: Approaches of Labour Welfare**

Types of undertaken welfare activities are greatly dependent on the beliefs and attitudes of the concerned agencies. If we try to understand the different approaches of labour welfare, it is good that we will be able to understand its evolution, and these are discussed below (Khanka, 2005).

- i. **Paternalistic Approach:** Owner and management- these two terms were almost alternatively used in the very first phase of the modern industrial revolution. The employees' living condition, work environment, work-life

balance, etc.- everything was in the hand of the owner. Gradually the owners realised that basically they are responsible for physical, mental, and moral wellbeing of the workers, and from this realisation, this approach evolved. Various welfare schemes were undertaken to help deprived workers. A hidden intention was associated with the approach. The owners thought that if they undertake various welfare measures, that means they are doing good for the workers; so the workers should do good in return- it may be in terms of being loyal, or in terms of paying respect to the owners.

- ii. Atomistic Approach:** This approach is closely associated with theory x of motivation. With the assumption that there is a natural formation of our society with the individuals who, being self-centred, always try to look at their self-interests and strive to pursue their own objectives, this approach is in favour of promoting welfare activities as little as possible.
- iii. Mechanistic Approach:** Efficiency had become a buzz word in the early stage of the 20<sup>th</sup> century. Later, some mechanical unit like- hours of work, man-day, man-hours, etc. got added with it. It was realised by the management that a positive correlation exists between the profitability and efficiency of the workers. Gradually, they started realizing that to preserve the efficiency of the workers, motivation is very much needed. Taking this realization into consideration, various welfare measures used to be taken. However, though it is a scientific approach, it considers labour welfare from a very restrictive perspective, as it is based on the ‘carrot and stick’ technique.

- iv. Humanistic Approach:** The flavour of sympathy got added with welfare activities in the hand of Elton Mayo, the famous Australian sociologist. In general sense, relationship with the human, and in broad sense human factor, which were missing in earlier approaches, were taken into consideration. More importance was given on informal relationship with the workers or group of workers while promoting welfare measures, to keep the stress level of the workers low, to keep them motivated, and to preserve their efficiency.

#### **1.4: Concept of Productivity**

The term productivity has become a buzz word in this modern era of industrialization. In this era, almost every firms are striving hard to maximize their profit. But in an environment of stiff competition, it is not as easy as it sounds. For the purpose of profit maximization, a firm has to be operated efficiently. How efficiently a firm will run, is fully dependent on the firm's capacity to increase productivity by optimum utilization of existing resources. Since a reciprocal relationship exists between productivity and cost, if a firm can increase productivity, then obviously the cost of production will go down, which ultimately will let them enjoy better profitability.

In general sense, productivity is measured in quantitative terms and it is calculated using the arithmetic ratio between the amount, what is produced and the amount of resource that has been utilized during the course of the production. Productivity has been defined in the I.L.O. publication "Higher Productivity in Manufacturing Industries" as "the ratio between the output of wealth and the input of resources, used in the process of production" (Jain & Aggarwal, 2002).

Quesnay was the first man, who gave the idea of productivity in the year 1766. Littre defined productivity as “a faculty to produce” in 1833. The mother word of the word “productivity” is “productive”. However; Marshall warned about the use of the word “productive” and remarked it as a “slippery term”. Therefore, it is essential to understand this term before one uses the term for the purpose of assessment of performance. It expresses a relative sense of the relation between inputs and outputs of a concern. It is, therefore, considered as an index of efficiency. Raising the productivity of an organization indicates the utilization of the resources even more effectively.

Generally, productivity can be viewed from two aspects; from the technical aspect, and from the human and psychological aspect. The former is very much dependent on the management, where for the latter, management, worker or employee, and unions are responsible. However, nowadays, the term “productivity” has become much more comprehensive and it holds a multidimensional concept.

Higher productivity holds great importance at the industry level and at the national level also. In true sense higher productivity leads to prosperity; as productivity and efficiency go side by side and it generates economic gains by saving, energy, money, and material. On the other hand, as productivity aims at elimination or reduction of wastage, the per unit cost also goes down to a great extent..

#### **1.4.1: Production and Productivity**

Very often, “productivity” is confused with “production” as both sounds alike. But it is not like that. Production is the net result; a perceptible output obtained through resource consumption i.e. factors of production or inputs. On the other hand, productivity is the capacity of each respective factor of production, used for the purpose of producing goods and services.

In the modern era, need is not only to increase the production of goods and services but also to increase productivity through an increase in the capacity of each factor of production. In India, we have been giving importance to the production rise, for many decades, neglecting productivity rise. Therefore, in spite of industrial growth, we remained poor while countries smaller than India and with meagre resources surpassed us in per capita income, and GDP (Biswas, 2011).

#### **1.4.2: Earlier Approaches to Productivity**

In the early days, productivity used to be measured from the technical aspect only. During that time, a complete product used to be made by a few workers and simple relationship used to exist. In the post-industrial revolution period, the perception started changing because of the changing pattern of job. Human being became machine dependable to a large extent and thus man-machine relationship came into existence. On the other hand, the problem of repetitive job occurred and workers started suffering because of work problem of others. To address various issues during this time, Taylor and Gulick came up with unique ideas of division of labours, consideration of work from the technical aspect, time and motion study, job allocation, etc.

Human being always strives to find short cut methods of doing tasks, as if it is in our gene. For justification of the above statement, we can take examples of the invention of cranes for lifting heavy loads, the invention of the wheel for easy transportation. However, systematic approaches were not taken into consideration for earlier work study method.

In the very early stage of the industrial revolution, textile industries in Britain were the hit by its wave; as a result, handlooms and the spinning wheel got replaced by water power driven mechanical devices. Before the 1760s, R. A. Wright proved his outstanding managerial

abilities and he is the first man who recognised the necessity to train human being so that they give up their bad habits and also he successfully encoded factory discipline.

The first ever methodological study concerned with productivity was done by J.R.Perroset in the year 1760, where through his study he was able to reach to the standard rate of production of pins.

In the year 1762, after the introduction of his own factory at Soho, Matthew Boulton introduced simple but efficient earlier unknown mechanical processes for better output. On the other hand, he could increase his profit by ten times from the year 1763 to 1767 by arranging physical training for the craftsmen. Later, Robert Owen (1771-1858) hadrealised and given emphasis human aspect of labour. He started the concept of rest allowance to compensate for strenuous jobs.

F. W. Taylor (1856 -1915) had an enormous contribution in this field. Though Charles Babbage's (1792 -1891) thoughts were quite similar to Taylor's thought, he was much busy with the calculator. Considering three elements namely- tasks, time, and method, Taylor developed a formula for maximum production. The element- task was concerned with the proper sequence of operation, time element was related with appropriate timing which is measured by stopwatch, and appropriate method comes from thorough experiment and documented on an instruction card. However, the formula is still relevant in the modern era of industrialization.

In that era of the industrial revolution, a new kind of relationship, between the workers and supervisors, started developing. Taylor observed that though supervisors are giving pressure to the workers, they themselves are not clear about the output, be it in terms of quantity, quality, or by what time the output to be produced. It forced him to think about the issue and

came up with the scientific approach of the definite task, time, and method; and this was helpful for the elimination or reduction of wastage.

The famous name which comes next is Frank Gilbreth, who contributed in this field with his unique motion study. Analysing the work pattern of the bricklayers, he suggested some methods; which ultimately led to higher output per man. He made it possible only optimising the number of motions of the workers while working. Moreover, his work became the basis of the discovery of motion economy.

Social researchers, during that time, were really striving hard to find out the way of increasing productivity and were coming up with new thoughts, but they could not think the matter from the aspect of social behaviour; which Max Weber made possible by introducing the concept of Bureaucracy model. The model is based on specialisation, proper hierarchical structure of authority, impersonal relationships, close supervision, rational thinking, and proper control system on the basis of rules. Unfortunately, later, the model was heavily criticised in the writings of Merton, Selznick, Gouldner, who argued it as a mechanical model. However, afterwards, through the Hawthorne experiment, concentration got sifted to human relation. Social researchers started realising that informal relationship and style of supervision create a lot of impact on the satisfaction of the employees, which ultimately effects productivity ( “Concept of Productivity”, n.d.).

### **1.4.3: Modern Concept of Productivity**

Classical elements, in combination with the neoclassical elements and some other additions, appeared in a new shape in the modern era. This framework views an organisation as a system, where various variables are dependent on each other. In other words, organisation, now, is viewed as a socio-technical system; and during determination and formulation of various policies, considering this aspect makes organisational operation effective.

Appropriate process and optimum utilisation – these two are very important things to be considered in modern industrial operations. The operation should be done using fewer resources within minimum time. Dividing task into smaller parts in appropriate sequential order and engaging the workers according to expertise leads to good productivity; whereas considering employee satisfaction and motivation gives a better result.

Quality of Work Life is another important issue which plays major roles behind labour productivity. If employees' personal needs are satisfied, if they have the opportunity to work in a healthy environment, if they get better remuneration, the employees will obviously be motivated to produce better output. From this aspect, special attention is needed for employees' welfare also. The physical, mental, moral, and emotional well-being of the employees keeps them motivated (Bharathi & Padmaja, 2018). Proper safety measures, on the other hand, as reduces the probability of mishappenings, helps the workers to work without worrying about the risk; and this also indirectly paves the path of better productivity.

In the modern era, with the increase in customer-centric approaches, any concept of productivity without relating it to customer satisfaction would be irrelevant. Japanese consider productivity taking into consideration a holistic view, and have developed approaches where every activity in the organization is linked to and pulled by the customer needs.

Therefore, productivity, being multidimensional, must be related to the product design also, to satisfy customer's quantitative and qualitative needs, leading to improvement in the quality of life of the people. The products should be environmentally safe, generating low or no wastes in their use and maintenance. We must have to ensure optimum consumption of all resources which is of a great need during manufacturing and for after-sales services.



#### **1.4.4: Labour Productivity**

In simple language, in a given amount of time, the amount of goods and services that labour produces is referred to as labour productivity. Labour productivity can be measured at an individual level, shop floor level, unit level, industry level, and at the national level. In earlier days, company revenue used to be divided by the number of employees to calculate labour productivity. But later it was realised that a novice cannot have the same productivity as seven or ten years of an experienced worker. After all, varying responsibility used to be neglected in this method. However, the OECD defines labour productivity as the ratio of a volume measure of output to a volume measure of input (Guellec & Pilat, 2009). GDP and Gross Value Added (GVA), expressed at constant prices, are normally considered as volume measures of output; whereas the number of employed people, hours worked, and workforce jobs are used as measures of input (Atafar, Damirchi, & Darban, 2013).

From the aspect of microeconomics, it is necessary to increase labour productivity over the period of time, otherwise, negative situations will prevail through the economy. Because, with unchanged labour productivity and increased wages, cost per output will go high. It can lead to a price hike in a larger context at the national economy; and if it happens, a country will lose its competitive advantage in the international context.

Theoretically, two methods can be adopted for labour productivity improvement; i.e. either to increase the numerator or output, which is logical, or otherwise to decrease the denominator or input, which is irrational. Labour productivity is very sensitive to various factors. Long work timing, unhygienic or unhealthy workplace, improper safety measures, etc. create a great negative impact on it; so special care must be taken.

A common measure of productivity relates output to per labour unit i.e. man-hours, man days, unit labour cost, etc. Some of the indices of labour productivity are as follows (Singh, 1989):

- L.P. = Physical output/Man hours
- L.P. = Value of output-materials cost/Labour cost
- L.P. = Value created/Labour input

Labour productivity indices are essential to understand the changes in the productivity of labour. Partial productivity indices focus on measuring the role of single and particular input factor for the purpose of evaluative comparison. They are generally expressed as follows:

L.P = Output/One factor of input.

#### **1.4.5: Factors Affecting Labour Productivity**

Labour productivity gets affected by a wide range of factors depending on various industries. Some well-known factors that affect labour productivity are discussed below (Attar, Gupta, & Desai, n.d.).

- i. Work Time:** Rational and appropriate work time is good for labour productivity. Extending work hour creates a negative impact on it. On the other hand, appropriate work time helps to preserve the efficiency of the workers which ultimately creates a good impact.
- ii. Morale and Attitude:** Modern industrial operations are characterised by conflicts, disputes, grievance, etc. If steps are not taken to resolve the matters at the root then, these will affect employees' morale, and the employees will start developing a negative attitude like indiscipline, absenteeism, which ultimately

will decrease their productivity. Additionally, unhygienic work condition, lack of safety and security also affect workers' morale.

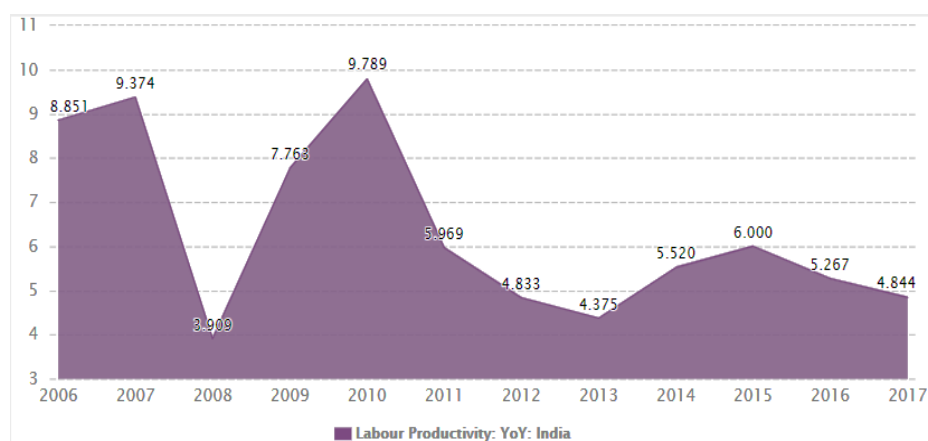
- iii. **Fatigue:** Elongated or unusual physical toil can cause fatigue which hampers labours productivity.
- iv. **Inconsistent Rules and Regulation:** If in any organisation, rules and regulations get changed frequently, workers fail to adjust quickly. So, it is quite simple that consistent rules and regulations lead to better productivity.
- v. **Absenteeism and Turnover:** Regardless of the type of industry, absenteeism, and turnover eat a huge amount of time. Not only that, high turnover rate, in any firm, makes the workers insecure about their jobs, which ultimately affects their productivity.
- vi. **Tool and Equipment Shortage:** If the appropriate tools and equipment are not readily available then workers lose their interest in performing their jobs.
- vii. **Inappropriate Training:** Employers are bound to experience low productivity form untrained workers. So, special care needs to make the workers efficient.
- viii. **Working in Holidays:** If any worker is forced to work on holidays, in spite of paying extra, an employer cannot expect good productivity, because while working on the holiday, a worker feels emotionally detached with his work.
- ix. **Shorter Interval between Two Consecutive Work Cycles:** If the interval between two consecutive work cycles of a worker is too short, then obviously the productivity of the worker will go down.
- x. **Weather and Season Change:** This is something on which none of us has complete control. Working under extreme temperature, rain, and dust is unfavourable for labour productivity. Obviously, employers can take some measures; but these may not be sufficient.

### 1.4.6: Causes of Poor Productivity among the Plantation Workers in India

India, the world's largest democratic country, has been experiencing low productivity since a few decades, though there was an improvement after independence. In the agricultural sector, the situation is bitter. But the question is why the real scenario is rancorous? Certain factors must be responsible. Let us find.

**Graph: 1.1**

**Labour Productivity in India: YoY**



*Source: www.ceicdata.com*

- i. **Overcrowding in the Agricultural Industry:** The actual problem of Indian agriculture can be considered due to the dependency of many people on agriculture as the other sectors have very limited scope to grow. India has been observing a tremendous increase in population. It is tough to imagine the population has increased about 3 times during the previous 65 years. In 1947 where the population was about 35 crore in 2017 it has become 133.92 crores. So, naturally, tremendous pressure has come on agricultural sectors as it is one of the major players in India. On the other hand, because this overpopulation from the

year 1901 to 1991, the area of cultivated land per hectare declined from 0.43 hectare to 0.22 hectare.

- ii. The Poor Condition of the Workers:** As per the law of demand and supply, we know that where supply is more than demand, the worthiness must go down. In this highly competitive market, the labours are compelled to work with a low wage which is even insufficient for bare sustenance of life, good health is far to achieve. Where India is experiencing high poverty ratio, discussion on good health and quality life of the workers has become irrelevant. Naturally, if they are not able to maintain quality life due to the insufficient penny in their pocket, how can we raise the question of their productivity? So, because of this inadequate individual productivity, the whole sector is suffering.
- iii. Un-healthiness of the Rural Atmosphere:** People of rural area are leading an unhealthy life. They are still ignorant, illiterate, superstitious, orthodox, and bound by old customs such as the caste system, even after 69 years of independence. They are still using open ground for sanitation, instead of installing the sanitary facility at their home, even after getting support from Government. This is the main cause that often suffers from various diseases like diarrhoea, etc. This un-healthiness is one of the reasons for low productivity among agricultural workers.
- iv. Poor Welfare Activities by Employers:** Employers still consider welfare activities as a burden on them and are reluctant to spend huge amount behind the welfare activities. Because of this traditional mindset, workers remain deprived from being benefited from this aspect. Eventually, there is an existence of low morale among the workers which act as a barrier to their productivity.
- v. Uneconomic Holdings:** If we focus on the scenario of average landholdings size in India, we will be able to justify the heading. In 2001, it was less than two

hectares. In one hand, one-fourth of the total rural households own less than 0.4 hectares each, on the other hand, one-fourth are deprived of the land. This is the reason, the application of modern inputs adoption of scientific land improvement, including water conservation and plant protection measures, etc. become difficult. In this situation, we are bound to experience low productivity in the agricultural sector (Sinha, 2014).

- vi. **Usage of Unscientific Traditional Method:** The traditional methods of operations in any industry, are bound to lose their relevancy with the passing of time. The agricultural industry in India is no exception. Sticking to the older operational method bears the risk and involves wastage time, effort, and resources. Moreover, the usage of poor quality seeds by Indian farmers makes the situation worse.
- vii. **Inadequate Irrigation Facilities:** It sounds bad, but it is true that most of the Indian farmers are still dependent on natural rainfall for cultivation, due to the absence of proper irrigation facility in our country. A very limited percentage of the farmers in India enjoys the facility of proper irrigation. This brings down the graph of employee productivity of the workers in the agricultural sector.
- viii. **The Decline in Soil Fertility:** Soil is the most precious resources in agricultural and plantation industry (Nyamekye, Thiel, Schönbrodt-Stitt, Zoungrana, & Amekudzi, 2018). So, degradation of soil leads to a serious problem for cultivation. Due to the unscientific cultivation method and excessive usage of chemicals, the agricultural industry in India has been experiencing continuous degradation in soil fertility and has become another barrier of productivity.
- ix. **Uncertain Seasonal Change:** In the agriculture sector, weather and season play a very important role. Uncertain seasonal changes not only affects plantation but

also it affects psychological pressure on the plantation workers. Low productivity is experienced in many regions in India due to this uncertain seasonal change.

#### **1.4.7: Ways to Improve Productivity**

Only focusing on the problem will not make things good. We will have to find a solution to tackle the problems. Some proven remedies have been discussed below, adoption of which in a larger context, will make the scenario better.

If the strategy is formulated in a national context to reduce population pressure on the agricultural industry, the employer will experience better productivity. Expansion of manufacturing and service industry in this regard will solve the problem to a certain extent because the workers will start shifting in these industries with the expansion.

Employers must consider various welfare measures to experience better productivity from the workers. If the workers get enough scope to enjoy various welfare facilities, their morale gets increased and they feel motivated to work. Canteen facilities, housing facility, recreational facility like clubs, playground, and education to children, etc., help the workers not only to improve their quality of life but also to improve their productivity.

As the productivity of the workers suffers because of their ill health, and uncertain accidents, employers should undertake various health and safety measures to get better results. Facilities like- medical facility, a periodical medical check-up for workers, first aid facility, availability of water which is safe for drinking, latrine facility, etc. should be provided by the employers for the workers. Special care needs to be taken for maintaining healthy working condition. Not only that, employers must give attention to introduce a safe working environment with proper safety measures to get better labour productivity through which it is possible to generate better revenue (Dogramaci & Färe, 1988).

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