

**A STUDY ON THE HEALTH AND SAFETY
AMONG EMPLOYEES IN EAST INDIA MATCH FACTORY, KOVILPATTI**

Submitted in partial fulfillment of the requirements for the award of

MASTER OF BUSINESS ADMINISTRATION

BY

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**DEPARTMENT OF BUSINESS ADMINISTRATION
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SATHAYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

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BONAFIDE CERTIFICATE

This is to certify that the project report entitled “**A STUDY ON THE HEALTH AND SAFETY AMONG EMPLOYEES IN EAST INDIA MATCH FACTORY, KOVILPATTI**” is a record of work done by **V. MAHALAKSHMI(42410239)**, full time student of Master of business administration Palayamkottai during the period of his study in the academic year (2023 -2024) . This research represents work on the part of the candidate under my supervision and guidance.

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DECLARATION

DECLARATION

I hereby declare that the present research project entitled “A study on the Health and Safety among employees in East India Match Factory, Kovilpatti” has been conducted by me under the guidance of Prof. M. JAYASEELY Assistant Professor, P.G. Department of Master of Business Administration

The research project is submitted to Sathyabama University in partial fulfillment of the requirement for the Degree of Master of Business Administration

I further, declare that this is an original study and no part of it has been published or submitted to any University.

DATE:

(v. MAHALAKSHMI)

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ABSTRACT

Employee health and safety is the system of protection of the life and health of employees in the process of work. The system includes social, economical, organizational, technical, sanitation and hygienic aspects. Moreover, occupation health and safety also studies the legal background and offers a set of laws which protect the rights of employees in case of an incident. So, one of the most essential components of the system is sanitation.

The present study on employees' Health and safety in East India Match Factory, Tuticorin adopted the research design of descriptive method by 60 respondents followed by the simple random sampling method.

Due to the high level of sanitation it is possible to protect employees from the harmful impact of the bacteria which cause various diseases. It is very important, because a good employee is a healthy employee. Every boss should provide the staff with the healthy working environment which will protect health and personal hygienic requirements of employees. Then, employees should be protected from the dangerous impact of the electricity, so all the wires should be checked quite frequently to make sure the electrical safety is achieved.

CHAPTER

INTRODUCTION

1.1 INTRODUCTION :

Due to rapid industrialization, industrial workers are exposed to several types of hazards and accidents. Every year lakhs of workers are injured due to mechanical, chemical, electrical and radiation hazards and it leads to partial or total disablement. So in recent years, greater attention is given to health and safety due to pressure from government, trade unions, labour laws and awareness of employers.

The efficiency of workers depends to a great extent on the environment in which the work. Work environment consists of all the factors, which act and react on the body and mind of an employee. The primary aim is to create an environment, which ensures the greatest ease of work and removes all causes of worries.

Occupational health and safety is a discipline with a broad scope involving many specialized fields. In its broadest sense, it should aim at:

- a) The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations.
- b) The prevention among workers of adverse effects on health caused by their working conditions.
- c) The protection of workers in their employment from risks resulting from factors adverse to health.
- d) The placing and maintenance of workers in an occupational environment adapted to physical and mental needs.
- e) The adaptation of work to humans.

Successful occupational health and safety practice requires the collaboration and participation of both employers and workers in health and safety programmes, and involves the consideration of issues relating to occupational medicine, industrial hygiene, toxicology, education, engineering safety, ergonomics, psychology, etc.

Occupational health issues are often given less attention than occupational safety issues because the former are generally more difficult to confront. However, when health is addressed, so is safety, because a healthy workplace is by definition also a safe workplace. The converse, though, may not be true - a so-called safe workplace is not necessarily also a healthy workplace. The important point is that issues of both health and safety must be addressed in every workplace.

Work plays a central role in people's lives, since most workers spend at least eight hours a day in the workplace, whether it is on a plantation, in an office, factory, etc. Therefore, work environments should be safe and healthy. Unfortunately some employers assume little responsibility for the protection of workers' health and safety. In fact, some employers do not even know that they have the moral and often legal responsibility to protect workers.

1.2 WHAT IS SAFETY ?

Safety refers to the absence of accidents. Stated differently, safety refers to the protection of workers from the danger of accidents. Safety, in simple terms, means freedom from the occurrence or risk of injury or loss. Industrial safety or employee safety refers to the protection of workers from the danger of industrial accidents. An accident, then is an unplanned and uncontrolled event in which an action or reaction of an object, a substance, a person, or a radiation results in personal injury.

1.3 TYPES OF ACCIDENTS :

Accidents are of different types. They may be classified as major and minor ones, depending upon the severity of the injury. An accident which ends in a death, or which results in a prolonged disability to the injured is a major one. A scratch or a cut which does not seriously disable him/her is a minor accident, but an accident nevertheless. A mere incision or a deep scratch, say, on the leg or the shoulder, may or may not immediately disable the worker, but he or she may develop disability later. Again, a wound which may disable one worker may not disable another who receives a similar injury.

An accident may be internal or external. If a worker falls, or an object falls on him or her, it is possible he or she may show no external signs of injury, but he or she may have fractured a bone or strained a muscle or nerve- which is an internal injury. A worker may be disabled by an injury for hour, half a day, a day, a week, a month, or a few months. If he or

she recovers from such a disability, his or her disability is temporary. If the injury is such that he or she will never recover fully, his or her disability is permanent.

1.4 NEED FOR SAFETY :

(1) Cost Saving :

Two types of costs are incurred by the management when an accident occurs. There are the direct costs, in the form of compensation payable to the dependents of the victim if the accident is fatal, and medical expenses incurred in treating the patient if the accident is non-fatal. The management, however, is not liable to meet the direct costs if the victim is insured under the ESI scheme. When the victim is uninsured, compensation and medical expenses are the responsibility of the management .

More serious than the direct costs are the indirect or hidden costs which the management cannot avoid. In fact, the indirect costs are three to four times higher than the direct costs. Hidden costs include loss on account of down-time of operators, slowed-up production rate of other workers, materials spoiled and labour for cleaning and damages to equipment.

(2) Increased Productivity :

Safety plants are efficient plants. To a large extent, safety promotes productivity. Employees in safe plants can devote more time to improving the quality and quantity of their output and spend less time worrying about their safety and well-being.

(3) Moral :

Safety is important on human grounds too. Managers must undertake accident prevention measures to minimise the pain and suffering the injured worker and his/her family is often exposed to as a result of the accident. An employee is a worker in the factory and the bread-winner for his/her family. The happiness of his/her family depends upon the health and well-being of the worker.

(4) Legal :

There are legal reasons too for undertaking safety measures. there are laws covering occupational health & safety, and penalties for non-compliance have become quite severe. The responsibility extends to the safety and health of the surrounding community, too. The supreme court held :

An enterprise which is engaged in a hazardous or inherently dangerous industry which poses a potential threat to the health and safety of the persons working in the factory and industry in the surrounding areas, owes an absolute and non-delegable duty to the community to ensure that no harm results to anyone on account of the hazardous or inherently dangerous nature. this implies unlimited liability.

The civil law establishes the extent of damages or compensation. In the criminal law, sentences are prescribed under the pollution control laws. There is no legal ceiling on the extent of liability.

1.5 HEALTH AND SAFETY AT WORK :

According to Cole (2002), employer has a common law duty to provide a safe place of work for his or her employees and is liable at common law for accidents encounter by his or her employees in the course of their employment. The duties (regarding health and safety) which employer owes his or her employees basically include the following:

- The provision of a safe place of employment.
- The provision of safe means of access to work.
- The provision of safe systems of working.
- The provision of adequate equipment, materials and clothing to enable employees to carry out their work safely.
- The provision of competent co-workers.
- A duty of care to ensure that employees are not subjected to any unreasonable risks in the workplace.

1.6 BUILDING AN EFFECTIVE HEALTH & SAFETY MANAGEMENT SYSTEM :

The components of effective health and safety management system are briefly explained below:

(1) Management Leadership & Organizational Commitment :

For this system to be effective, management must show leadership and commitment to the program. To achieve this, management should put the organization's expectation around health and safety into writing by developing a health and safety policy. Employees who forms part of the health and safety committee, should be involved in writing the policy, and to be signed by senior operating officer, to indicate the commitment of management.

(2) Roles & Responsibilities :

Clearly defined and well communicated health and safety roles and responsibilities for all levels of the organizations will create an expectation of a standard level of performance and accountability among employees, contractors, and visitors. All levels must be aware of their individual roles and responsibilities under both state law and company standards.

(3) Management Commitment :

For a health and safety management system to be effective, management at all levels, should demonstrate their support of the health and safety program. This may be demonstrated

through management, participation in health and safety leadership training meetings, facility inspections incident investigations etc.

(4) Employee Participation :

It is important for workers to be involved in the development of the system in order to create ownership as well as help a better fit with the culture of the organization.

(5) Hazard Identification & Assessment Process :

Employers are required to assess a work site for existing and potential hazards before work begins. Hazard assessment data could be used to determine what worker–training needs to be done, and to build the content of employee orientations and job training hazard assessment data could be used as the basis for inspection checklists. In the case of incident investigation, hazard assessment and control data can be used to help determine if a system failure was the cause of an incident.

(6) Determine Controls :

Address identified hazards by assigning methods of control to eliminate or reduce the hazard. The most effective controls can be determined based on legal requirements, manufacturers' specifications, company rules, industry best practices, and worker inputs.

(7) Hazard Control :

Once the hazard assessments are completed, the next step in the development of health and safety management system is the implementation of control measures to eliminate or reduce the risk of harm to workers. In this case, employers should take all reasonable steps to eliminate or control identified hazards in order to make the workplace safer.

(8) Enforcement of Controls :

To enforce control methods, develop a constructive enforcement policy, and communicate the consequences to employees and the steps that will be taken if noncompliance occurs.

(9) Emergency Response Plan :

A serious emergency (Such as explosion, fire, or flood) could seriously affect the operation of a business and put the health, safety, and livelihood of many employees in jeopardy. The best health and safety management system cannot protect your company from all natural or unexpected disasters; however, having a good emergency response plan (ERP) in place can reduce the severity and risk of loss. Knowing what to do and who to contact can save lives and reduce costs if disaster should strike.

1.7 STATUTORY PROVISIONS OF SAFETY IN INDIA :

According to factories Act, 1948, the statutory provisions regarding the safety of the workers are stated in the sections 21 to 41. They are

(1) Fencing of Machinery (Sec 21) :

In every factory, every dangerous part of any machinery, every moving part of a prime mover and every flywheel connected to prime mover the head-race and tail-race of every water wheel and water turbine, and every part of an electric generator, motor or rotary converter, every part of transmission machinery, must be securely fenced by safeguards of substantial construction.

(2) Work on or near Machinery in Motion (Sec 22) :

It is necessary to examine any part of the machinery while it is motion. The examination and lubrication of the machinery, while in motion, should be carried out only by a specially-trained adult worker wearing tight-fitting clothing.

(3) Employment of Young Persons on Dangerous Machines (Sec 23) :

A young person should not be allowed to work at dangerous machines unless, has been sufficiently instructed and received sufficient training.

(4) Striking Gear and Devices for Cutting off Power (Sec 24) :

In every factory, suitable striking gear or other efficient mechanical appliance has to be provided, maintained and used to move driving belts.

(5) Self-acting Machines (Sec 25) :

No travelling part of a self-acting machine in any factory and no material carried thereon shall be allowed to run on its outward or inward traverse within a distance of 18 inches from any fixed structure which is not a part of the machine, if a person is liable to pass over the space over which it runs.

(6) Casing of New Machinery (Sec 26) :

All machinery driven by power, every set-screw, bolt or key or any revolving shaft, spindle, wheel or pinion, spur, worm and other toothed or friction-gearing has to be properly encased or guarded in order to prevent danger to the workmen.

(7) Prohibition of employment of Women and Children near Cotton Openers (Sec 27) :

Women and child workers are prohibited to be employed in any part of a factory for pressing cotton in which a cotton opener is at work.

(8) Hoists, Lifts, Lifting Machines (Sec 28 &29) :

Lifting machines, chains, ropes and lifting tackles must be of good mechanical construction, sound material and adequate strength and free from defects. They are to be properly maintained and thoroughly examined by a competent person at least once in every 6 months.

(9) Revolving Machinery (Sec 30) :

The maximum safe working peripheral speed of every grindstone or abrasive wheel shall be permanently affixed. Safe working peripheral speed of every revolving vessel, cage, basket, flywheel, pulley or disc has also to be ensured.

(10) Pressure Plant (Sec 31) :

In any factory operation is carried on at a pressure above the atmospheric pressure, effective arrangements shall be taken to ensure that the safe working pressure is not exceeded.

(11) Floors, Stairs and Means of Access (Sec 32) :

In every factory all floors, steps, stairs, passages and gangways shall be of sound construction and properly kept and maintained.

(12) Pits, Sumps, Openings in Floors (Sec 33) :

Every fixed vessel, sump, tank, pit or opening in the ground or in a floor, which may be a source of danger shall be either securely covered or securely fenced.

(13) Excessive Weights (Sec 34):

No person is to be employed in any factory to lift, carry or move any load so heavy as is likely to cause him injury.

(14) Protection of Eyes (Sec 35):

The state government may require the provision of effective screens or suitable goggles if the risk of injury to the eyes is caused from particles or fragments thrown off in the manufacturing process or from exposure to excessive light.

(15) Precautions against Dangerous Fumes (Sec 36):

In any factory, no person shall be allowed to enter any chamber, tank, vat, pipe, flue or other confined space in which dangerous fumes are likely to be present to an extent involving risks to persons.

(16) Explosive or Inflammable Dust, Gas (Sec 37) :

All practicable measures have to be taken to prevent explosion by, effective enclosure of plant and machinery, removal or prevention of the accumulation of dust, gas etc and exclusion or effective enclosure of all possible sources of ignition.

(17) Precaution in case of Fire (Sec 38) :

Every factory has to be provided with adequate means of escape in case of fire. Effective and clearly audible means of giving warning in the case of fire have to be provided. A free passage-way giving access to each means of escape in case of fire has to be maintained.

(18) Power to require Specifications of Defective Parts or Tests of Stability (Sec 39):

The factory inspector to serve on the manager of a factory to furnish specifications of defective parts or he may order the manager to carry out tests as he may specify and to inform him of the results.

(19) Safety of Buildings & Machinery (Sec 40) :

Every factory should adopt the measures to ensure the safety of the buildings and machinery. The factory must employ the required safety officers according to the number of workers working in the factory.

(20) Power to Make Rules (Sec 41) :

The state government has the power to make rules to supplement the provisions relating to safety contained in the Act.

1.8 WHAT IS HEALTH :

Health is a state of complete physical, mental and social wellbeing and not merely the absence of diseases. It's a positive and dynamic concept which means something more than the absence of illness.

(1) Physical Health :

The health of employees results in reduced productivity, high unsafe acts, and increased absenteeism. A healthy worker, on the other hand, produces results opposite to these. In other words, healthy employees are more productive, more safe conscious, and are more regular to work. The worker who is healthy is always cheerful, confident looking and is an invaluable asset to the organization.

(2) Mental Health :

In recent years, mental health of employees, particularly that of executives, has engaged the attention of employers. Three reasons may be given for this development. First, mental breakdowns are common in modern days because of pressures and tensions. Second, mental disturbances of various types result in reduced productivity and lower profits for the organization. Third, mental illness takes its toll through alcoholism, high employee turnover, and poor human relationships. A mental health service is generally rendered in the following ways :

- (i) Psychiatric counselling.
- (ii) Co-operation and consultation with outside psychiatrists and specialists.
- (iii) Education of company personnel in the manner and the importance of mental health.
- (iv) Development & maintenance of an effective human relations programme.

1.9 IDENTIFYING HAZARDS IN THE WORKPLACE :

Some occupational diseases have been recognized for many years, and affect workers in different ways depending on the nature of the hazard, the route of exposure, the dose, etc. Some well-known occupational diseases include :

- a) Asbestosis (caused by asbestos, which is common in insulation, automobile brake linings, etc.)
- b) Silicosis (caused by silica, which is common in mining, sandblasting, etc.)
- c) Lead poisoning (caused by lead, which is common in battery plants, paint factories, etc.)
- d) Noise-induced hearing loss (caused by noise, which is common in many workplaces, including airports, and workplaces where noisy machines, such as presses or drills, etc.)

1.10 IMPORTANCE OF MANAGEMENT COMMITMENT ON HEALTH & SAFETY :

In order to develop a successful health and safety programme, it is essential that there be strong management commitment and strong worker participation in the effort to create and maintain a safe and healthy workplace. An effective management addresses all work-related hazards, not only those covered by government standards.

All levels of management must make health and safety a priority. They must communicate this by going out into the worksite to talk with workers about their concerns and to observe work procedures and equipment. In each workplace, the lines of responsibility

from top to bottom need to be clear, and workers should know who is responsible for different health and safety issues.

1.11 STATUTORY PROVISIONS OF HEALTH IN INDIA :

According to factories Act, 1948, the statutory provisions regarding the health of the workers are stated in the sections 11 to 20. They are

(1) Cleanliness (Sec 11) :

Every factory shall be kept clean by daily sweeping or washing the floors and workrooms and by using disinfectants where every necessary. Walls, doors and windows shall be repainted or varnished at least once in every 5 years.

(2) Disposal of Wastes and Effluents (Sec 12) :

The waste materials produced from the manufacturing process must be effectively disposed of wastes.

(3) Ventilation and Temperature (Sec 13) :

There must be provision for adequate ventilation for the circulation of fresh air. The temperature must be kept at a comfortable level. Hot parts of machines must be separated and insulated. The State Government may make rules for the keeping of thermometers in specified places and the adoption of methods which will keep the temperature low.

(4) Removal of Dust and Fumes (Sec 14) :

If the manufacturing process used gives off injurious or offensive dust and steps must be taken so that they are not inhaled or accumulated. The exhaust fumes of internal combustion engines must be conducted outside the factory.

(5) Artificial Humidification (Sec 15) :

The water used for this purpose must be pure. The State Government can frame rules regarding the process of humidification etc. The water used for humidification shall be taken from a public supply or other source of drinking water and must be effectively purified before use.

(6) Overcrowding (Sec 16) :

There must be no overcrowding in a factory. In factories existing before the commencement of the Act there must be at least 9.9 cubic meters of space per worker. For factories built

afterwards, there must be at least 4.2 cubic meters of space. The chief inspector of factories can also prescribe the maximum number of workers who can work in each work room.

(7) Lighting (Sec 17) :

Factories must be well lighted. Effective measures must be adopted to prevent glare or formation of shadows which might cause eye strain.

(8) Drinking water (Sec 18) :

Arrangements must be made to provide a sufficient supply of wholesome drinking water. All supply points of such water must be marked “drinking water”.

No such points shall be within 20 ft. (or 7.5 meters) of any latrine, washing place etc. Factories employing more than 250 workers must cool the water during the hot weather.

(9) Toilet Facilities (Sec 19) :

Every factory must provide sufficient number of latrines and urinals. There must be separate provisions for male and female workers.

Latrines and urinals must be kept in a clean and sanitary condition. In factories employing more than 250 workers, they shall be of prescribed sanitary types.

(10) Spittoons (Sec 20) :

A sufficient number of spittoons must be provided at convenient places, in a clean and hygienic condition. The State Government may take rules regarding their number, location and maintenance.

1.12 HEALTH AND SAFETY PROGRAMME :

Effective workplace health and safety programmes can help to save the lives of workers by reducing hazards and their consequences. Health and safety programmes also have positive effects on both worker morale and productivity, which are important benefits. At the same time, effective programmes can save employers a great deal of money. For all of the reasons given below, it is crucial that employers, workers and unions are committed to health and safety.

- a) Workplace hazards are controlled - at the source whenever possible.
- b) Records of any exposure are maintained for many years.
- c) Both workers and employers are informed about health and safety risks in the workplace.

- d) There is an active and effective health and safety committee that includes both workers and management.
- e) Worker health and safety efforts are ongoing.

NEED OF THE STUDY

The researcher carried out the study with an objective of finding out the effectiveness of industrial health and safety measures carried out in H & R Johnson India limited. To provide better life and health to the workers in the organization. This topic is to enumerate the difficulties faced by the workers on the work spot and develop programs that will improve health and safety in the working environment. To evaluate all equipment, machinery work areas and work processes to identify and analyses all potential sources that is harm to workers.

SCOPE OF THE STUDY

- To identify and analyze the health and safety hazards at the work site.
- To administrate health and safety measures those are properly communicated to the employees.
- To provide prevention among workers of adverse effects on health caused by their working conditions.

OBJECTIVES OF THE STUDY

PRIMARY OBJECTIVE

To study the important factors which are needed to motivate the employees

SECONDARY OBJECTIVE

- To study about the protection measures of the employees in the work spot
- To know about the safety education to improve the quality of work life.
- To know about the (OHSAS) Occupational Health and Safety Assessment Specification training programme to improve their work environment through minimizing the risk by Hazard control.

FILED OF STUDY

The study is going to be conducted in EAST INDIA MATCH FACTORY, Kovilpatti, Tamilnadu.

SAMPLING METHOD

Researcher has selected respondents randomly that is why simple random sampling method is used.

SAMPLE SIZE

Sample of present study consists 60 respondents of various departments.

RESEARCH DESIGN

This study is exploratory and descriptive in nature.

TOOLS OF DATA COLLECTION

Primary tool: Interview schedule

Secondary tool: library, books, journals, internet, news paper, magazines

STATISTICAL TOOLS USED

- **PERCENTAGE METHOD**

In this project percentage method test and used. The following are the formula

Percentage of Respondent = $\frac{\text{No. of Respondent}}{\text{Total no. of Respondent}} \times 100$

Total no. of Respondent

- **CHI - SQUARE Analysis**

In this project chi- square test was used. This test is used to test significance of association between two attributes. Chi- square, symbolically written as χ^2 (pronounce as Ki-square), is a statistical measure used in the context of sampling analysis for comparing a variance to a theoretical variance. Formula for finding chi square is

$$\chi^2 = \sum (O-E)^2 / E$$

In this study chi-square is to find the association between respondents gender and respondents accident proneness, respondents accident proneness and enough training for the employees & employees work load and the approach of the organization .

- **CORRELATION ANALYSIS**

Correlation Analysis is a statistical technique used to measure the magnitude of linear relationship between two variables. Correlation Analysis is not used in isolation to describe the relationship between variables. To analyze the relation between two variables, two prominent correlation coefficient are used –the Pearson product correlation coefficient and Spearman’s rank correlation coefficient .

In this study the Pearson product correlation coefficient is used to find the correlation coefficient between respondents awareness level at the time of joining with employees participation in suggestion scheme & respondents awareness level at present and the counseling .

This is also known as simple correlation coefficient and is denoted by “r”.The “r” value ranges from -1, through 0, to +1.It is calculated using the formula

$$r = \sum xy / \sqrt{\sum x^2 \sum y^2}$$

LIMITATIONS OF THE STUDY

The project was done in limited period of time

Due to lack of adequate time, the entire operation of the company could not be taken for the study.

- The study was limited to the important fields of activities of the company.
- The study was based on the basic information available for 5 years.

IV. CHAPTERIZATION

V. The Present research study report is presented in five chapters

VI. CHAPTERIZATION

VII. CHAPTER I	-	INTRODUCTION & METHODOLOGY
VIII. CHAPTER II	-	REVIEW OF LITERATURE
IX. CHAPTER III	-	DATA ANALYSIS & INTERPRETATION
X. CHAPTER IV	-	MAIN FINDINGS & SUGGESTIONS
XI. CHAPTER V	-	CONCLUSION

XII. BIBLIOGRAPHY

XIII. APPENDIX

CHAPTER II

REVIEW OF LITERATURE

2.1 INTRODUCTION

EMPLOYEE SAFETY

Since the beginning of the present century, employee safety and health problems at work have been engaged attention of the psychologists, sociologists and the industrial engineers. Psychologists are concerned with the theoretical considerations of accident causation and the research into accident control, through proper selection, training and the education of the employee; and the social and psychological factors that influence the individual's behaviour in general. Engineers and safety officers usually render necessary practical advice on certain aspects of safety in industry. They look upon prevention of accidents basically as an engineering problem to be tackled through proper designing of mechanical safety devices. In fact, accident prevention and safety are inter related and, therefore require a multi dimensional approach. Its importance has increased because of large-scale industrialization in which human beings are subjected to mechanical, chemical, electrical and radiation hazards. Besides, modern industry is characterized by complicated mechanisms, intricate job requirements, and fast moving production lines. One of the important consequences of all this is increased dangers of human life, through accidents.

INDUSTRIAL ACCIDENT AND INDUSTRIAL INJURY

The life of the industrial workers is full of risk and hazards. The injuries may be caused as a result of any unsafe activities, or act of their part or chance occurrence or as a result of some unsafe work condition or unsafe act of employees themselves, or defective plant or shop layout, inadequate ventilation , unsafe and insufficient space for movement inside the plant or shop, etc.

An industrial accident may be defined as,” an occurrence which interferes with the orderly progress of work in an industrial establishment”. According to Factories Act of 1948, it is “an occurrence in an industrial establishment causing bodily injury to a person for which him unfit to resume his duties in the next 48 hours.” In other words it is an unexpected event which is neither expected nor designed to occur . It is always sudden for a gradual process does not constitute an accident. Moreover, the event or occurrence should be something to which a definite time, data and place can be assigned.

An industrial injury has been defined as “ a personal injury to an employee which has been caused by an accident or an occupational disease, and which arise out of ,or in the course of, employment , and which would entitle such employee to compensation under the Workmen’s Compensation Act , 1923”.

NATURE OF ACCIDENT

The nature of an accident may vary from industry to industry. The employee may fall from a height while engaged on a particular assignment; or he may be caught in a machine while working on it; or he may fall against a machine; or parts of a machine having a horizontal protruding motion may cause strike against him; or an explosives used carelessly may explode, and injure an employee. Such accidents may result in disablement or death.

Disablement— whether partial or total – may take a form of a loss of ability to work or to move. Such incapacity may be partial or total. Both types of disablement may be temporary or permanent.

- A temporary partial disablement reduces the earning capacity of an individual in the employment in which he was engaged when he sustained an injury at the time of accident.
- Permanent partial disablement reduces his ability to earn an income from any employment which he was capable of undertaking at the time of the accident occurred.

Total disablement , on the other hand, is a disablement, whether temporary or permanent, which incapacitates a workman and makes it impossible for him to engage in any work.

CAUSES OF ACCIDENT

Nature and causes of accident may vary from organization to organization. Basically industrial accidents will arise either due to technical faults or due to human follies or errors. Therefore the causes of accidents may be attributed to work related causes and worker related causes.

1. Work related Causes

Unsafe working conditions are the prime causes for any industrial accident and these include all engineering deficiencies. These mainly include improper lighting, inadequate safety devices, polluted work place, poor machine guarding and unsafe and careless housekeeping. These factors will create psychological and physical problems for the workers and will invite industrial accident.

2. Worker related Causes

These are human factors responsible for accidents due to their unsafe acts. Lack of adequate skill or knowledge in handling the machine, disturbed mental condition, neglecting safety devices and instruction, using unsafe machine, working at unsafe speed are some of the causes due to which workers become victims as industrial accidents.

PROVISIONS TO PREVENT ACCIDENTS IN WORK PLACE

It is important for an organization to ensure safe working conditions in order to prevent accidents at the workplace. In India there are a number of statutory provisions that provide safety working conditions for the workers. The Factories Act secures health, safety, welfare, proper working hours, leave and other benefits for the workers employed in the factories. In other words the act is enacted primarily with the objective to regulate the conditions of work in manufacturing establishments.

INDUSTRIAL HEALTH:

The term “Health” is a positive and dynamic concept and implies more than an absence of illness. The W.H.O has defined health as:” a state of complete physical, mental and social well being and not merely the absence of disease or infirmity.” Industrial health refers to a system of

public health and preventive medicine which is applicable to industrial concerns. According to the joint I.L.O / W.H.O. committee on organizational health, industrial health is

- The prevention and maintenance of physical, mental and social well beings of workers in all occupations.
- Prevention among workers of ill health caused by the working conditions.
- Protection of workers in their employment from risk resulting from factors adverse to health.
- Placing and maintenance of the worker in an occupational environment adapted to his physical and psychological equipment.

The basic objective of industrial health is the prevention of disease and injury rather than the cure of disease. It involves a programme of health conversation and prevention of occupational diseases. Veil observes that the aim of industrial hygiene is ' the promotion and maintenance of the highest degree of physical, mental and social well being of the workers; the prevention of factor which make for ill health in their working condition; their protection in their occupation from risks arising from factors which are adverse to the maintenance of health; the placing and maintenance of the worker in an occupational environment which is adapted to his psychological and physiological equipment; and to summaries, the adaptation of work to man and each man on his job.

PREREQUISITES FOR AN EFFECTIVE SAFETY AND HEALTH POLICY

For a safety and health program to be successful an organization should:

- Have the support and guidance pf top management in the implementation of safety policy.
- Educate and train employees about the safety policy and the importance for an organization. Even the workers at the lowest operating level should have a clear understanding 0of the methods and procedures to be followed to ensure safety at the workplace.
- Make safety and health an important aspect of organizational culture so that it pervades all the functions and the levels of the organization.
- Appoint a safety director to ensure that the safety programs are progressing in accordance to the set directions.

- Have a safety engineering process that includes designing of new products, processes and machines, structuring the layout of plants and equipment, providing safety devices for employees working on hazardous jobs, keeping the work place clean, well lit and properly ventilated, maintaining a well designed system for detection, prevention and control of fire, dust fumes, inflammable gases and explosives.
- Conduct an organization wide audit to ensure the implementation of the safety policy and strict adherence to all the safety rules.
- Keep a track of the accidents that take place so that they can be avoided in the future.
- It is not necessary that all the organization have the above mentioned elements for the implementation of safety policy. However, if they are taken into consideration, accidents can be avoided.

ACCIDENT PREVENTION IN THE WORK PLACE

Let us discuss some of the important steps that an organization has to take in implementation safety and health programs to prevent accidents at the workplace and provide a safe working environment for its employees. When an organization is successful in implementing the following steps, the accident rate will be automatically decrease.

- Educating and training the employees
- Frequent inspections by the top management
- Tabulating and analyzing the causes of accidents
- Conducting regular employee wellness program
- Designing mental health program
- Making the right start and get going
- Apart from the above mentioned steps it is also the duty of the employer to understand the following issues:
- Importance of reasonable hours of work

Unduly long hours of work can damage an employee's health and can result in fatigue and poor concentration. Hence it is important to define the number of hours of work

- Rest pauses or breaks in working hours

Introduction or rest pauses for short periods can solve the problem of fatigue in a very large measure.

- Holidays and leave with pay

Adequate provision of holidays and leave with pay to workers can help in reducing absenteeism, stress and labor turnover. At the same time, the provision of excessive holidays is likely to hinder production and increase the financial burden of the organization.

Enforcement and Disciplinary Action

If an employee does not adhere to the safety policy being implemented by the organization, the organization should as the first step, educate him on the impending hazards of a careless approach to work. Employees can also be encouraged to implement safety policy by rewarding the units/groups with good safety records. Employees who have been alert in preventing accidents and active in spreading health and safety awareness can also be rewarded.

If an employee still fail to heed to safety advice, the next step is to enforce disciplinary action. To enforce safety measures in some organization, employees are either reprimanded or fined and sometimes even discharged if they are found guilty of any serious violation of safety provisions.

2.2 REVIEW OF LITERATURE FROM ARTICLES ON EMPLOYEES SAFETY AND HEALTH

2.2.1 Quality and Safety in Health Care

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Nine surveys were found that measured the patient safety climate of an organization. All used Likert scales, mostly to measure attitudes of individuals. Nearly all covered five common dimensions of patient safety climate: leadership, policies and procedures, staffing, communication, and reporting. The strength of psychometric testing varied. While all had been used to compare

units within or between hospitals, only one had explored the association between organizational climate and patient outcomes.

2.2.2 Relative Effectiveness of Worker Safety and Health Training Methods

Michael J. Burke, PhD, Sue Ann Sarpy, PhD, Kristin Smith-Crowe, PhD, Suzanne Chan-Serafin, BA, Rommel O. Salvador, MBA and Gazi Islam, BA

As training methods became more engaging (i.e., requiring trainees' active participation), workers demonstrated greater knowledge acquisition, and reductions were seen in accidents, illnesses, and injuries. All methods of training produced meaningful behavioral performance improvements.

2.2.3 The Ecology of Work and Health:

Research and Policy Directions for the Promotion of Employee Health

Daniel Stokols, PhD, Kenneth R. Pelletier, PhD, MD, Jonathan E. Fielding, MD, MPH, MBA

This article identifies new research and policy directions for the field of worksite health in the context of the changing workplace.

These directions are viewed from an ecological perspective on worksite health and are organized around three major themes: (1) the joint influence of physical and social environmental factors on occupational health, (2) the effects of non occupational settings (e.g., households, the health care system) on employee well-being and the implications of recent changes in these settings for worksite health programs, and (3) methodological issues in the design and evaluation of worksite health programs. Developments in these areas suggest that the field of worksite health may be undergoing a fundamental paradigm shift away from individually oriented wellness programs (provided at the worksite and aimed primarily at changing employees' health behavior) and toward broader formulations emphasizing the joint impact of the physical and social environment at work, job-person fit, and work policies on employee well-being.

CHAPTER III

DATA ANALYSIS AND INTERPRETATION DISTRIBUTION OF REPPONDENTS BY THEIR DESIGNATION

Table No. : 3.1

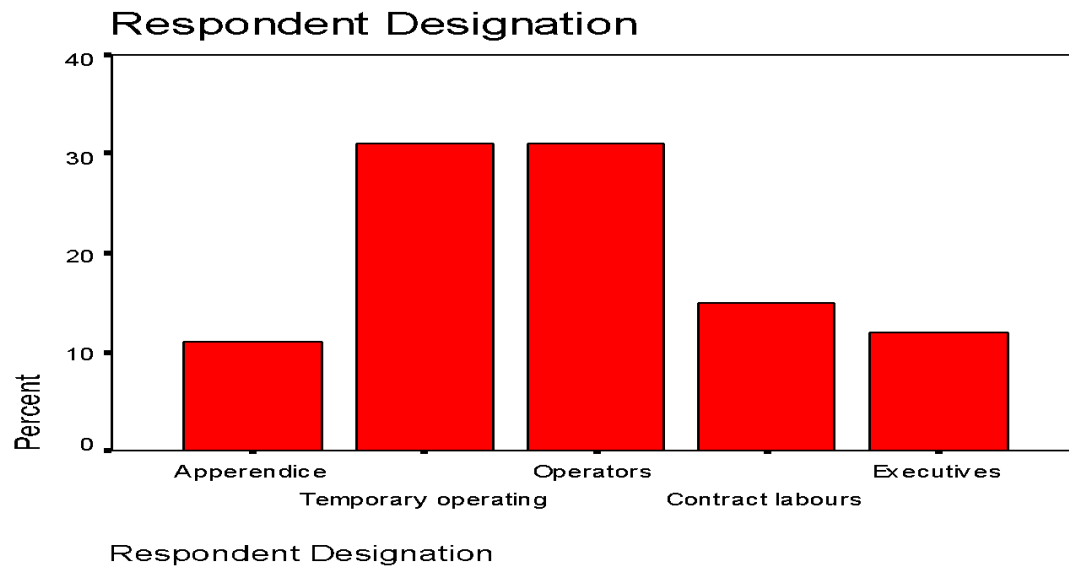
S.NO.	DESIGNATION	No. Of Respondent	PERCENTAGE

1	Apprentice	11	11
2	Temporary operating trainees		
	Operators	31	31
3	Contract Labour	31	31
4	Executives	15	15
5		12	12
	Total	100	100

INFERENCE

From the above table it is inferred that 11% of the respondents are Apprentice. 31% of the respondents are Temporary operating trainees. 31% of the respondents are Operators. 15% of the respondents are Contract labours and 12% of the respondents are Executives.

CHART No. 1



DISTRIBUTION OF REPONDENTS BY THEIR GENDER

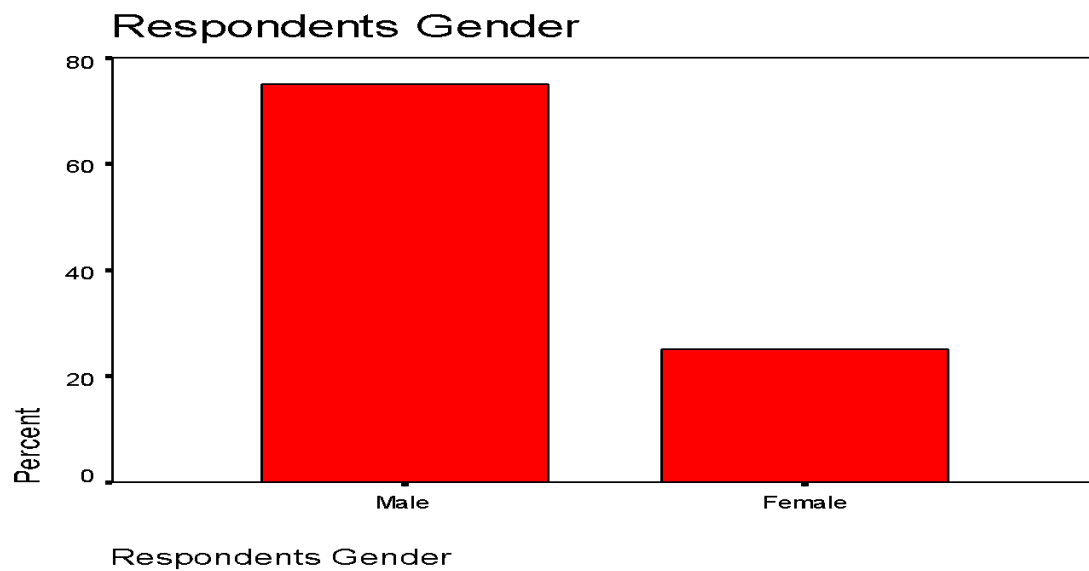
Table No. : 3.2

S.NO.	Gender	No. of Respondents	Percentage (%)
1	Male	75	75
2	Female	25	25
	Total	100	100

INFERENCE

From the table it is inferred that 75% of the respondents are Male and 25% of the respondents are Female.

CHART No. 2



DISTRIBUTION OF REpondENTS BY THEIR AGE

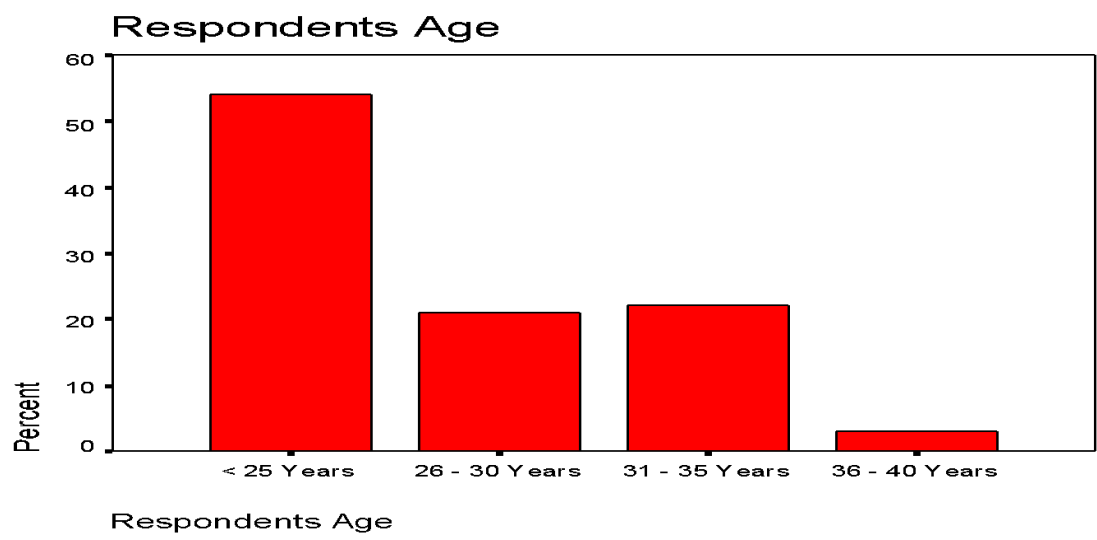
Table No. : 3.3

S.NO.	Age	No. Of Respondents	Percentage (%)
1.	<25	54	54
2	26-30	21	21
3	31-35	22	22
4.	36-40	3	3
5.	>40 Years	-	-
	Total	100	100

INFERENCE

From the above table it was inferred that 54% of the respondents are above 25 years. .22% of the respondents belong to the age group of 31-35 and the remaining 24% of the respondents belong to the age group of 26-30 and 36-40.

CHART No. 3



DISTRIBUTION OF REpondENTS BY THEIR EDUCATIONAL QUALIFICATION

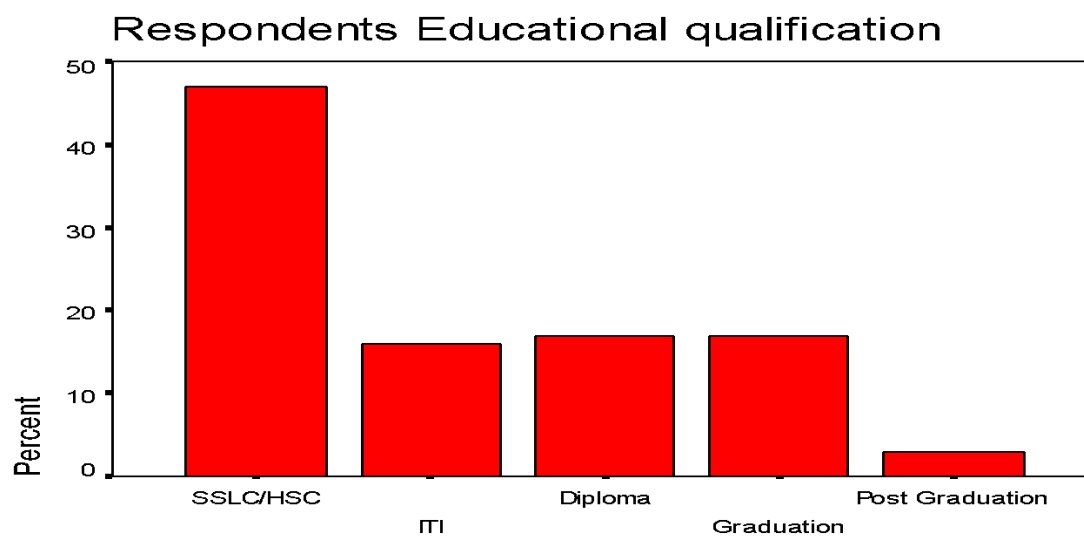
Table No. : 3.4

S.NO.	EDUCATIONAL QUALIFICATION	NO. OF RESPONDENTS	PERCENTAGE
1.	SSLC/HSC	47	47
2.	ITI	16	16
3.	Diploma	17	17
4.	Graduation	17	17
5.	Post-Graduation	3	3
	Total	100	100

INFERENCE

From the above table it is inferred that 47% of the respondents have an educational qualification of SSLC/HSC. 16% of the respondents have an educational qualification of ITI. 49% of the respondents have an educational qualification of Diploma and Graduation and the remaining 3% are post graduation.

CHART No. 4



Respondents Educational qualification

DISTRIBUTION OF RESPONDENTS BY THEIR ACCIDENT PRONENESS

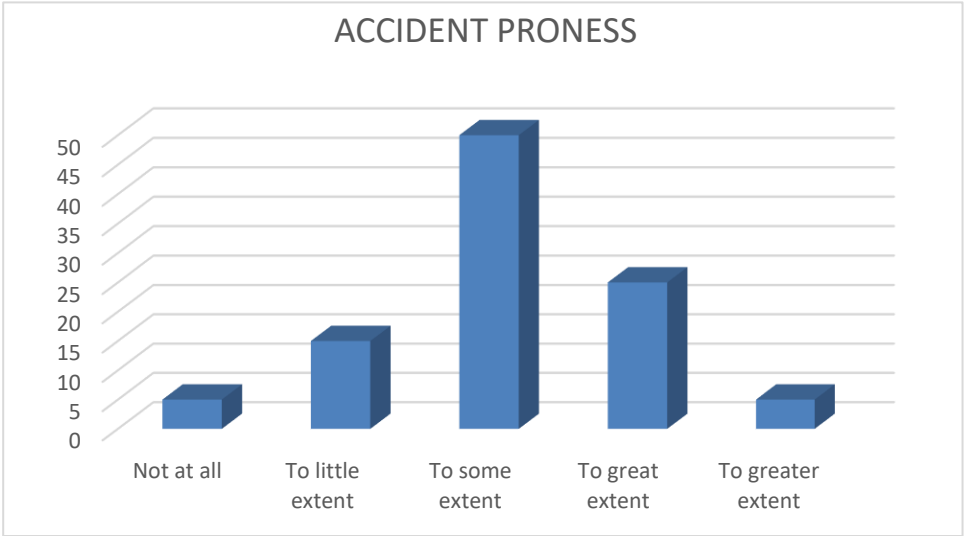
Table No. : 3.5

S.NO.	Accident proneness	No. of Respondents	Percentage
1	Not at all	5	5
2	To little extent	15	15
3	To some extent	50	50
4	To great extent	25	25
5	To greater extent	5	5
	Total	100	100

INFERENCE

From the above table it is inferred that 22% of the respondents have accident proneness and 78% of the respondents have no accident proneness

CHART No. 5



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DISTRIBUTION OF RESPONDENTS BY THEIR MAJOR REASONS FOR THE WORK PLACE ACCIDENT

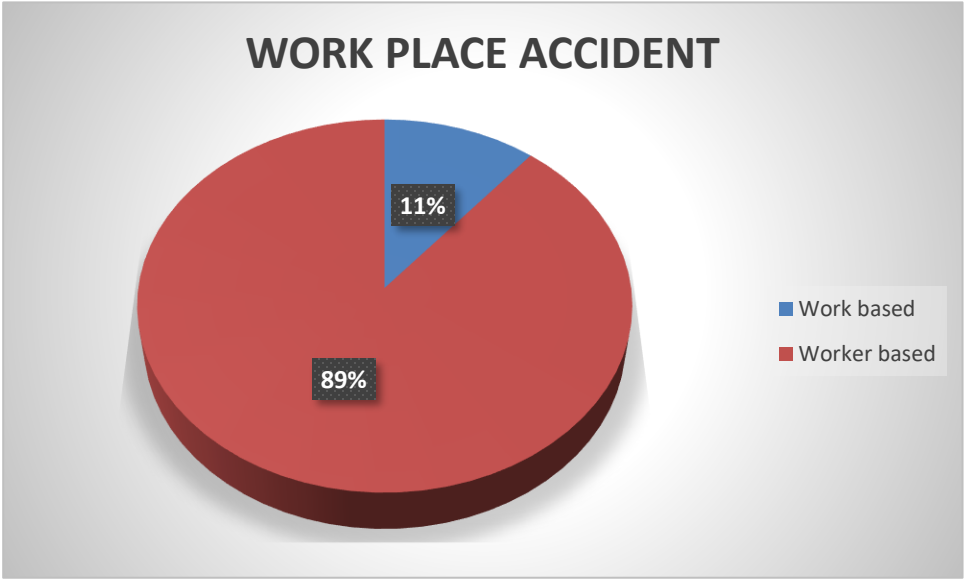
Table No. : 3.6

S.NO.	Work Place Accident	No. of Respondents	Percentage
1	Work based	11	11
2	Worker based	89	89
	Total	100	100

INFERENCE

From the above table it is inferred that 11% of the work place accidents owing to work and the remaining 89% of work place accidents owing to workers.

CHART No. 6



DISTRIBUTION OF RESPONDENTS BY THEIR MAJOR REASONS FOR THE WORKER BASED ACCIDENT

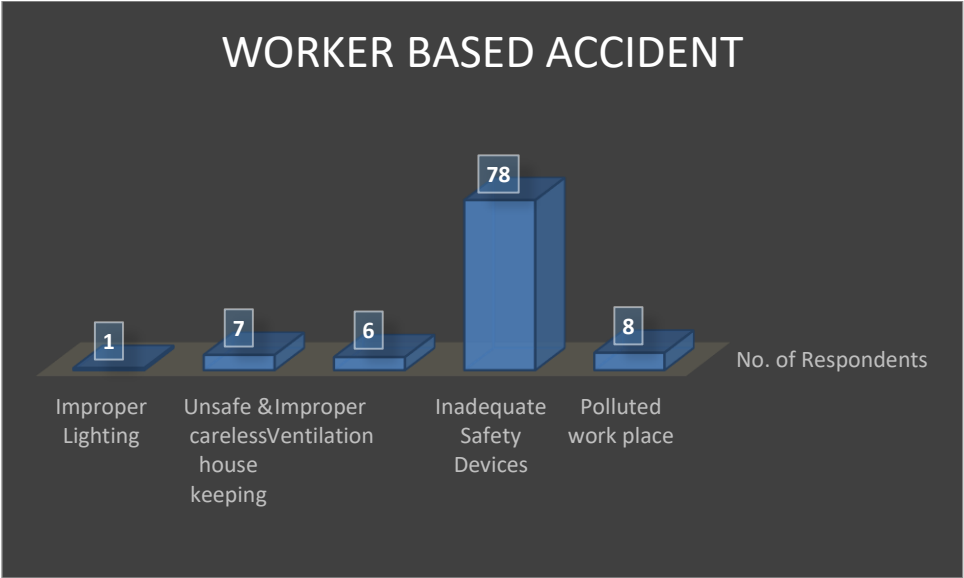
Table No. : 3.7

S.NO.	Worker Based Accident	No. of Respondents	Percentage
1	Improper Lighting	1	1
2	Unsafe & careless house keeping	7	7
3	Improper Ventilation	6	6
4	Inadequate Safety Devices	78	78
5	Polluted work place	8	8
	Total	100	100

INFERENCE

From the above table it is inferred that 78% of the worker based accidents due to Inadequate Safety Devices. 8% of the worker based accidents due to polluted work place and the remaining 14% of the worker based accidents due to improper lighting, unsafe & careless house keeping, improper ventilation.

CHART No. 7



DISTRIBUTION OF RESPONDENTS BASED ON THEIR SIGNIFICANT AWARENESS LEVEL AT THE TIME OF JOINING

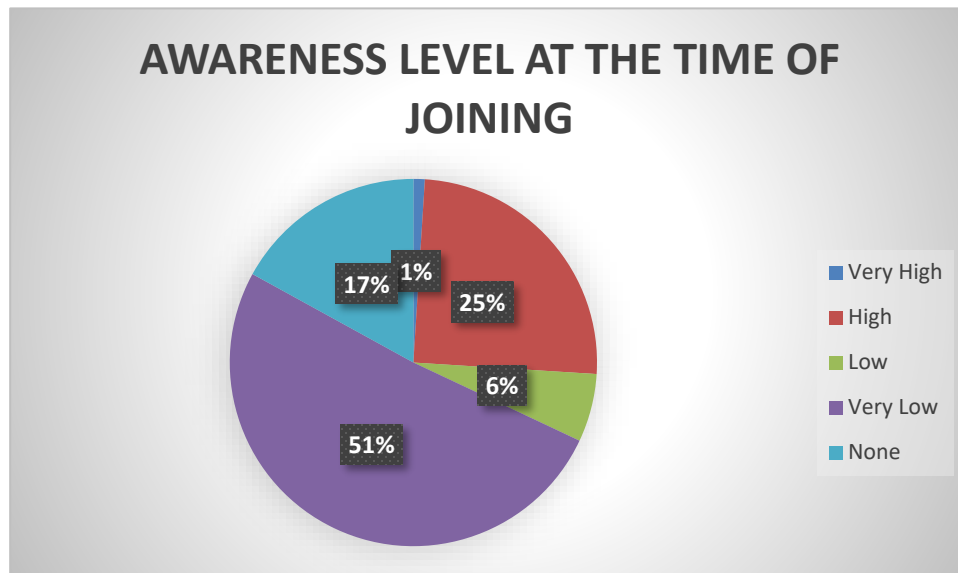
Table No. : 3.8

S.No.	Awareness level at the time of joining	No. of Respondents	Percentage
1	Very High	1	1
2	High	25	25
3	Low	6	6
4	Very Low	51	51
5	None	17	17
	Total	100	100

INFERENCE

From the above table it is inferred that awareness of 1% of respondents have very high at the time of joining 25% of respondents have high awareness at the time of joining and the remaining 74% of respondents have low, very low and no awareness at the time of joining .

CHART No. 8



DISTRIBUTION OF RESPONDENTS BASED ON THEIR SIGNIFICANT AWARENESS OF EMPLOYEES SAFETY & HEALTH MEASURES AT PRESENT

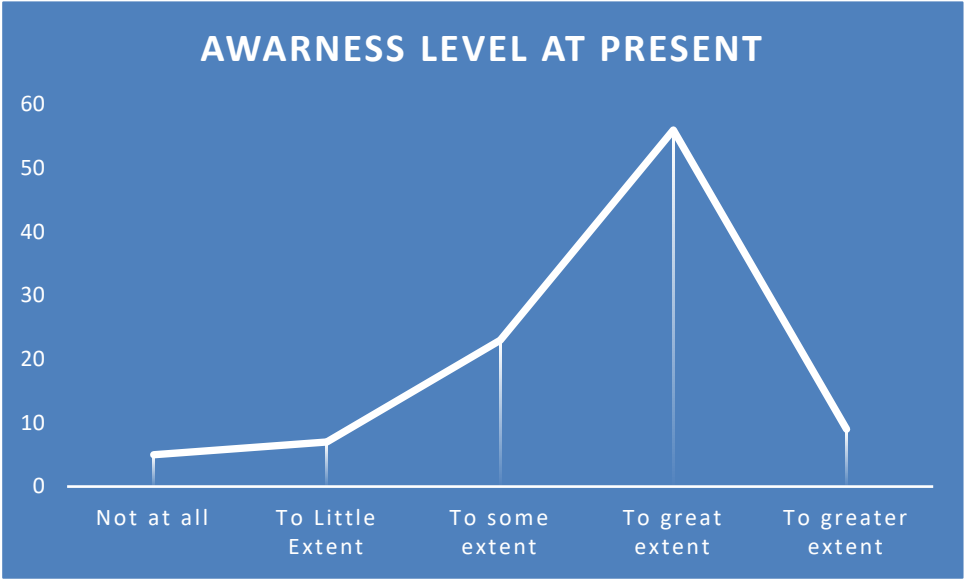
Table No. : 3.9

S.No.	Awareness level at present	No. of Respondents	Percentage
1	Not at all	5	5
2	To Little Extent	7	7
3	To some extent	23	23
4	To great extent	56	56
5	To greater extent	9	9
	Total	100	100

INFERENCE

From the above table it is inferred that 96% of the respondents have awareness at present and 4 % of the respondents have no awareness at present.

CHART No. 9



DISTRIBUTION OF RESPONDENTS BASED ON THEIR SIGNIFICANT AWARENESS THROUGH

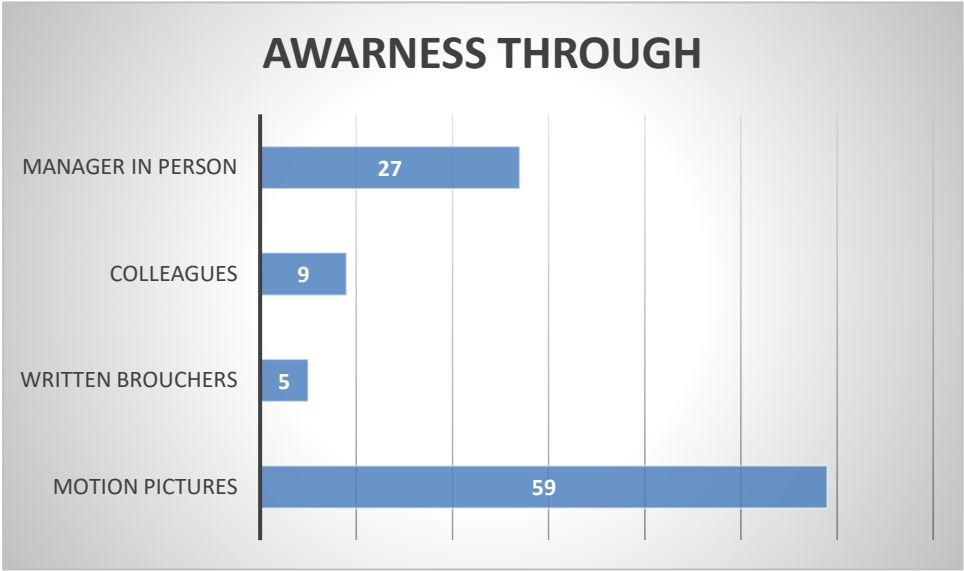
Table No. : 3.10

S.No.	Awareness Through	No. of Respondents	Percentage
1	Motion Pictures	59	59
2	Written brouchers	5	5
3	Colleagues	9	9
4	Manager in Person	27	27
	Total	100	100

INFERENCE

From the above table it is inferred that 59% of the respondents acquired the knowledge through motion pictures, 27% of the respondents through manager in person and the remaining 14% of the respondents through written brouchers, colleagues.

CHART No. 10



DISTRIBUTION OF RESPONDENTS BASED ON THE WORK LOAD IN ORGANISATION

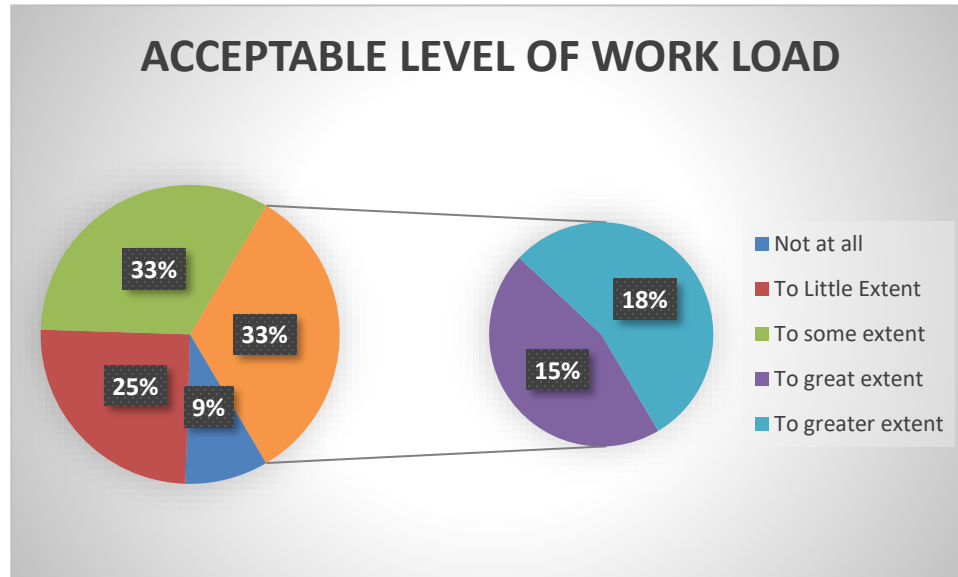
Table No. : 3.11

S.No.	Acceptable Level Of Work Load	No. of Respondents	Percentage
1	Not at all	9	9
2	To Little Extent	25	25
3	To some extent	33	33
4	To great extent	15	15
5	To greater extent	18	18
	Total	100	100

INFERENCE

From the above table it is inferred that 58% of the respondents have satisfactory level of work load in the organization and the remaining 42% have unsatisfactory level of work load.

CHART No. 11



DISTRIBUTION OF RESPONDENTS BASED ON ENOUGH TRAINING

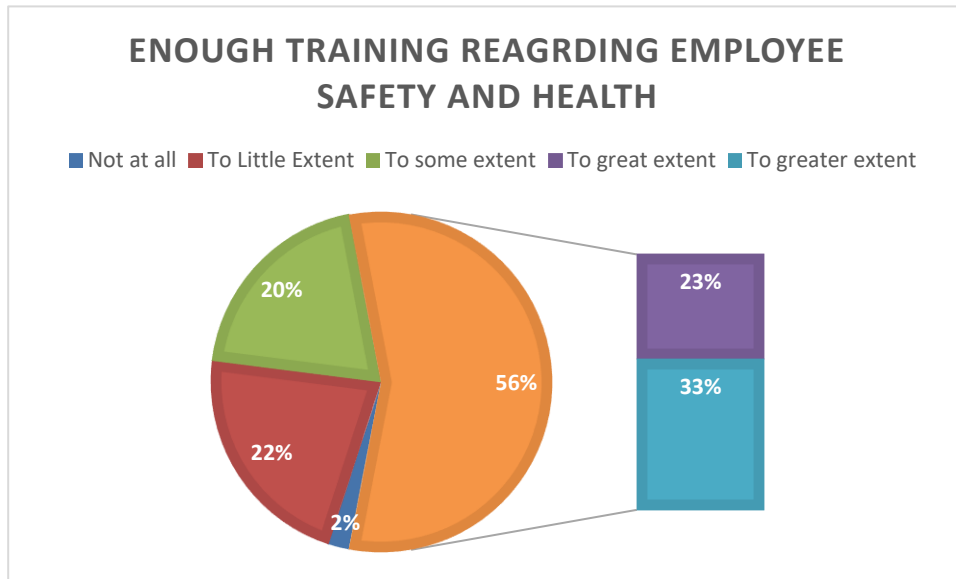
Table NO. : 3.12

S.No.	Enough Training Regarding Employees Safety an Health	No. of Respondents	Percentage
1	Not at all	2	2
2	To Little Extent	22	22
3	To some extent	20	20
4	To great extent	23	23
5	To greater extent	33	33
	Total	100	100

INFERENCE

From the above table it is evident that 36% Of the respondents said that they get enough training regarding employee's safety and health and 64% Of the respondents opposed this.

CHART NO. 12



DISTRIBUTION OF RESPONDENTS BASED ON THE EMPLOYEES INTEREST TO PARTICIPATE IN SUGGESTION SCHEME

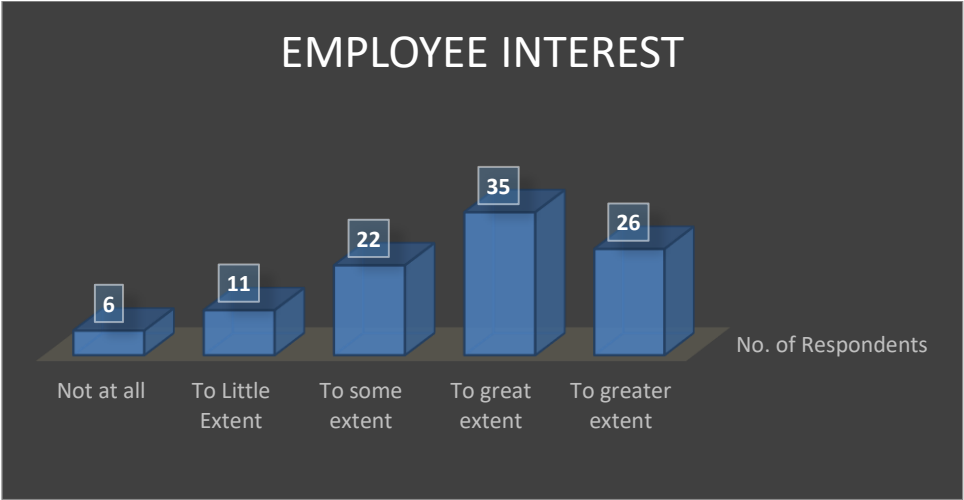
Table No. :3.13

S.No.	Employee interest	No. of Respondents	Percentage
1	Not at all	6	6
2	To Little Extent	11	11
3	To some extent	22	22
4	To great extent	35	35
5	To greater extent	26	26
	Total	100	100

INFERENCE

From the above table it is evident that 92% Of the respondents have interest to participate in suggestion scheme regarding employee's safety and health and 8% of the respondents have no interest.

CHART No. 13



DISTRIBUTION OF RESPONDENTS BASED ON THE EMPLOYEES LEVEL OF PARTICIPATION IN THE IMPLEMENTATION

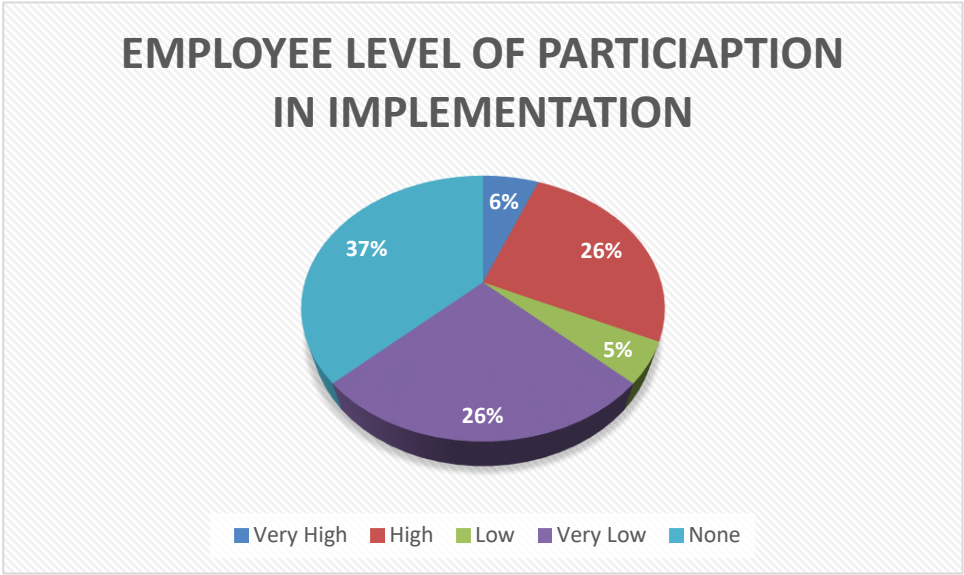
Table No. :3.14

S.No.	Employees level of participation in implementation	No. of Respondents	Percentage
1	Very High	6	6
2	High	26	26
3	Low	5	5
4	Very Low	26	26
5	None	37	37
	Total	100	100

INFERENCE

From the above table it is evident that participation level of 6% Of the respondents have very high ,26% Of the respondents have high and the remaining 68% Of the respondents have low, very low and no participation.

CHART No. 14



DISTRIBUTION OF RESPONDENTS BASED ON THE FREQUENCY OF SAFETY TRAINING

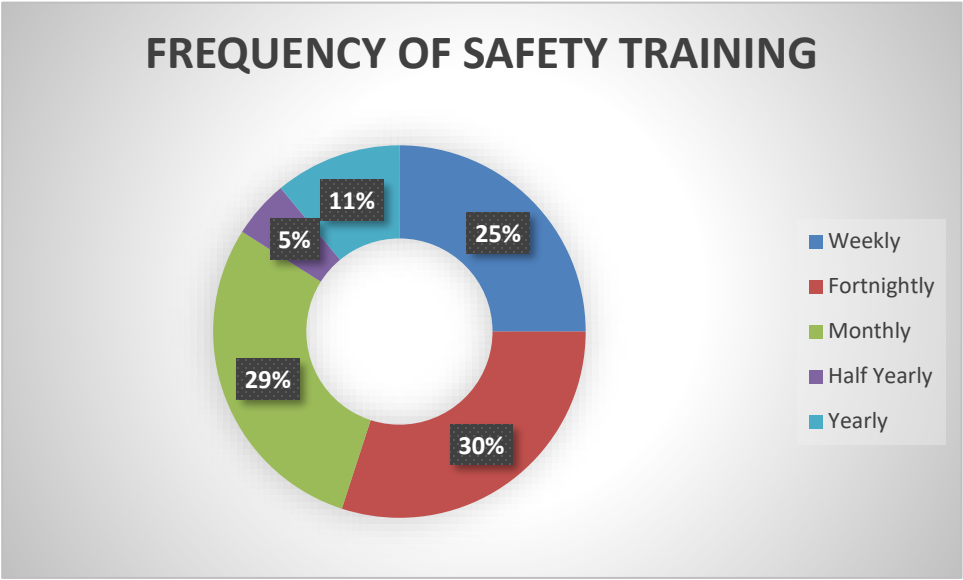
Table No. :3.15

S.No	Frequency of Safety Training	No. of Respondents	Percentage
1	Weekly	25	25
2	Fortnightly	30	30
3	Monthly	29	29
4	Half Yearly	5	5
5	Yearly	11	11
	Total	100	100

INFERENCE

From the above table it is inferred that 16% of the respondents said that every week safety training conducted in the organization. 21% of the respondents said that every month safety training conducted in the organization and 63 % **of the respondents said that every year safety training conducted in the organization.**

CHART No. 15



DISTRIBUTION OF RESPONDENTS BASED ON THE ENOUGH FIRST AID FACILITIES

Table No. :3.16

S.No	First Aid Facilities	No. of Respondents	Percentage
1	Least	9	9
2	Little	12	12
3	Some	18	18
4	Optimum	35	35
5	Maximum	26	26
	Total	100	100

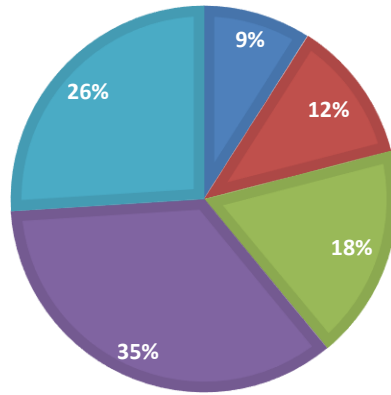
INFERENCE

From the above table it is inferred that 34% of the respondents states that they have enough first aid facilities and 66% of the respondents states that they have insufficient first aid facilities .

CHART No. 16

FIRST AID FACILITIES

■ Least ■ Little ■ Some ■ Optimum ■ Maximum



DISTRIBUTION OF RESPONDENTS BASED ON THE REASONS FOR THE STRESS RELIEF MEASURES

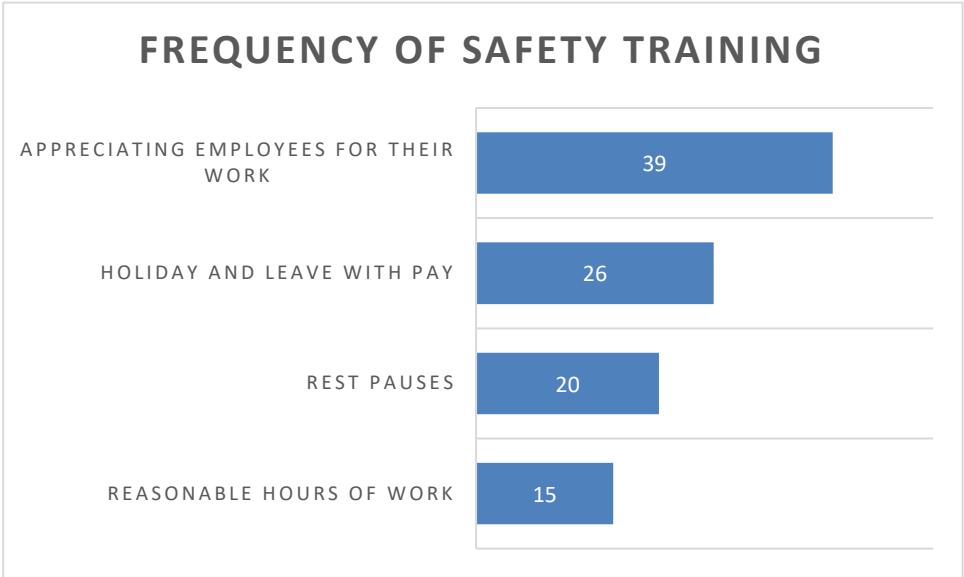
Table No. :3.17

S.No	Frequency of Safety Training	No. of Respondents	Percentage
1	Reasonable hours of work	15	15
2	Rest Pauses	20	20
3	Holiday and leave with pay	26	26
4	Appreciating employees for their work	39	39
	Total	100	100

INFERENCE

From the above table it is found that for the stress relief measures 15% of the respondents have reasonable hours of work, 20% of the respondents have rest pauses, 26% of the respondents have holidays and leave with pay and 39% of the respondents have appreciating employees for their work.

CHART No. 17



DISTRIBUTION OF RESPONDENTS BASED ON THE RECREATIONAL FACILITIES

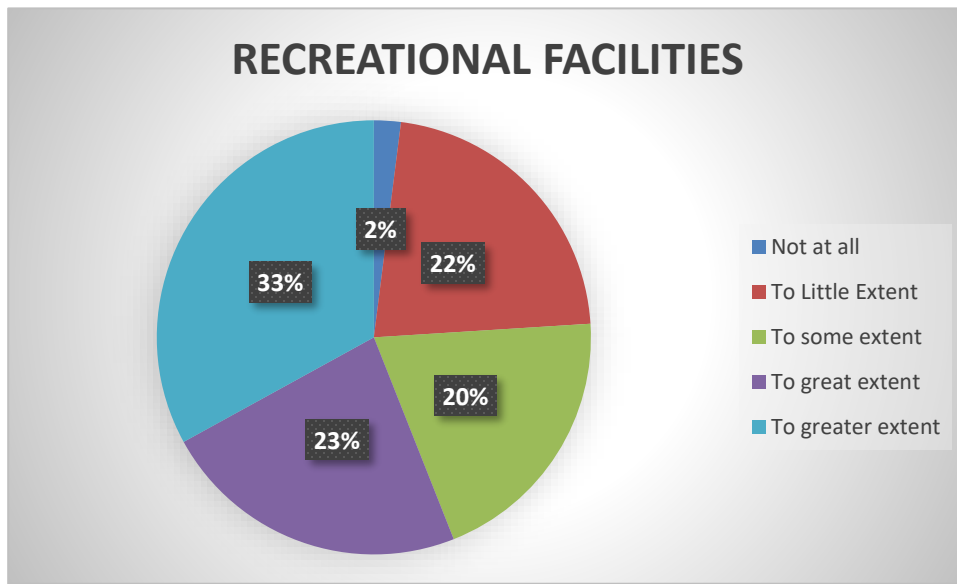
Table No. :3.18

S.No.	Recreational Facilities	No. of Respondents	Percentage
1	Not at all	2	2
2	To Little Extent	22	22
3	To some extent	20	20
4	To great extent	23	23
5	To greater extent	33	33
	Total	100	100

INFERENCE

From the above table it is inferred that 46% of respondents state that they have recreational facilities and 54% of respondents state that they have no recreational **facilities**.

CHART No. 18



DISTRIBUTION OF RESPONDENTS BASED ON THE PRACTICING METHOD OF ERGONOMICS

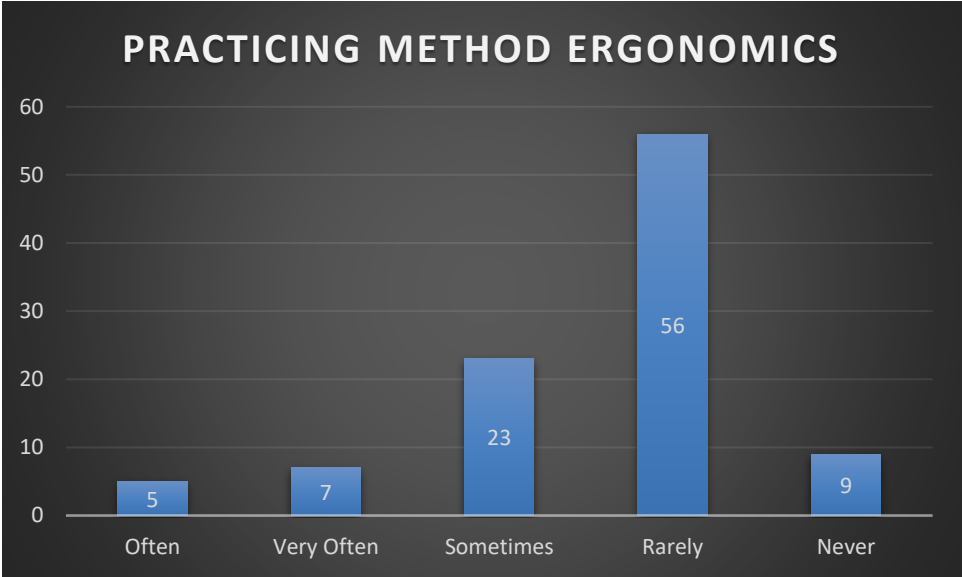
Table No. :3.19

S.No.	Practicing Method Ergonomics	No. of Respondents	Percentage
1	Often	5	5
2	Very Often	7	7
3	Sometimes	23	23
4	Rarely	56	56
5	Never	9	9
	Total	100	100

INFERENCE

From the above table it is found that 2% of the respondents said that they are practicing the method of Ergonomics and 98% of the respondents said that they are not practicing the method of Ergonomics.

CHART No. 19



DISTRIBUTION OF RESPONDENTS BASED ON THE COUNSELING

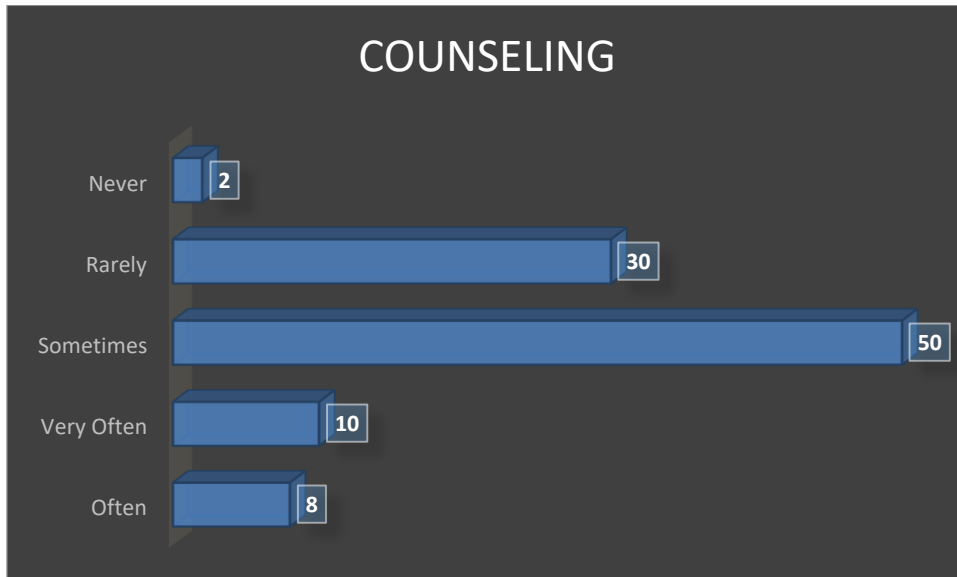
Table No. :3.20

S.NO.	Counseling	No. of Respondents	Percentage
1	Often	8	8
2	Very Often	10	10
3	Sometimes	50	50
4	Rarely	30	30
5	Never	2	2
	Total	100	100

INFERENCE

From the above table it is evident that 7% of the respondents said that they have counseling for the employees concerning personal and technical problems and 93% of the respondents opposed this.

CHART No. 20



DISTRIBUTION OF RESPONDENTS BASED ON THE PRE EMPLOYMENT AND POST EMPLOYMENT MEDICAL CHECK

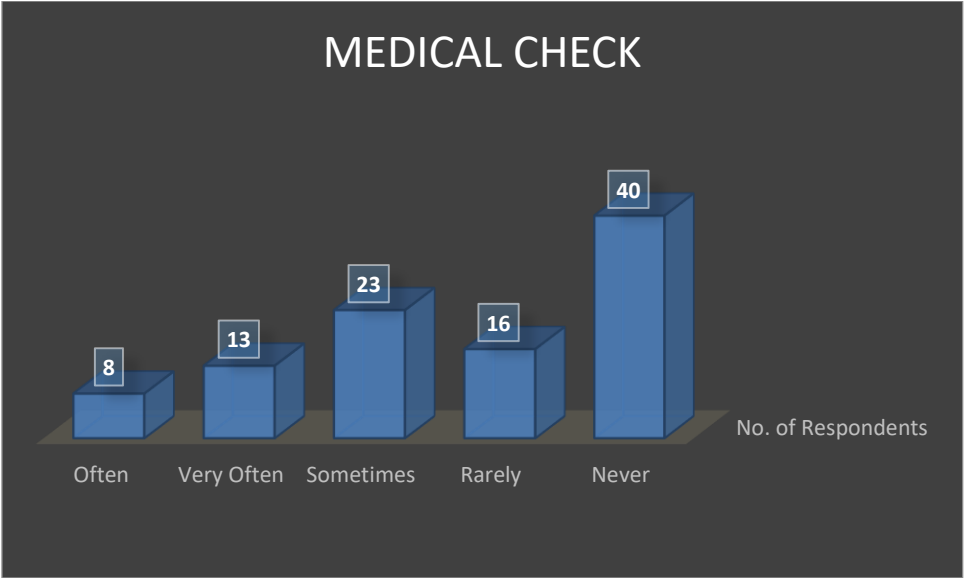
Table No. :3.21

S.NO.	Medical Check	No. of Respondents	Percentage
1	Often	8	8
2	Very Often	13	13
3	Sometimes	23	23
4	Rarely	16	16
5	Never	40	40
	Total	100	100

INFERENCE

From the above table it is inferred that 37% of the respondents states that they have pre employment and post employment **medical check** and 63% of the respondents opposed this.

CHART No. 21



DISTRIBUTION OF RESPONDENTS BASED ON THE APPROACH OF HEALTH FACILITIES IN THE ORGANIZATION

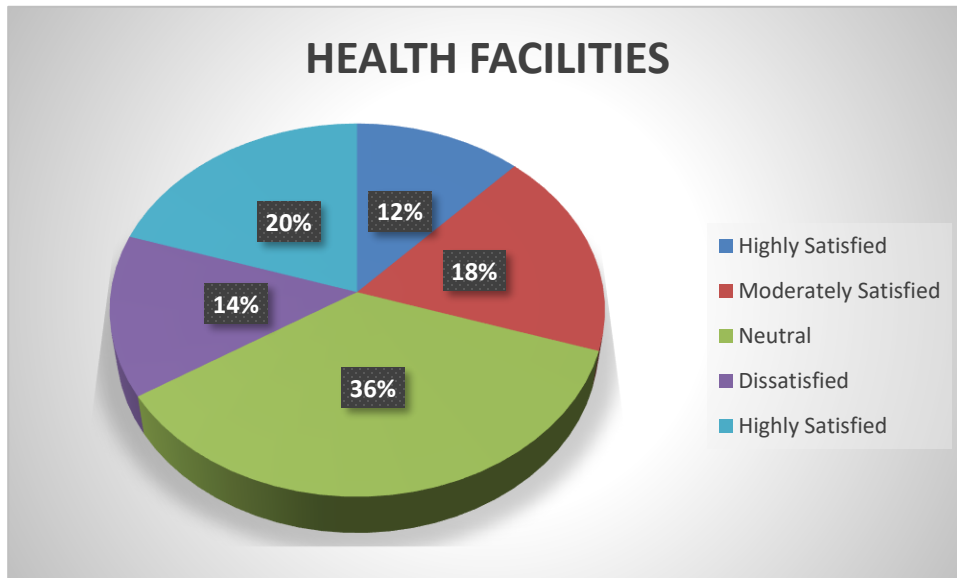
Table No. : 3.22

S.NO.	Health Facilities	No. of Respondents	Percentage
1	Highly Satisfied	12	12
2	Moderately Satisfied	18	18
3	Neutral	36	36
4	Dissatisfied	14	14
5	Highly Satisfied	20	20
	Total	100	100

INFERENCE

From the above table it is found that 17% of the respondents feels flexible towards the approach of the organization. 15% of the respondents feels the approach of the organization as people oriented. 32% of the respondents feels Transparent towards the approach of the organization and 36% of the respondents feels the approach of the organization as production oriented.

CHART No. 22



ANALYSIS USING CHI-SQUARE

TO FIND THE ASSOCIATION BETWEEN RESPONDENTS GENDER AND THE RESPONDENTS ACCIDENT PRONENESS

Table No. : 3.23

S.No	Accident Proneness	Male	Female	Total
1	Yes	14	61	75
2	No	8	17	25
		22	78	100

S.No	Accident Proneness	Male	Female	Total
1	Yes	16.5	58.5	75
2	No	5.5	19.5	25
		22.0	78.0	100

Null Hypothesis:

There is no significant difference between respondents gender and the respondents accident proneness.

Chi- square

O	E	(O-E) ²	(O-E) ² / E
14	16.5	6.25	0.37878788
8	5.5	6.25	1.13636364
61	58.5	6.25	0.10683761
17	19.5	6.25	0.32051282

$$\sum(O-E)^2/E = 1.94$$

Degrees of Freedom = 1

Tabulated Value for χ^2 for 1 degree of freedom @ 5% level of Significance is 3.841

Calculated Value < Tabulated Value

Therefore H_0 is accepted.

INFERENCE

There is significant association between respondents gender and the respondents accident proneness

Table No. : 3.24

ANALYSIS USING CHI-SQUARE

TO FIND ASSOCIATION BETWEEN RESPONDENTS ACCIDENT PRONENESS AND
ENOUGH TRAINING FOR THE EMPLOYEES

Observed count

S.No.	Accident Proneness	Enough training for the employee		Total
		Yes	No	
1	Yes	7	15	22
2	No	29	49	78
	Total	36	64	100

Expected count

S.No.	Accident Proneness	Enough training for the employees		Total
		Yes	No	
1	Yes	7.9	14.1	22
2	No	28.1	49.9	78
	Total	36.0	64.0	100

Null Hypothesis:

There is no significant difference between respondents accident proneness and enough training for the employees

Chi- square

O	E	(O-E) ²	(O-E) ² / E
7	7.9	0.81	0.1025
29	28.1	0.81	0.0288
15	14.1	0.81	0.057
49	49.9	0.81	0.016

$$\sum(O-E)^2 / E = 0.2043$$

Degrees of Freedom = 1

Tabulated Value for χ^2 for 1degree of freedom @ 5% level of

Significance is 3.841

Calculated Value < Tabulated Value

Therefore H_0 is accepted

INFERENCE

There is a significant association between respondents accident proneness and enough training for the employees.

Table No. 3.25

ANALYSIS USING CHI-SQUARE

TO FIND ASSOCIATION BETWEEN EMPLOYEES WORK LOAD AND THE APPROACH OF THE ORGANIZATION

Observed count

S.No.	Acceptable level of work load	Approach of the organization				Total
		Flexible Transparent People Production oriented				
1	Yes	11	12	15	20	58
2	No	6	3	17	16	42
	Total	17	15	32	36	100

Expected count

S.No.	Acceptable level of work load	Approach of the organization				Total
		Flexible Transparent People Production oriented				
1	Yes	9.9	8.7	18.6	20.9	58
2	No	7.1	6.3	13.4	15.1	42
	Total	17	15	32	36	100

Null Hypothesis:

There is no significant difference between the employees work load and the approach of the organization.

Chi- square

O	E	(O-E) ²	(O-E) ² / E
11	9.9	1.21	0.122
6	7.1	1.21	0.170
12	8.7	10.89	1.251
3	6.3	10.89	1.728
15	18.6	12.96	0.696
17	13.4	12.96	0.967
20	20.9	0.81	0.038
16	15.1	0.81	0.053

$$\sum(O-E)^2/E = 5.025$$

Degrees of Freedom = 2

Tabulated Value for χ^2 for 2 degree of freedom @ 5% level of Significance is 5.991

Calculated Value < Tabulated Value

Therefore H_0 is accepted

INFERENCE

There is a significant association between the employees work load and the approach of the organization.

TABLE No. 3.26

ANALYSIS USING CORRELATION COEFFICIENT

TO FIND CORRELATION COEFFICIENT BETWEEN RESPONDENTS AWARENESS LEVEL AT THE TIME OF JOINING AND THE EMPLOYEES PARTICIPATION

Let,

X be the respondents awareness level at the time of joining

Y be the employees participation in suggestion scheme

X	Y	X	x^2	y	y^2	xy
1	6	-19	361	-14	196	266
25	26	5	25	6	36	30
6	5	-14	196	-15	225	210
51	26	31	961	6	36	186
17	37	-3	9	17	289	-51

$$\sum x^2 = 1552 \quad \sum y^2 = 782 \quad \sum xy = 641$$

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \cdot \sum y^2}}$$

$$= \frac{641}{\sqrt{1552 \cdot 782}}$$

$$= \frac{641}{1200.83}$$

$$r = 0.5338$$

$$r = 0.5816$$

INFERENCE

The value of 'r' indicates that is a positive correlation exist between two variables, respondents awareness level at the time of joining and the employees participation. Hence it can be concluded that as the awareness level increases, employees participation in suggestion also increases.

TABLE
ANALYSIS USING CORRELATION COEFFICIENT

TO FIND THE CORRELATION COEFFICIENT BETWEEN RESPONDENTS AWARENESS
 LEVEL AT PRESENT AND THE COUNSELING

Let,

X be the respondents awareness level at present

Y be the counseling

X	Y	x	x ²	y	y ²	XY
7	96	-43	1849	46	2116	-1978
93	4	43	1849	-46	2116	-1978

$$\sum x^2 = 3698 \quad \sum y^2 = 4232 \quad \sum xy = 3956$$

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \cdot \sum y^2}}$$

$$= \frac{3956}{\sqrt{3698 \cdot 4232}}$$

$$r = 1$$

INFERENCE

The value of 'r' indicates that a high degree of positive correlation exist between two variables, respondents awareness level at present and the counseling.

CHAPTER IV

FINDINGS OF STUDY

- It is found that thirty one percent of the respondents are Temporary operating trainees. Thirty one percent of the respondents are Operators.
- It is evident that most of the respondents are Male.
- It is found that fifty four percent of the respondents are above 25 years.
- It is found that forty seven percent of the respondents have an educational qualification of SSLC/HSC.
- It is evident that majority of the respondents have no accident proneness.
- It is found that most of work place accidents owing to workers.
- It is found that seventy eight percent of the worker based accidents due to unsafe material handling.
- It is found that fifty one percent of the respondents have no awareness concerning Employees Safety & Health at the time of joining.
- It is astonished that at present majority of the respondents have awareness concerning Employees Safety & Health.
- It is evident that fifty nine percent of the respondents acquired the knowledge regarding Employees Safety & Health through motion pictures.
- It is found that fifty eight percent of the respondents have satisfactory level of work load in the organization.
- It is found that sixty four percent of the respondents have no sufficient training about Employees Safety & Health.
- It is evident that ninety two percent of the respondents have interest to participate in suggestion scheme regarding employees safety and health.
- It is found that participation level of thirty seven percent of the respondents participation level is none.
- It is found that sixty three percent of the respondents states that every year safety training is conducted in the organization.

- It is evident that most of the respondents states that they have inadequate first aid facilities.
- It is found that thirt nine percent of the respondents states appreciating employees for their work as a stress relief measure.
- It is evident that fifty four percent of respondents state that they have no recreational facilities.
- It is found that ninety eight percent of the respondents said that they are not practicing the method of Ergonomics.
- It is found that ninety two percent of the respondents said that they have no counseling for the employees pertaining to personal and technical problems.
- It is found that sixty three percent respondents states that they have no pre employment and post employment medical check.
- It is evident that most of the respondents feels that the organization approach is mainly towards production.

SUGGESTIONS AND RECOMMENDATIONS

- The major cause for the workplace accidents that occur in the organization is unsafe handling of material. So the vestibule training method can be included in employee training program.
- The frequency of safety training for the employees on safety and health can be altered to monthly once instead of yearly twice.
- Proper maintaining of adequate First aid facilities should be ensured.
- The rest room should be reconstructed with sufficient space and the sports center facility can also be extended to temporary labours.
- Ergonomics method should be followed. In an ergonomic workplace tools are designed to fit individual capabilities and limitation so that people can do their job without being injured.
- Work environment causes number of problems, counseling enables to overcome personal and technical problems.
- A careful Pre employment and Post employment medical check up can also be extended to temporary labours.

CHAPTER V

CONCLUSIONS

This analysis will give a clear idea as to the situation of a large number of accidents that occur in the organization and the steps that an organization should take to reduce these accidents and to prevent them from occurring in future.

Some of the suggested measures for improving employees safety and health include vestibule training method, first aid facilities, recreational facilities, counseling program, pre employment and post employment medical check up for improving the effectiveness of employees safety and health.

The findings of the survey will be utilized to bring about the necessary changes in **Employees Safety & Health** procedures in the company.

The above concept could be better envisaged to bring about the better safety and health for the employees by inculcating the concept of **Ergonomics**.

QUESTIONNAIRE

A STUDY ON EFFECTIVENESS OF EMPLOYEES SAFETY AND HEALTH AT EAST INDIA MATCH FACTORY

I. PERSONAL DETAILS

1. Department :
2. Designation :
3. Gender :
4. Age :
5. Marital status :
 - a. Married b. Unmarried
- 6 Educational Qualification
 - a. SSLC/HSC b. ITI c. Diploma d. Graduation e. Post Graduation
7. Work Category
 - a. Technical b. Non- Technical
8. Total Work Experience in years _____

II. CAUSES OF ACCIDENT

9. Do you have accident proneness (fear)?
 - a. Not at all b. To little extent c. To some extent d. To great extent e. To greater extent
10. If you have proneness, specify the reasons?
 - a. Personal problems b. Technical problem c. Environmental Problems
11. The major reasons for the Work place accident ?
 - a. Work Based b. Worker Based

12. The major reasons for Work related accident that occur in the organization?

- a. Improper lighting b. Unsafe & careless house keeping
- c. Improper Ventilation d. Inadequate Safety Devices
- e. Polluted work place f. If others mention

13. what are the worker based causes for the accident that occur in the accident ?

- a. Lack of adequate skill b. Neglecting safety devices
- c. Unsafe material handling d. Disturbed mental condition
- e. Unsafe speed f. Others Mention

III. EMPLOYEES COMMITMENT

14. Are Good safety& health measures required for improving your work efficiency?

- a. Strongly agree b. Agree c. Neither agree nor disagree
- d. Disagree e. Strongly disagree

15. At the time of joining, your awareness level of Employees safety & health measures?

- a. Very High b. High c. Low d. Very low e. None

16. At present, do you aware of Employees Safety & Health measures?

- a. Not at all b. To little extent c. To some extent d. To great extent e. To greater extent

17. If Yes, through which ?

- a. Motion Pictures b. colleagues
- c. written brouchers d. Manager in person

18. Is your work load is acceptable in the organization?

- a. Not at all b. To little extent c. To some extent d. To great extent e. To greater extent

19. If Not at all, to what extent ?

- a. Least b. Less c. Heavy d. Too heavy e. Unmanageable

20. How would you rate your job?

- a. Challenging b. Interesting c. Creative d. poor e. very poor

IV. MANAGEMENT COMMITMENT

21. Do you receive support from the management regarding Employees Safety & Health?

- a. Not at all b. To little extent c. To some extent d. To great extent e. To greater extent

22. Do you get enough training from the company regarding Employees Safety & Health?

- a. Not at all b. To little extent c. To some extent d. To great extent e. To greater extent

23. Are the company's Safety & Health policies flexible and acceptable to you?

- a. Not at all b. To little extent c. To some extent d. To great extent e. To greater extent

24. If Not, at all acceptable, specify reason _____

25. Are you interested to participate in suggestion scheme in Employees safety & Health?

- a. Not at all b. To little extent c. To some extent d. To great extent e. To greater extent

26. Your level of participation in the implementation of Safety & Health Procedures in your organization?

- a. Very High b. High c. Moderate d. Less e. Least

27. The frequency of safety training conducted in the organization?

- a. Weekly b. Fortnightly c. Monthly d. Half yearly e. Yearly

28. If so, mention how the training program is useful ?

- a. Strongly agree b. Agree c. Neither agree nor disagree
d. Disagree e. Strongly disagree

29. Do you have frequent inspection by the top management?
a. Often b. Very often c. Sometimes d. Rarely e. Never

30. How do you feel about the approach from the organization?
a. Flexible b. People oriented c. Transparent
d. Product oriented e. Employee oriented

V. MEASURES

31. Do you have enough First aid facilities in case of accident?
a. Least b. Little c. Some d. Optimum e. Maximum

32. What are the reasons for Stress relief measures followed?
a. Reasonable hours of work
b. Rest Pauses or break in working hours
c. Holidays and leave with pay
d. Appreciating employees for their work
e. Providing leisure trips

33. Does the company provide recreational facilities?
a. Not at all b. To little extent c. To some extent
d. To great extent e. To greater extent

34. If Yes, What type of facilities
a. T.V b. News papers or magazines
c. Light music d. Sports e. Fun games

35. The frequency of accidents is high in the organization during?
a .First Shift b .Second Shift c .Third Shift d. General e. None

36. Do you think that some particular type of accident that occur frequently

in your work place?

- a. Often b. Very often c. Sometimes d. Rarely e. Never

37. If Yes, Specify reason _____

38. Are safety contests organized?

- a. Often b. Very often c. Sometimes d. Rarely e. Never

39. Is your practicing method of work based on Ergonomics (designing tools and work based on the capabilities & limitation of work)?

- a. Often b. Very often c. Sometimes d. Rarely e. Never

40. Are they giving counseling for the employees?

- a. Often b. Very often c. Sometimes d. Rarely e. Never

41. Is your organization carefully conducting pre- employment and post- employment medical check up?

- a. Often b. Very often c. Sometimes d. Rarely e. Never

42. Is the working temperature reasonable to work?

- a. Strongly agree b. Agree c. Neither agree nor disagree
d. Disagree e. Strongly disagree

43. Do you agree that your performance is evaluated fairly?

44. Does your company receive reports of hazardous situations?

- a. Often b. Very often c. Sometimes d. Rarely e. Never

45. Are the flammable substances stored on your premises controlled?

- a. Strongly agree b. Agree c. Neither agree nor disagree
d. Disagree e. Strongly disagree

46. Are the electrical appliances in your organization kept safe?

- a. Strongly agree b. Agree c. Neither agree nor disagree
d. Disagree e. Strongly disagree

47. Do you have a system in place to report and record incidents and near misses?

- a. Strongly agree b. Agree c. Neither agree nor disagree
d. Disagree e. Strongly disagree

48. Do you have need of some extra safety facilities?

- a. Strongly agree b. Agree c. Neither agree nor disagree
d. Disagree e. Strongly disagree

49. Are you satisfied with current health facilities?

- a. Highly satisfied b. Moderately satisfied c. Neutral
d. Dissatisfied e. Highly dissatisfied

50. Do you agree that you can move quickly in the event of an emergency?

- a. Strongly agree b. Agree c. Neither agree nor disagree
d. Disagree e. Strongly disagree

