Labour welfare and Industrial Health

Chapter – 4:

Industrial Accident and Industrial Safety

Dr. Shyamal Gomes

Introduction:

What does ISO 14000 say regarding the benefits and important to an organization if they implements an affective environmental management system? According to ISO 14000, any corporations and organizations can protect human health and environment from the potential impacts of their activities, products and services, assist in maintaining and improving the quality of the environment, meet customer’s environmental expectations, maintain good public and community relations, satisfy investor criteria and improve access to capital, provide insurance at a reasonable cost, improve cost control and provide confidence to interested parties and shareholders that Policies, objectives and targets are met, emphasis is on prevention first, reasonable care and regulatory compliance that regularly occur, system design includes continual improvement and finally considering that the employees are internal customer and partner.

Therefore, Environment (Industrial), employee’s health and safety (EHS) is very much an integral part of the expanded domain of the SAFE environment.

According to Michael Porter, today in competitive environment there is a wide range of rivalry among the existing business firms giving an opportunity for new entrants with new substitute. Customers as well as supplier’s bargaining power increases day by day as industries and demand is increasing. Well these increasing factors also creating some global warnings:

1. “Every 20 seconds of every working minute of every hour throughout the world, some one dies as a result of an industrial accident” – Director General of the British council.
2. Thousands of employees throughout the world lose their fingers, eyes, limbs, and their lives, everyday.
3. Much blood flows in the sewers of industrial establishments. The perils (dangers) inherent in industrial work has made the life of the
worker very cheap. Let's see what is happening in our Indian scenario in last decades:

1. Bhopal, December 1984: World’s worst chemical disaster, a methylisocyanate gas leak from the Union Carbide plant in the city killed over 4000 people, thousands suffered irreversible health damage.
3. Durgapur, June 1987: Chlorine leak at Durgapur Chemicals Factory created panic all round, long distance trains were halted, over 100 were affected.
5. Nagothane, November 1990: Explosion at the Indian Petrochemicals, Nagothane complex, 35 persons killed, over 50 suffered, 70% burns.
6. Gwalior, December 1991: Blast at the dyeing department of GRASIM unit at Gwalior, 14 killed and 22 severely injured.
7. Panipat, August 1992: Ammonia leak at the National Fertilizers plant, Panipat killed 11, many injured and so on ……

Source: The Economic Times, November 8, 1992

Now questions come? Why do these accidents occur? How can they be prevented? What should be the action plan of an organization? These and other issues are the primarily concerns of employee safety and Health.

**What is accident and Safety?**

**ACCIDENT:**
- An accident which ends in a death, or which results in a prolonged disability to the injured is a major one.

- 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.

**SAFETY:**
- 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 accident.
- 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.
Types of Accident:

Why accident happened? Accident happened because of:

1. Poor leadership from the top
2. Inadequate supervision
3. Insufficient attention to the design of safety into the system or careless attitude on EMS.
4. An unsystematic approach to the identification, analysis and elimination of hazards.
5. Poor training facilities and employee motivation

Therefore, safety is required. Because safety increase employee moral, increased productivity, helps to follow the legal instruction and finally save the cost related to accident and after. When an injured worker returns (if he / she is lucky to do so) he/she may operate at less than his / her normal efficiency for sometimes. Co workers, too may become emotionally upset for some time and consequently turnout fewer and inferior goods. Finally, customers may be lost because of the non-execution of orders on time.

Safety programmes deals with the prevention of accidents and with minimum the resulting loss and damage to persons and property. **Five basic principles** must govern the safety programmes of an organization:

1. Trace out the root cause of Accident.
2. Identify the potential hazards
3. Continuous monitoring the safety performance
4. Assuring the accountability of employee and employer for safety performance in the working areas.
5. Assuring the continuous training and education on eliminating safety hazards and prevention of accidents
A safety programme generally contains 6 Elements:

1. Strategic Choice
2. Development of Safety Policy
3. Organization for safety
4. Analysis of Causes for Accidents
5. Implementation of the Programme
6. Evaluation of Effectiveness by Safety inspection And safety audit

Remedies / Safety Measures:

The methods and devices for the prevention of accidents are now in plenty. Experiences and the relentless war waged by independent organizations like the safety council, ISO 14000, and the stringent rules framed by GOI have all resulted in the development of new methods and devices for the prevention of accidents. Today, an accident occurs; it is not because of the lack of safety facilities, but because of the indifferent attitude of the management, carelessness of the workers and predilections of enforcing agencies.

Now before, discussing safety measures, in details it is useful to consider what has come to be known as the AXIOMS of industrial accidents like:

1. The accident is caused or permitted directly by an unsafe act of an employee and / or a mechanical or physical hazard.
2. The unsafe acts of employees are responsible for a majority of accidents.
3. The occurrence of an accident that results in an injury is largely preventable.
4. Four basic methods are available for the prevention of accidents – engineering revision, persuasion and appeal, personal adjustment and discipline.
5. The immediate supervisor or the foreman is the key person in industrial accident prevention.
6. Safety should be driven internally, not externally.
7. Do not count on common sense for safety improvement.
8. Safety incentives programmes should focus on processes rather than outcomes.
9. Behaviour is directed by activators and motivated by consequences.
10. When people feel empowered, their safe behaviour spreads to other situations.

These AXIOMS or principles enable the management to understand the causes and consequences of accidents and give then an idea to introduce suitable safety devices.

However, most applicable safety measures are:

1. **Training in Safety:** ( for all level, short duration, periodic, by experts, updated training module and participative, on the job)
2. **Physical and mechanical condition:** There is a need for periodic inspection to ensure safety of workers and machines. Defective tools and equipments must be discarded ( provision of the factories act 1948). Safe electrical wiring adds to the safety of a plant.
3. **Awareness Generation by Safety posters and film shows:** The National Safety council has published a series of slogans as, “Provides Guards – Avoid Tragedies”, “Always Alert Accident Avert”, “No Grip – No Safe” and so on.

4. **Safety week and Awards:** (1st – 7th March considered as a safety week) workers are given badges with green triangles printed on them and are asked to wear them while on work.

5. Safety awards are presented by the National Safety Council every year to industrial establishment which shows accident free operations.

6. BHEL has been recipient of the highest numbers of such awards.

**The Role of Management and Trade Union:**

1. The problem of safety must begin with the management. The management should believe in, and have a commitment to safety and safety rules.

2. The mere constitution of safety committee or the appointment of a safety officer serves no great purpose. Nor is it enough merely to show concern for safety after an emergency.

3. The management must view safety as an integral part of the management process.

4. Strong Trade unions can force unwilling managers to undertake sufficient safety measures.

5. Strong willingness of employees and cooperation with management is also crucial.
Labour welfare and Industrial Health

Chapter – 5: **Industrial Health**

Dr. Shyamal Gomes

**Introduction:**

The term “health” is a positive and dynamic concept and implies more than an absence of illness. The world health organization (WHO) has defined health as: “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

According to the joint ILO / WHO Committee: “Industrial health” is:

• the prevention and maintenance of physical, mental and social well-being of workers in all occupations.
• the prevention among workers of ill-health caused by the working conditions;
• the protection of workers in their employment from risks resulting from factors adverse to health and
• placing and maintenance of the worker in an occupational environment adapted to his physical and psychological equipments.

Or

“The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations – total health of all at work”

**Why Industrial health?**

“Efficiency in work is possible only when an employee is healthy”

The industry exposes him / her to certain hazards which he/she would not meet elsewhere and which may affect his health. It is with the intention of reducing these hazards and improving the workers health that the discipline of industrial health came into being as a branch of public health in its own right. Therefore, the symptoms of bad health are high rate of absenteeism and turnover, industrial discontent and indiscipline, poor performance and low productivity. That is the reason why when industrial health programmes are introduced, both workers and employers.

**Factors affecting Workers health:**

Employees in an industrial establishment are often subject to certain health hazards and occupational diseases. According to Roland Black, the normal occupational health hazards may be classified into:

1. Chemical Hazard
2. Biological Hazard
3. Physical Hazard
4. Mechanical Hazard
5. Psychological Hazard

1. Chemical Hazard: Routes of entry - Inhalation, Ingestion, skin absorption. (Inhalation is the main route of entry) Chemical agents can be classified into:
   1) Metals - Lead,
   2) Aromatic Hydrocarbons - Benzene, phenol etc.
   3) Aliphatic Hydrocarbons - Methyl alcohol
   4) Gases - N2, CH4, CO2, CO, H2S, HCL, SO2, etc.

Workers may suffer from RESPIRATORY diseases, SKIN diseases, ALLERGY, HEART disease, CANCER and NEUROLOGICAL disorders, all of which often shorten life expectancy

2. Biological Hazard
   Bacteria - Tetanus, Tuberculosis, Anthrax, Brucellosis (Milkmen), Gonorrhea (Sex-workers-Genital organs get affected).
   Virus - Hepatitis, AIDS (Acquired Immune Deficiency syndrome) – is a deadly disease that is gripping mankind. The incidence of AIDS is increasing rapidly in Indians industries. The AIDS virus attack and destroy the cells of immune system.
   Protozoa & Parasitic - Malaria, Hydatid (Dog handlers), Hookworms, tapeworms (Agri-workers), etc.
   Fungi - (Agri-workers) - Tinea-infections, Cocci-diomycosis, ornithosis, etc.
   Insects: Mosquito bites, fleas carrying microbes etc. cause of Malaria, Dengue, Plague and filaria etc. Workers may suffer from Dietary deficiencies, excessive drinking, imbalances, allergies, brain fever, tetanus, emotional stresses and strains with their psychological concomitants of fear, rage, worry and anxiety. All these affect the health of employees.

3. Physical Hazard:

   Diseases due to Physical Hazard:
   Cold: Frost bite,
   Light: Occupational Cataract, Atmospheric-pressure: Caisson disease, air embolism, explosion.
   Noise: Hearing loss, Occupational deafness,
   Radiation/ Benzene: Cancer, Leukemia, anemia,
   Electricity - Burns, Shocks etc.

4. Mechanical Hazard:

   Injuries: Falls, cuts, abrasions (An abraded area where the skin is torn or worn off) , concussions (Injury to the brain caused by a blow; usually resulting in loss of consciousness). Ergonomic Disorders:
   - Muscular-skeletal disorders (MSDs),
   - Cumulative-trauma-Disorders (CTDs) etc.
Ergonomics: ‘‘Adjustment of Man & Machine’’. Application of human biological sciences with engineering science to achieve optimum \( \textit{mutual adjustment of man} \) & \( \textit{his work} \), the benefit being measured in terms of human efficiency and well being. Tool / machine design to fit to work. Ergo tools/ ergofriendly tools: Tools which reduce the stresses or problems resulting in CTD’s / MSD’s.

6. **Psychological Hazard:**

Lack of job satisfaction, insecurity, poor interpersonal relations, work pressure, ambiguity, etc. are cause of Fatigue, Monotony and Boredom Psychological & behavioral changes – hostility, aggressiveness, anxiety, depression, alcoholism, drug addiction, sickness absenteeism, workplace violence, Sexual Harassment, alcoholism and drug abuse. Causes:

---

**Provision of the Act (Factories Act 1948)**

- Factory to be kept clean and free from effluvia (GASEOUS WASTE) and dirt (S. 11)
- Arrangement to be made for disposal of wastes and events (S.12)
- Adequate Ventilation and Temperature to be provided (S.13)
- Measures to be taken for prevention of inhalation or accumulation of dust and fumes (S.14).
- Standards for artificial humidification to be fixed (S.15)
- **Overcrowding related injuries to health of workers to be avoided.** 9.9 / 14.2 cubic metres of space must be provided for each worker (S.16)
- Sufficient and suitable lighting must be provided in every part of the factory (S.17)
- Glazed windows to be kept clean, measures need to be taken for prevention of glare and formation of shadows. (S.17)
- Suitable points for wholesome drinking water must be provided. Drinking points to be legibly marked and located away from urinals. Water needs to be cooled if the number of workers is 250 or more (S. 18)
- Latrines and urinals to be separately provided for male and female workers. They should be well lighted and ventilated. (S.19)
- Sufficient number of spittoons must be provided. Wherever, spits outside the spittoons shall be punishable (S.20)

---

**Protection against Health Hazard by:**

1. **Substituting a less toxic substance for the hazardous chemical** (through isolating the process, providing protecting clothing, handling and warning devices, and providing safety education).
2. **Ensuring that firms using radiation in their manufacturing process** insists that their employees wear badges which indicate the amount of radiation they have been exposed to;

3. **Controlling noise in factories**, segregating noisy equipment, dampening vibration, redesign noisy equipments, etc. The employee may be asked to wear ear-covering or ear-plugs;

4. **Devoting adequate attention to lighting, temperature and atmospheric conditions** (through controlling dust, fumes, and gases, providing protective devices, clothing, goggles and shields)

**Therefore, today the organization renders the following health services:**
- **Pre-hiring medical check up** for all employees.
- **Periodic medical check up of all employees** and regular medical check up of executives to detect early signs of tension, ulcers, diabetes and the like.
- **First-aid treatment** following an accident. Training in first aid is compulsory for everyone.
- **Treatment of minor complaints**, such as cold, cough, fever and headaches.
- **Rehabilitation and job placement** of seriously injured workers who have been cured but suffer from some disability.
- Control of **occupational health hazards**.
- **Provision of healthy sanitary facilities**, such as supply of potable water, disposal of waste and effluents, good housekeeping etc..
- **Special examination of eyes, teeth and ears**, when needed.
- Facilities for **local hospital, clinics**, as well as specialists.
- Special care of employees working in painting, welding and foundry sections where the risk of their health is greater.
- **Maternity and child care welfare**, including family planning.
- Adequate **ventilation, good lighting, tree plantation and good residential quarters**.

**Conclusion:**

It is true that everyone wants a safe and healthful workplace, but what each person is willing to do to achieve this worthwhile objective, can vary a great deal. As a result, the management of each firm must decide at what level along a broad spectrum, the safety and health efforts will be aimed. Some managers deny this responsibility and attempt to have left the decision to employees; some managers are giving this responsibility to the welfare officer fully. This type of strategy seems to squire with hallowed principles of personal freedom and individual responsibility. But such a denial of responsibility by management results in a diverse by default and usually the result is a relatively low level of safety and health in the work place. Therefore, Industrial safety and Health is a collective approach of employer – management and employees.