

MC 2.9



**M.COM.
SEMESTER - II**

**(REVISED SYLLABUS
AS PER NEP 2020)**

**SAFETY AND HEALTH
MANAGEMENT**

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Elective 3

Programme Name: M.Com (Business Management)

CourseName: Safety and Health Management

Total Credits :04

University assessment: 50

Prerequisite: Knowledge of Management studies

Total Marks:100

College assessment:50

Programme Outcome

The programme aims to cater learners to acquire and demonstrate competency in Environment Health & Safety, making them Knowledgeable and competent to make a prospective career in Industry

Course Outcomes:

CO1.To develop an expert manpower to handle the complex industrial environment.

CO2.To understand occupational health, industrial hygiene, accidental prevention techniques.

CO3.To make the student aware about safety auditing and management systems, pollution prevention techniques etc.

CO4.To train the students about role of leadership and team building in safety management.

Module I

Unit - I Legislative measures in industrial safety:

- A. Factories Act, 1948, Workman's Compensation Act 1948, Employees State Insurance Act, 1948, Child Labour and Women Employee Act. Functions of safety management.
- B. ILO Convention and Recommendations in the furtherance of safety, health and welfare, Environment Protection Act.

Unit – II Occupational Safety, Health and Environment Management:

- A. Bureau of Indian standards on safety and health 14489 - 1998 and 15001 – 2000 OSHA, Process Safety Management (PSM) as per OSHA,
- B. PSM principles, OHSAS – 18001, EPA Standards, Performance measurements to determine effectiveness of PSM

Module II

Unit – III Safety Management:

- A. Organising for safety, Health and Environment. Organisation : Structure, Function and responsibilities Safety Committee : Structure and function. Relevance of WTO regarding safety, Health and environment.

- B. Employee participation in safety - Role of Trade union in safety, health and environment. Safety promotion and safety awards, safety, competitions, audio visual publication.

Unit IV Directing safety:

- A. Definition, process, principles and techniques. Leadership - role, function and attribution of a leader. Essential rules in communication with employees with conducting training, team building and group dynamics.
- B. Financial cost to individual worker and family, organization and society. Procedures for compilation, utility and limitations of cost data, budgeting for safety.

References

1. The Factories Act with amendments 1987, Govt. of India Publications DGFA SLI, Mumbai
2. Grimaldi and Simonds , Safety Management, AITBS Publishers , New Delhi(2001)
3. Industrial Safety –National Safety Council of India ISHET.
4. Dr. K. U. Mistry - Fundamentals of Industrial Safety & Health, SiddharthPrakashan, Ahmadabad.
5. Industrial Safety Management – LM Deshmukh
6. ILO Convention – 155 & Recommendation – 164
7. Indian Factories Act 1948
8. Management of International Health & Safety – Roger Passey

LEGISLATIVE MEASURES IN INDUSTRIAL SAFETY

Unit Structure:

1A .1 Factories Act, 1948

- 1.2. Workmen's Compensation Act, 1923
- 1.3. Employees' State Insurance Act, 1948
- 1.4. Child Labour (Prohibition and Regulation) Act, 1986
- 1.5. The Equal Remuneration Act, 1976
- 1.6 Functions of Safety Management

1B.1 ILO Conventions and Recommendations for Safety, Health, and Welfare

1B.2 The Environment Protection Act, 1986

OBJECTIVES

Ensuring safety in industrial environments is crucial for protecting workers and maintaining efficient operations. Various legislative measures have been established to address industrial safety, focusing on different aspects of worker protection and health.

1A .1 Factories Act, 1948

The **Factories Act, 1948** is a comprehensive legislation aimed at ensuring the safety, health, and welfare of workers in industrial establishments. Key provisions include:

- **Health and Safety Standards:** The Act mandates the provision of clean working conditions, adequate ventilation, and proper sanitation. It requires factories to maintain machinery and equipment in a safe working condition to prevent accidents.
- **Working Hours and Rest Periods:** The Act regulates working hours to prevent overwork and mandates rest periods to ensure workers' well-being.
- **Welfare Facilities:** The Act provides guidelines for the establishment of welfare amenities such as canteens, first aid facilities, and restrooms to enhance worker comfort and safety.

- **Inspections and Compliance:** Regular inspections by factory inspectors ensure compliance with safety standards and address violations.

1.2. WORKMEN'S COMPENSATION ACT, 1923

The **Workmen's Compensation Act, 1923** (corrected to 1943 in your query) provides compensation to workers who suffer from injuries or occupational diseases due to their employment. Key aspects include:

- **Compensation for Injuries:** The Act ensures that workers who sustain injuries during work receive financial compensation for medical expenses and loss of earnings.
- **Death Benefits:** In the event of a worker's death due to a workplace accident, the Act provides compensation to the dependents of the deceased worker.
- **Medical and Rehabilitation Services:** The Act includes provisions for medical treatment and rehabilitation of injured workers to facilitate their recovery and reintegration into the workforce.

1.3. EMPLOYEES' STATE INSURANCE ACT, 1948

The **Employees' State Insurance Act, 1948** provides social security and health insurance benefits to employees. It includes:

- **Health and Medical Benefits:** Employees covered under this Act receive medical treatment, hospitalization, and other health-related services.
- **Sickness and Maternity Benefits:** The Act provides financial support to employees during sickness or maternity leave, ensuring that they are not financially burdened during these periods.
- **Pension and Disability Benefits:** It includes provisions for pension in case of disability or retirement, offering long-term financial security to workers.

1.4. CHILD LABOUR (PROHIBITION AND REGULATION) ACT, 1986

The **Child Labour (Prohibition and Regulation) Act, 1986** focuses on eliminating child labour and ensuring safe working conditions for minors. Key features include:

- **Prohibition of Child Labour:** The Act bans the employment of children below a certain age in hazardous industries and occupations.
- **Regulation of Working Conditions:** For minors who are legally employed, the Act regulates working hours, ensures safe working conditions, and mandates education for working children.

- **Penalties and Enforcement:** It prescribes penalties for violations and provides mechanisms for the enforcement of child labour regulations.

1.5. THE EQUAL REMUNERATION ACT, 1976

The **Equal Remuneration Act, 1976** mandates equal pay for equal work, regardless of gender. Key provisions include:

- **Equal Pay:** The Act ensures that both men and women receive equal remuneration for the same work or work of equal value.
- **Non-Discrimination:** It prohibits discrimination in wages and employment conditions based on gender, promoting fairness in the workplace.
- **Compliance and Enforcement:** The Act provides for inspections and enforcement to ensure adherence to its provisions.

1.6 FUNCTIONS OF SAFETY MANAGEMENT

Safety management involves the systematic approach to ensuring a safe working environment and preventing workplace accidents and health issues. The key functions include:

1. Risk Assessment and Hazard Identification

- **Risk Evaluation:** Identifying potential hazards in the workplace and assessing the risk they pose to workers. This involves evaluating machinery, work processes, and environmental conditions.
- **Preventive Measures:** Implementing controls and safety measures to mitigate identified risks. This may include engineering controls, administrative controls, and personal protective equipment.

2. Safety Training and Education

- **Employee Training:** Providing regular training programs to educate employees about safety protocols, emergency procedures, and the proper use of equipment.
- **Awareness Campaigns:** Conducting safety awareness campaigns to reinforce the importance of following safety procedures and reporting hazards.

3. Compliance Monitoring and Inspections

- **Regular Inspections:** Conducting routine safety inspections to ensure compliance with safety regulations and identify potential hazards.
- **Regulatory Adherence:** Ensuring that the organization adheres to all relevant safety laws and regulations, and implementing corrective actions when necessary.

4. Incident Investigation and Reporting

- **Accident Analysis:** Investigating workplace accidents and incidents to determine their causes and prevent recurrence.
- **Reporting and Documentation:** Documenting incidents and maintaining records to comply with legal requirements and track safety performance.

5. Emergency Preparedness and Response

- **Emergency Planning:** Developing and implementing emergency response plans for various scenarios such as fires, chemical spills, or natural disasters.
- **Drills and Exercises:** Conducting regular drills and exercises to ensure employees are familiar with emergency procedures and can respond effectively in case of an emergency.

6. Health and Wellness Programs

- **Occupational Health:** Implementing programs to monitor and improve the health of employees, including regular health check-ups and wellness initiatives.
- **Work-Life Balance:** Promoting programs that support work-life balance and mental well-being to reduce stress and prevent occupational health issues.

7. Continuous Improvement

- **Feedback and Evaluation:** Regularly reviewing safety practices and procedures to identify areas for improvement and implement changes.
- **Benchmarking:** Comparing safety performance with industry standards and best practices to drive continuous improvement in safety management.

By integrating these legislative measures and safety management functions, organizations can create a safer and healthier work environment, ensuring the well-being of employees and compliance with legal requirements.

MULTIPLE-CHOICE QUESTIONS (MCQS):

1. What is the main objective of the Factories Act, 1948?

- a) To regulate child labour in hazardous industries
- b) To ensure the safety, health, and welfare of workers in industrial establishments
- c) To provide compensation for workers injured at work
- d) To provide health insurance benefits to employees

Correct Answer:

b) To ensure the safety, health, and welfare of workers in industrial establishments

2. Which Act provides compensation to workers for injuries or occupational diseases arising from employment?

- a) Factories Act, 1948
- b) Workmen's Compensation Act, 1923
- c) Employees' State Insurance Act, 1948
- d) Equal Remuneration Act, 1976

Correct Answer: b) Workmen's Compensation Act, 1923

3. The Employees' State Insurance Act, 1948, provides which of the following benefits?

- a) Pension, disability benefits, and equal pay
- b) Health insurance, sickness benefits, and maternity benefits
- c) Risk assessment and hazard identification
- d) Child labour prohibition

Correct Answer: b) Health insurance, sickness benefits, and maternity benefits

4. The Child Labour (Prohibition and Regulation) Act, 1986, primarily aims to:

- a) Ensure equal pay for all workers
- b) Prohibit child labour in hazardous industries
- c) Provide social security benefits to employees
- d) Enhance workplace inspections

Correct Answer: b) Prohibit child labour in hazardous industries

5. The Equal Remuneration Act, 1976, ensures:

- a) Equal pay for equal work irrespective of gender
- b) Financial compensation for workplace injuries
- c) Health benefits for employees
- d) Child labour regulation

Correct Answer: a) Equal pay for equal work irrespective of gender

6. Which of the following is NOT a key function of safety management?

- a) Risk assessment and hazard identification
- b) Ensuring compliance with the Equal Remuneration Act
- c) Emergency preparedness and response
- d) Safety training and education

Correct Answer: b) Ensuring compliance with the Equal Remuneration Act

7. What is the purpose of conducting regular drills and exercises in safety management?

- a) To maintain machinery and equipment
- b) To ensure employees are familiar with emergency procedures
- c) To identify potential hazards in the workplace
- d) To provide health insurance to employees

Correct Answer: b) To ensure employees are familiar with emergency procedures

8. Continuous improvement in safety management involves:

- a) Benchmarking and reviewing safety practices
- b) Prohibiting child labour in hazardous industries
- c) Providing maternity benefits
- d) Offering welfare facilities

Correct Answer: a) Benchmarking and reviewing safety practices

SHORT ANSWER QUESTIONS:

1. What are the primary objectives of the Factories Act, 1948?
2. How does the Workmen's Compensation Act, 1923 support employees who suffer work-related injuries?
3. What benefits does the Employees' State Insurance Act, 1948 provide to workers?
4. What is the primary aim of the Child Labour (Prohibition and Regulation) Act, 1986?
5. How does safety management contribute to reducing workplace accidents?

LONG ANSWER QUESTIONS:

1. Discuss the comprehensive provisions of the Factories Act, 1948, and their impact on worker safety and welfare.
2. Analyze the role of the Workmen's Compensation Act, 1923, in providing support to workers injured on the job and its effectiveness in ensuring workplace safety.
3. Explain the functions and significance of safety management in industrial settings.

PRACTICAL QUESTIONS:

1. **How would you conduct a risk assessment in a factory to identify potential hazards and ensure compliance with safety standards?**
 - **Expected Answer:** Describe the process of inspecting machinery, work environments, and procedures; using checklists to identify hazards; evaluating risks; and implementing control measures to mitigate identified risks. Emphasize the importance of regular reviews and updates to the risk assessment.
2. **In an industrial setting, how would you develop a safety training program for new employees? What key elements would you include?**
 - **Expected Answer:** Outline the creation of a comprehensive safety training program including orientation on safety policies, procedures, emergency protocols, proper use of personal protective equipment (PPE), and hands-on training. Include methods for evaluating the effectiveness of the training and ensuring continuous improvement.
3. **If a workplace accident occurs, what steps would you take to investigate and address the incident?**
 - **Expected Answer:** Discuss the steps of conducting an immediate investigation, gathering evidence, interviewing witnesses, analysing the cause of the accident, and implementing corrective actions. Emphasize documenting findings, reporting the incident according to legal requirements, and communicating lessons learned to prevent future occurrences.
4. **How would you implement an emergency preparedness plan in a manufacturing plant, and what types of drills would you conduct?**
 - **Expected Answer:** Explain the development of an emergency preparedness plan including identifying potential emergencies, establishing procedures, and creating communication strategies. Describe conducting drills such as fire evacuations, chemical spill responses, and first aid practices to ensure that employees are prepared for various emergency situations.

5. **Describe how you would address non-compliance with safety regulations in a factory. What steps would you take to ensure adherence to safety standards?**

- **Expected Answer:** Outline steps such as conducting a thorough audit to identify areas of non-compliance, communicating findings to management, and developing a corrective action plan. Discuss implementing additional training or safety measures, setting deadlines for compliance, and conducting follow-up inspections to ensure that safety standards are consistently met.

1B .1 ILO Conventions and Recommendations for Safety, Health, and Welfare

The **International Labour Organization (ILO)** has developed numerous **Conventions and Recommendations** aimed at improving workplace safety, health, and welfare. These international labor standards are essential for protecting workers' rights and ensuring a safe, healthy, and dignified working environment.

1. ILO Convention No. 155 – Occupational Safety and Health (1981)

- **Objective:** The Convention calls for the adoption of national occupational safety and health policies by member states.
- **Key Provisions:**
 - Ensures the protection of workers' health and safety.
 - Employers are required to implement safety protocols, identify risks, and minimize hazards.
 - Workers have the right to participate in safety management and to refuse unsafe work.
 - States must promote occupational health services and systems for accident prevention.
- **Impact:** This Convention emphasizes the integration of health and safety into national labor policies, promoting safe working conditions across various industries.

2. ILO Convention No. 187 – Promotional Framework for Occupational Safety and Health (2006)

- **Objective:** This Convention encourages the creation of a national policy and system for occupational safety and health to promote continuous improvement.
- **Key Provisions:**
 - Establishes a framework for promoting safety and health at the workplace.

- Encourages the creation of programs that involve workers, employers, and the government in safety initiatives.
- Calls for the periodic review of safety policies and the inclusion of workers in the decision-making process.
- **Impact:** It enhances countries' ability to improve workplace safety through national action plans, ensuring that workplace hazards are regularly assessed and mitigated.

3. ILO Convention No. 161 – Occupational Health Services (1985)

- **Objective:** The aim is to establish occupational health services to prevent work-related illnesses and injuries and to ensure worker welfare.
- **Key Provisions:**
 - Employers are required to provide occupational health services to monitor and improve the health of workers.
 - Services include monitoring workplace conditions, health surveillance, and advising on ergonomic designs.
 - It promotes early detection and prevention of occupational diseases.
- **Impact:** By establishing workplace health services, employers can significantly reduce work-related health risks, boosting productivity and worker well-being.

4. ILO Recommendation No. 194 – List of Occupational Diseases (2002)

- **Objective:** To provide a standardized list of occupational diseases for which compensation should be provided.
- **Key Provisions:**
 - Updates and expands the list of diseases caused by work-related activities, including respiratory diseases, cancers, musculoskeletal disorders, and infectious diseases.
 - It encourages member states to offer compensation to workers affected by these diseases.
- **Impact:** This recommendation aids in the proper diagnosis and treatment of occupational diseases, ensuring affected workers are compensated and protected.

5. ILO Convention No. 138 – Minimum Age Convention (1973)

- **Objective:** This convention aims to combat child labor and protect young workers.

- **Key Provisions:**
 - Prohibits the employment of children below the minimum age of 15 (or 14 in some developing countries).
 - Prohibits hazardous work for anyone under 18 years old.
- **Impact:** The convention ensures that children are not exposed to dangerous work environments, safeguarding their health and well-being.

1B.2 The Environment Protection Act, 1986

The **Environment Protection Act (EPA), 1986** was enacted in India to provide a framework for the protection and improvement of the environment. It plays a crucial role in ensuring that industrial activities do not compromise the health and safety of workers and the environment.

Key Provisions of the Environment Protection Act

1. **Objective:** The EPA aims to protect and improve the environment by regulating activities that lead to pollution, environmental degradation, and health hazards.
2. **Prevention of Environmental Pollution:**
 - The Act empowers the government to take action to control pollution from industries.
 - Industries must comply with pollution control standards and adopt measures to minimize waste and emissions.
3. **Environmental Impact Assessment (EIA):**
 - Industries are required to conduct EIAs before starting new projects. This ensures that potential environmental impacts are identified and addressed early in the planning process.
 - EIAs help assess the effects of industrial activities on air, water, soil, and surrounding ecosystems, leading to better decision-making and minimizing environmental risks.
4. **Waste Management:**
 - The Act provides guidelines for the disposal and management of hazardous waste, ensuring it does not pose risks to human health or the environment.
 - It mandates the safe handling, transportation, and disposal of toxic chemicals, ensuring that workers and surrounding communities are protected from hazardous exposures.

5. **Environmental Standards:**

- The Act empowers the government to set standards for emissions, discharge of pollutants, and the use of natural resources. Compliance with these standards is mandatory for all industries.
- Failure to comply can result in penalties, including fines and imprisonment for responsible parties.

6. **Monitoring and Enforcement:**

- The Act provides for the monitoring of environmental quality through inspections, audits, and reporting mechanisms.
- It empowers authorities to close down industrial operations or impose restrictions if environmental laws are violated.

Impact of the Environment Protection Act on Industrial Safety

- **Worker Safety:** By regulating emissions and hazardous waste, the Act directly impacts the health and safety of workers exposed to harmful substances in the workplace.
- **Sustainable Industrial Practices:** The Act encourages industries to adopt eco-friendly practices, reducing their environmental footprint while ensuring the health and safety of workers and surrounding communities.
- **Accountability:** The Act holds industries accountable for environmental degradation and encourages compliance with environmental safety standards, thereby improving overall industrial safety.

Case Studies for The Environment Protection Act, 1986

1. Bhopal Gas Tragedy (1984) and The Environment Protection Act, 1986

Overview: The Bhopal Gas Tragedy was one of the world's worst industrial disasters, where a gas leak from the Union Carbide pesticide plant in Bhopal, India, resulted in the deaths of thousands and long-term health issues for over half a million people. This incident exposed the severe lack of environmental and industrial safety regulations in India at the time.

Relevance to the Environment Protection Act, 1986:

- The tragedy catalyzed the enactment of the **Environment Protection Act, 1986**, which was passed to prevent such disasters in the future by ensuring stringent regulation of hazardous industries.
- Under the EPA, industries are now required to follow environmental safety standards, conduct regular safety audits, and ensure safe disposal of hazardous materials.

- The Act gave authorities the power to take preventive and remedial actions, including shutting down hazardous operations, which was lacking during the Bhopal disaster.

Impact: The EPA provided a legal framework for the Indian government to take strong action against polluting industries and laid the foundation for environmental justice and industrial safety in India.

2. Sterlite Copper Plant Closure (2018)

Overview: The Sterlite Copper plant in Thoothukudi, Tamil Nadu, was accused of violating environmental norms for several years, causing air and water pollution. Local residents had long complained about respiratory problems and contamination of drinking water. Protests escalated in 2018, leading to a police crackdown that resulted in the death of 13 protesters.

Relevance to the Environment Protection Act, 1986:

- The Tamil Nadu Pollution Control Board (TNPCB) invoked the **Environment Protection Act, 1986**, to shut down the plant after it found that the company was discharging untreated effluents into the environment and not complying with environmental regulations.
- The EPA's provisions allowed the state to take immediate action to protect public health and the environment by closing the plant.
- The Act empowered the authorities to revoke the company's operational licenses and ensured that industries adhere to strict environmental safety standards to prevent pollution.

Impact: This case underscored the effectiveness of the EPA in regulating large-scale industries and holding them accountable for environmental violations. It highlighted the importance of enforcing environmental laws to protect community health and the ecosystem.

3. Ganga Pollution Case (M.C. Mehta vs Union of India, 1987)

Overview: The Ganga River, a lifeline for millions, had been heavily polluted by industrial waste, untreated sewage, and other harmful pollutants. Environmentalist M.C. Mehta filed a Public Interest Litigation (PIL) to stop industries from polluting the river. This case played a pivotal role in raising awareness about industrial pollution in India.

Relevance to the Environment Protection Act, 1986:

- The Supreme Court, under the provisions of the **Environment Protection Act, 1986**, ordered the closure of numerous polluting industries located along the Ganga River. These industries were discharging untreated waste into the river, violating the EPA's norms.
- The EPA provided the legal tools necessary for the government to mandate strict waste treatment practices and prevent further pollution of the river.

- The Act enabled the central government to issue guidelines for the regulation of industrial waste and effluent treatment, ensuring industries comply with environmental standards.

Impact: The Ganga pollution case became a landmark in environmental jurisprudence and emphasized the power of the EPA in regulating and controlling industrial pollution. It also set a precedent for other environmental cases concerning river and water body protection in India.

These case studies illustrate how the **Environment Protection Act, 1986**, serves as a robust legal framework to safeguard the environment from industrial pollution and enforce environmental standards for the health and safety of both the environment and people.

Conclusion- By adhering to the ILO Conventions and Recommendations, along with compliance with the Environment Protection Act, industries can foster a safer and healthier workplace while minimizing risks to workers, the environment, and public health.

MULTIPLE-CHOICE QUESTIONS (MCQS)

ILO Conventions and Recommendations

1. What is the primary objective of ILO Convention No. 155 (Occupational Safety and Health, 1981)?

- a) To promote child labor regulations
- b) To establish a minimum wage for workers
- c) To adopt national occupational safety and health policies
- d) To create a standardized list of occupational diseases

Correct Answer: c) To adopt national occupational safety and health policies

2. ILO Convention No. 187 focuses on:

- a) Child labor protection
- b) The creation of a national system for occupational safety and health
- c) Updating the list of occupational diseases
- d) Ensuring equal pay for equal work

Correct Answer: b) The creation of a national system for occupational safety and health

3. Which provision is part of ILO Convention No. 161 (Occupational Health Services, 1985)?

- a) Prohibiting hazardous work for minors
- b) Monitoring workplace conditions and health surveillance

- c) Creating a promotional framework for workplace safety
- d) Providing compensation for occupational diseases

Correct Answer: b) Monitoring workplace conditions and health surveillance

4. ILO Recommendation No. 194 (List of Occupational Diseases, 2002) includes which provision?

- a) Setting minimum wages for all employees
- b) Establishing health services for workers
- c) Standardizing diseases eligible for compensation
- d) Requiring EIAs for new industrial projects

Correct Answer: c) Standardizing diseases eligible for compensation

Environment Protection Act, 1986

5. What is the primary objective of the Environment Protection Act (EPA), 1986?

- a) To regulate working hours of factory employees
- b) To protect and improve the environment by regulating pollution
- c) To establish health surveillance systems for workers
- d) To enforce equal pay for all genders

Correct Answer: b) To protect and improve the environment by regulating pollution

6. What is required under the Environmental Impact Assessment (EIA) provision of the EPA, 1986?

- a) Establishing occupational health services
- b) Identifying environmental impacts before starting new projects
- c) Prohibiting child labor in hazardous industries
- d) Providing financial compensation for workplace accidents

Correct Answer: b) Identifying environmental impacts before starting new projects

7. How does the EPA, 1986 address hazardous waste management?

- a) By ensuring safe handling, transportation, and disposal of toxic chemicals
- b) By setting minimum wages for employees handling waste

- c) By providing workers with free health insurance
- d) By regulating the working hours of employees in waste management industries

Correct Answer: a) By ensuring safe handling, transportation, and disposal of toxic chemicals

8. One impact of the Environment Protection Act on industrial safety is:

- a) Promoting child labor in certain industries
- b) Encouraging industries to adopt eco-friendly practices
- c) Providing equal remuneration for male and female workers
- d) Regulating rest periods for factory employees

Correct Answer: b) Encouraging industries to adopt eco-friendly practices

SHORT ANSWER QUESTIONS

1. What is the primary objective of the Environment Protection Act, 1986?
2. How did the Bhopal Gas Tragedy influence the creation of the Environment Protection Act, 1986?
3. What is the role of Environmental Impact Assessments (EIA) under the Environment Protection Act, 1986?
4. How does the Environment Protection Act, 1986, help in regulating hazardous waste?
5. What powers does the Environment Protection Act, 1986, grant authorities in cases of non-compliance by industries?

LONG ANSWER QUESTIONS

1. Discuss the key provisions of the Environment Protection Act, 1986, and how it serves as a framework for regulating environmental safety in India. Provide examples of how the Act has been used to address industrial pollution.
2. Explain the role of the International Labour Organization (ILO) Conventions in improving workplace safety and health. How do these conventions complement the Environment Protection Act, 1986, in promoting industrial safety?
3. Analyze the impact of the Sterlite Copper Plant closure on environmental and public health. How did the provisions of the Environment Protection Act, 1986, influence the decision to shut down the plant, and what lessons can be learned for future industrial projects?

PRACTICAL QUESTIONS

1. How would you assess whether a manufacturing plant is complying with the Environment Protection Act, 1986? Describe the steps you would take to conduct an environmental audit.
2. Imagine you are tasked with setting up an Environmental Impact Assessment (EIA) for a new factory. What key factors would you consider, and how would you address potential environmental risks?
3. A factory in your area is suspected of violating environmental safety standards by discharging untreated waste into a nearby river. What immediate actions would you take to investigate and address this issue in accordance with the Environment Protection Act, 1986?



OCCUPATIONAL SAFETY, HEALTH, AND ENVIRONMENT (OSHE) MANAGEMENT

- A. Bureau of Indian standards on safety and health 14489 – 1998 and 15001 – 2000 OSHA, Process Safety Management (PSM) as per OSHA
- B. PSM Principle, OHSAS – 18001, EPA Standards, Performance Measurements to determine effectiveness of PSM

Unit Structure :

- 2.1 Introduction to Oshe Management
- 2.2 Bureau of Indian Standards on Safety and Health
- 2.3 Osha's Process Safety Management (PSM)
- 2.4 PSM Principle
- 2.5 Ohsas – 18001
- 2.6 Environmental Protection Agency (EPA) Standards
- 2.7 Performance Measurements For PSM Effectiveness

2.1. INTRODUCTION TO OSHE MANAGEMENT

OSHE management is a holistic approach in terms of ensuring that the workplace is safe, healthy, and environmentally responsible. It seeks to ensure protection against possible risks among workers, reduction of workplace accidents, and prevention of further environmental deterioration. With integration at the levels of safety protocols, health standards, and environmental policies, OSHE management ensures observance to regulatory requirements, efficiency in operations, and organization culture. It is important in every industry, as it ensures that the work force is prioritized, risks are at a minimum, and companies are assisting with the sustainability of the environment.

Definition: OSHE Management involves the systematic control of hazards in the workplace to protect worker health, ensure safety, and reduce environmental impact. It is a key component of sustainable business practices.

2.2. BUREAU OF INDIAN STANDARDS ON SAFETY AND HEALTH

The Bureau of Indian Standards (BIS) has developed guidelines to ensure safety and health in workplaces. Two significant standards include:

➤ **IS 14489: 1998 - Code of Practice on Occupational Safety and Health**

This standard provides guidelines for implementing occupational safety and health practices in workplaces to prevent accidents and health hazards.

Features

1. Safety Policy:

Employers must establish and communicate a written safety policy that outlines the organization's commitment to safety, specifies responsibilities, and defines safety objectives.

Example:

Tata Steel's safety policy is a benchmark in the industry. It includes zero-harm goals and extensive communication channels to ensure all employees understand safety procedures. Regular safety audits and reporting mechanisms are integral to their approach. Tata Steel's policy helped reduce workplace accidents by 20% over five years.

2. Risk Assessment:

Organizations must regularly identify workplace hazards and risks, evaluate their potential impact, and implement control measures to mitigate them.

Example:

In chemical plants like those operated by Hindustan Unilever, risk assessment involves mapping the risks of handling hazardous materials such as ammonia. After conducting a thorough hazard analysis, the company introduced advanced personal protective equipment (PPE) and automated chemical handling systems, significantly reducing worker exposure to harmful chemicals.

3. Emergency Preparedness:

This involves establishing procedures for responding to emergencies such as fires, chemical spills, equipment malfunctions, or natural disasters.

Example:

At ONGC's offshore oil platforms, emergency drills for oil spills and fire outbreaks are conducted every quarter. These drills ensure that workers are prepared to respond quickly, minimizing environmental and operational damage. During the Mumbai floods in 2005, ONGC's preparedness helped secure critical equipment and ensure worker safety.

4. Training and Awareness:

Employers must train employees in safety protocols, hazard identification, proper equipment usage, and emergency response. Continuous awareness programs ensure a culture of safety.

Example:

The Indian Railways frequently organizes workshops for its maintenance workers to educate them on track safety and the use of modern tools. For instance, the introduction of ultrasonic flaw detectors for rail inspection was preceded by comprehensive training sessions, leading to a reduction in rail accidents.

5. Workplace Design:

Infrastructure should be designed or modified to ensure safety, such as proper ventilation, fire exits, and ergonomic layouts to prevent risks.

Example:

Infosys campuses in India are designed with employee safety in mind. Features include automated fire suppression systems, well-marked emergency exits, and anti-skid flooring in high-traffic areas. These measures ensure a safe working environment for its employees and visitors.

By implementing these measures, Indian organizations have successfully enhanced workplace safety and minimized risks. These examples illustrate the practical application of safety standards, showcasing their relevance in protecting employees and ensuring operational continuity.

➤ **IS 15001: 2000 - Occupational Health and Safety Management Systems**

This standard focuses on establishing an Occupational Health and Safety (OHS) management system that integrates safety measures into organizational processes.

Features:

1. Policy and Planning:

Developing Occupational Health and Safety (OHS) objectives and integrating them into business practices involves setting clear safety goals, creating frameworks to achieve them, and embedding these measures into daily operations.

Example:

The Indian Oil Corporation (IOCL) has a comprehensive OHS policy that focuses on preventing workplace accidents and promoting a safety culture. IOCL integrates these objectives into its operations by mandating safety drills and continuous risk assessments at its refineries. The policy includes goals such as achieving "zero accidents," which is tracked via regular performance reviews.

Case Study:

Larsen & Toubro (L&T):

L&T's construction division implemented an OHS management plan to reduce accidents at construction sites. The plan involved setting

measurable safety goals such as a 20% reduction in incidents annually and integrating them into project execution. As a result, the division achieved a 30% reduction in site accidents within three years

2. Operational Control:

This involves identifying high-risk operations and implementing controls to mitigate potential hazards. It includes using engineering controls, administrative controls, and personal protective equipment (PPE).

Example:

Hindustan Zinc Limited (HZL):

HZL identified mining as a high-risk operation due to the potential for cave-ins and toxic gas exposure. To mitigate these risks, the company deployed automated mining equipment, installed gas detectors, and mandated the use of advanced PPE for workers.

Case Study:

Vizag Steel Plant:

After a gas leak incident in 2014, the plant revamped its operational control measures by installing advanced sensors and upgrading its safety protocols. These measures significantly reduced the likelihood of similar incidents, ensuring a safer workplace for its employees.

3. Monitoring and Measurement:

Regular audits and inspections ensure compliance with OHS standards and help identify gaps in safety practices.

Example:

Maruti Suzuki India Ltd.:

Maruti Suzuki conducts monthly safety audits at its manufacturing plants to monitor compliance with OHS standards. These audits focus on machinery maintenance, employee training records, and emergency preparedness. Any deviations are immediately addressed with corrective actions.

Case Study:

Aditya Birla Group:

The company's aluminium division implemented a digital safety monitoring system to track workplace safety parameters. Regular audits identified areas of concern, such as excessive noise levels in one plant, which were mitigated through soundproofing measures. This initiative improved worker satisfaction and reduced workplace injuries.

4. Incident Investigation:

A systematic approach to investigating incidents helps identify root causes and implement corrective actions to prevent recurrence.

Example:

Tata Chemicals:

After a machinery failure caused an injury at one of its plants, Tata Chemicals conducted an in-depth root cause analysis. The investigation revealed gaps in routine maintenance schedules, leading to the implementation of a stricter maintenance regime and improved safety checks.

Case Study:

The Bhopal Gas Tragedy (1984):

While tragic, the incident underscored the need for incident investigation and root cause analysis. Had Union Carbide conducted a thorough investigation of prior smaller leaks and adopted stricter controls, the catastrophic disaster might have been averted. Modern chemical plants in India now use lessons from Bhopal to prioritize incident investigations and proactive safety measures.

Integrating these features into OHS practices ensures a safer working environment, boosts employee morale, and minimizes operational disruptions.

2.3. OSHA'S PROCESS SAFETY MANAGEMENT (PSM)

The Occupational Safety and Health Administration (OSHA) introduced the PSM standard to prevent hazardous chemical accidents.

PSM (29 CFR 1910.119):

The PSM standard applies to processes involving highly hazardous chemicals.

Elements of PSM:

1. Employee Participation

Involving employees in the development and implementation of Process Safety Management (PSM) plans ensures practical insights from those directly handling hazardous processes.

Example:

At Hindustan Unilever's chemical plant in Maharashtra, workers are involved in risk assessments and safety drills. Their feedback on machinery safety improvements led to the redesign of workstations, reducing the risk of chemical exposure.

Case Study:

ExxonMobil Refinery

ExxonMobil involved workers in creating emergency shutdown procedures. By incorporating their experiences, the company improved the response time during incidents, significantly reducing the scale of potential disasters.

2. Process Safety Information (PSI)

Maintaining detailed information on chemicals, technology, and equipment is vital for identifying and mitigating risks.

Example:

Reliance Industries Limited (RIL):

In its Jamnagar refinery, RIL maintains an extensive database of safety information for each chemical stored. This data helps workers understand safe handling practices and respond effectively in case of leaks or spills.

Case Study:

Union Carbide Bhopal Incident:

Had comprehensive PSI been maintained and shared with workers, the dangers of methyl isocyanate (MIC) could have been better understood and mitigated, potentially averting the tragedy.

3. Hazard Analysis

A Process Hazard Analysis (PHA) identifies potential risks in operations and recommends control measures.

Example:

Bharat Petroleum Corporation Limited (BPCL):

BPCL regularly conducts PHAs at its Kochi refinery. A PHA identified risks in a high-temperature pipeline system, prompting the installation of additional insulation, preventing accidents.

Case Study:

DuPont Chemical Plant Incident:

A PHA conducted at a DuPont plant revealed risks in a phosgene unit. After implementing recommended safety measures, including additional barriers and training, incidents involving phosgene exposure were eliminated.

4. Operating Procedures

Clear instructions for operating and maintaining processes are essential for minimizing human error.

Example:

At Deepak Nitrite Limited, operating procedures for handling nitric acid include step-by-step guidelines for equipment use and emergency shutdowns. These procedures are reviewed and updated annually.

Case Study:

Texas City Refinery Explosion (2005):

A lack of clear operating procedures contributed to this disaster. Post-incident, the company implemented detailed operational guidelines, resulting in a significant decrease in future safety incidents.

5. Training

Ongoing training ensures employees are well-versed in safety protocols and emergency actions.

Example:

Tata Steel:

The Jamshedpur plant provides yearly safety training for employees handling hazardous chemicals. Training includes simulations of chemical spills and fire outbreaks, enabling workers to respond effectively.

Case Study:

Chevron Richmond Refinery:

Following an incident caused by employee error, Chevron implemented a rigorous training program. Over five years, the training reduced operational errors by 40%.

6. Emergency Planning

Comprehensive emergency response plans are vital for minimizing the impact of accidents.

Example:

Indian Oil Corporation:

After a fire incident at a depot, IOCL developed an emergency plan involving nearby fire stations, local hospitals, and evacuation routes, improving community safety.

Case Study:

Fukushima Nuclear Disaster (2011):

Though not chemical-related, the incident highlighted the importance of emergency planning. Lessons learned have influenced industries worldwide, including the adoption of detailed evacuation plans and backup safety systems.

7. Mechanical Integrity

Ensuring that all equipment is regularly maintained and inspected is critical for preventing mechanical failures.

Example:

Gujarat Alkalies and Chemicals Limited (GACL):

The company schedules monthly maintenance of its pressure vessels and pipelines. Advanced monitoring systems detect wear and tear, preventing unexpected failures.

Case Study:

BP Deepwater Horizon Spill (2010):

The lack of proper maintenance led to equipment failure and one of the worst oil spills in history. Afterward, stricter mechanical integrity protocols were enforced across the industry.

8. Incident Investigation

Analyzing incidents or near-misses helps identify root causes and implement corrective actions.

Example:

ONGC Hazira Plant:

After a gas leak incident, ONGC conducted an investigation revealing that corroded pipelines were the root cause. The company replaced the pipelines and introduced real-time monitoring systems.

Case Study:

Phillips 66 Houston Explosion (1989):

Following the explosion, investigators identified procedural lapses and outdated equipment. The company implemented new protocols and equipment upgrades, improving workplace safety significantly.

OSHA's PSM standards ensure the safe management of processes involving hazardous chemicals, thereby reducing risks to workers, communities, and the environment.

Comparison: IS Standards vs. OSHA PSM

Aspect	IS 14489/15001	OSHA PSM
Focus Area	General workplace safety and health	Safety in hazardous chemical processes
Scope	Applicable to all industries	Specific to industries handling hazardous chemicals
Risk Assessment	Comprehensive risk assessment	Process Hazard Analysis (PHA)
Employee Involvement	Emphasized	Mandatory
Training	General safety training	Specific to hazardous processes

2.4. PSM PRINCIPLE

Process Safety Management (PSM) Principles

Process Safety Management (PSM) focuses on the prevention of accidents involving hazardous chemicals. The key principles include:

1. Employee Participation

Active participation of employees in safety-related planning and implementation ensures that safety measures are practical and effective. Their firsthand knowledge of processes provides valuable insights into potential hazards.

Key Elements:

- Involvement in risk assessments and audits.
- Participation in emergency preparedness drills and reviews.
- Representation in safety committees.

Example:

In ONGC (Oil and Natural Gas Corporation), employees actively participate in safety drills and are involved in reviewing emergency plans. A notable initiative was the worker-driven identification of risks during an offshore oil platform fire drill, which led to the revision of evacuation protocols, ensuring quicker response times.

Importance:

Engaging employees creates a culture of safety, making them more vigilant and proactive in identifying and addressing hazards.

2. Hazard Analysis

Conducting a Process Hazard Analysis (PHA) involves systematic identification and evaluation of potential risks in industrial processes to prevent accidents and implement control measures.

Steps in PHA:

1. Identifying hazardous chemicals and processes.
2. Assessing potential failure scenarios.
3. Proposing safeguards to mitigate risks.

Case Study: Visakhapatnam Gas Leak (2020):

- **Background:**

A gas leak at the LG Polymers plant in Visakhapatnam resulted in the release of styrene gas, affecting thousands in nearby villages and causing 11 fatalities.

- **Findings:**
The absence of comprehensive hazard analysis was a key factor. Inadequate refrigeration and monitoring systems allowed the gas to vaporize unchecked.

3. Operating Procedures

Developing and implementing clear, step-by-step instructions for safely operating machinery and handling hazardous materials ensures consistency and reduces human errors.

Key Components of Operating Procedures:

1. Detailed process descriptions.
2. Safe start-up and shutdown practices.
3. Emergency shutdown protocols.

Example: Tata Steel

- **Practice:**
Tata Steel implemented detailed operating procedures for handling molten metal in its Jamshedpur plant. Employees are trained rigorously to follow standardized protocols, including wearing PPE (Personal Protective Equipment) and adhering to strict safety measures during operations.
- **Result:**
The plant reported a 30% reduction in workplace accidents over three years and received the British Safety Council Sword of Honour for excellence in safety management.

Importance:

- Minimizes accidents caused by miscommunication or lack of knowledge.
- Ensures consistent handling of hazardous materials across shifts.

4. Incident Investigation

Analyzing incidents, including near-misses, to identify their root causes and implement corrective actions to prevent recurrence.

Steps in Incident Investigation:

1. Immediate containment of the situation.
2. Collecting data from witnesses and equipment.
3. Root cause analysis using methods like Fishbone Diagrams or the 5 Whys technique.
4. Developing and implementing action plans.

Case Study: Jaipur Oil Depot Fire (2009)

- **Background:**
An oil depot fire at the Indian Oil Corporation (IOC) facility in Jaipur resulted in massive explosions, killing 11 people and causing widespread damage.
- **Findings:**
Investigations revealed:
 - Poor adherence to safety protocols during oil transfer operations.
 - Lack of training and awareness among workers handling hazardous substances.
- **Corrective Actions:**
IOC implemented stricter operating procedures, enhanced fire safety measures, and conducted regular safety training for employees across all facilities.
- **Outcome:**
Post-incident measures significantly reduced fire incidents at IOC facilities, with the Jaipur depot serving as a benchmark for safety practices.

Understanding and implementing these PSM principles is crucial for ensuring workplace safety, especially in industries handling hazardous materials.

- Employee Participation fosters a safety-conscious culture, as seen in ONGC.
- Hazard Analysis identifies and mitigates risks proactively, a lesson from the Visakhapatnam gas leak.
- Operating Procedures provide a clear framework for safe operations, as demonstrated by Tata Steel.
- Incident Investigation prevents recurrence of similar incidents, illustrated by the IOC Jaipur fire case.

2.5. OHSAS – 18001

OHSAS 18001 (Occupational Health and Safety Assessment Series) provides a framework for organizations to create a safer workplace, reduce risks, and comply with occupational safety regulations.

1. Policy and Objectives

Organizations are required to draft a written Occupational Health and Safety (OHS) policy that outlines their commitment to creating a safe and healthy work environment. This policy sets the tone for management and employees to prioritize safety at all levels.

Key Features:

- The policy must reflect the organization's safety objectives.
- It should be communicated to all employees and stakeholders.
- Demonstrates top management's commitment to workplace safety.

Example:**Infosys:**

Infosys developed an OHS policy focused on promoting employee well-being. The policy included measures like ergonomic workplace designs, stress management workshops, and frequent safety audits. These initiatives led to a 30% reduction in workplace injuries and enhanced employee satisfaction.

Significance:

Having a clearly articulated OHS policy helps align organizational goals with safety practices, making it a foundation for a culture of safety.

2. Risk Assessment

Risk assessment involves systematically identifying potential hazards in the workplace, evaluating their impact, and implementing measures to eliminate or control risks.

Key Steps:

1. Identifying potential hazards (e.g., mechanical, chemical, electrical).
2. Assessing the likelihood and severity of each hazard.
3. Implementing control measures such as guards, alarms, or safety signage.

Case Study: Steel Manufacturing Unit in Jamshedpur

- **Background:**

A leading steel plant adopted OHSAS 18001 to improve workplace safety.

- **Action Taken:**

Conducted comprehensive risk assessments that identified machinery as a primary source of accidents. Safety guards and interlock systems were installed on high-risk machinery.

- **Outcome:**

Workplace accidents decreased by 40%, and employee confidence in safety measures improved significantly.

Significance:

Risk assessment prevents accidents, protects workers, and ensures compliance with safety regulations.

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3. Training

Regular and comprehensive training ensures employees are aware of safety protocols, emergency response actions, and proper handling of equipment and materials.

Key Features:

- Tailored training programs for different job roles.
- Hands-on training for high-risk activities.
- Periodic refresher courses to reinforce knowledge.

Example:**Bharat Petroleum Corporation Limited (BPCL):**

BPCL conducts mandatory safety training for its refinery workers, focusing on fire safety, handling hazardous chemicals, and emergency evacuation. Their training programs include mock drills and real-life simulations. This has significantly reduced the response time during emergencies.

Significance:

Training empowers employees to act confidently during emergencies and reduces the likelihood of human error leading to accidents.

4. Continual Improvement

OHSAS 18001 emphasizes continuous improvement by regularly evaluating safety practices and making necessary adjustments based on audits, incidents, and advancements in safety technology.

Key Actions:

- Conducting periodic internal and external audits.
- Reviewing incident reports to identify patterns or recurring issues.
- Updating policies and procedures to address identified gaps.

Example:**Larsen & Toubro (L&T):**

L&T uses OHSAS audits to identify safety gaps in construction sites, such as inadequate scaffolding or lack of personal protective equipment (PPE). Based on audit findings, L&T introduced stricter compliance measures and updated its safety manual. This resulted in better adherence to safety protocols and a significant reduction in on-site accidents.

Significance:

Continuous improvement ensures that the safety management system remains dynamic, adaptive, and effective in addressing evolving risks and challenges.

The key elements of OHSAS 18001—policy and objectives, risk assessment, training, and continual improvement—form a robust framework for managing occupational health and safety. By integrating these practices, organizations not only comply with safety standards but also protect their workforce, enhance productivity, and build a reputation for being responsible employers.

Real-world Insights:

- Infosys's OHS policy showcases the importance of leadership commitment.
- The Jamshedpur steel plant's risk assessment illustrates the practical benefits of identifying and mitigating hazards.
- BPCL's training programs highlight the role of employee preparedness in emergency scenarios.
- L&T's continual improvement demonstrates how regular evaluations lead to sustainable safety enhancements.

2.6 ENVIRONMENTAL PROTECTION AGENCY (EPA) STANDARDS

The Environmental Protection Agency (EPA) sets various standards to safeguard the environment by minimizing the risks posed by industrial operations. In India, industries have increasingly adopted EPA-compliant practices to ensure environmental protection, following national and international standards.

1. Hazardous Waste Management

Standard: The EPA mandates the proper handling, treatment, and disposal of hazardous waste to prevent environmental contamination.

Case Study:

- **Pharmaceutical Company in Hyderabad:** A prominent pharmaceutical company in Hyderabad has implemented EPA-compliant waste treatment plants that adhere to hazardous waste disposal norms. By using advanced chemical neutralization processes, they ensure that hazardous by-products such as expired chemicals, solvents, and heavy metals are safely processed. As a result, this initiative has significantly reduced the risk of groundwater contamination and protected surrounding ecosystems.

- **Example:** The Indian government, through the Ministry of Environment, Forest and Climate Change (MoEFCC), has introduced the **Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016**, aimed at improving waste disposal methods and ensuring industries handle hazardous waste responsibly. Companies are required to follow these rules for the safe disposal of hazardous substances, aligning with EPA standards.

2. Air Quality Standards

Standard: The EPA regulates industrial emissions by establishing stringent limits on pollutants such as particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and carbon monoxide (CO) to ensure the maintenance of air quality.

Case Study:

- **Delhi Metro Rail Corporation (DMRC):** DMRC adopted EPA-aligned practices by focusing on the use of clean and renewable energy sources for their operations. This initiative included the use of solar panels, energy-efficient trains, and a focus on reducing emissions through the integration of electric trains and eco-friendly stations. By making these changes, DMRC has significantly reduced air pollution levels in Delhi, especially in areas near metro corridors, contributing to cleaner air in the capital city.
- **Example:** The **National Clean Air Programme (NCAP)** launched by the Government of India in 2019 seeks to reduce particulate matter (PM) levels in urban areas. The program emphasizes initiatives like upgrading industrial practices to meet air quality standards, thus aligning with EPA air quality standards.

3. Water Pollution Control

Standard: The EPA's water pollution standards mandate that industries treat wastewater before discharging it into natural water bodies, ensuring that no untreated or harmful effluents contaminate the environment.

Case Study:

- **ITC's Paper Division (Zero Liquid Discharge Facility):** ITC's paper division, located in Bhadrachalam, Andhra Pradesh, has implemented a **Zero Liquid Discharge (ZLD)** system to ensure that no untreated water is discharged into nearby rivers or water bodies. The facility treats its wastewater through a multi-stage process that includes physical, chemical, and biological treatments, and all the water is recycled for internal use. This initiative aligns with both national and EPA water quality standards, ensuring the preservation of local water bodies and reducing the company's environmental footprint.
- **Example:** The **Ganga Action Plan (GAP)**, a government initiative aimed at cleaning and rejuvenating the river Ganga, has encouraged industries in cities along the river to install wastewater treatment plants

that comply with pollution control standards. Under this plan, several industries in Uttar Pradesh, Bihar, and West Bengal have adopted water treatment technologies to prevent untreated waste from polluting the river.

These case studies reflect India's increasing focus on aligning industrial operations with international environmental standards like those set by the EPA. Many industries are now investing in sustainable practices, innovative technologies, and regulatory compliance, recognizing the importance of environmental protection not only for ecological balance but also for long-term business sustainability.

2.7. PERFORMANCE MEASUREMENTS FOR PSM EFFECTIVENESS

Performance measurements for **PSM (Process Safety Management) Effectiveness** are essential for ensuring that industrial safety standards are met and maintained. The right indicators help organizations assess the success of their safety measures and identify areas needing improvement.

1. Key Performance Indicators (KPIs)

KPIs are essential for measuring the effectiveness of safety initiatives. These indicators can be classified into **lagging** and **leading** indicators.

- **Lagging Indicators:** These are reactive in nature and focus on past incidents. For example, metrics like the number of workplace accidents, fatalities, and medical treatments indicate the historical effectiveness of safety systems.

Case Study: Bhopal Gas Tragedy (1984): The Bhopal Gas Tragedy is one of India's most tragic industrial accidents. The lagging indicator in this case was the number of fatalities and injuries caused by the gas leak. While this is an unfortunate example, it highlighted the need for stronger safety regulations and led to the **Factories Act, 1948**, being amended with stricter provisions.

Example: ONGC (Oil and Natural Gas Corporation) tracks incidents like oil spills and accidents, and correlates these with safety training and audit data. By doing so, ONGC has been able to predict future safety issues and take corrective measures to prevent accidents.

- **Leading Indicators:** These are proactive and focus on activities that predict future safety performance. Metrics like the number of safety drills conducted, training hours completed, and equipment inspections performed fall under this category.

Example: ONGC tracks the frequency of safety drills and correlates higher drill frequencies with fewer workplace accidents, using it as a leading indicator of safety effectiveness. This proactive approach ensures that employees are well-prepared to handle emergencies before they occur.

2. Safety Audits

Regular safety audits are critical for ensuring compliance with safety standards and uncovering potential risks before they result in incidents.

Case Study: Hindustan Zinc Limited (HZL): In 2019, Hindustan Zinc Limited (HZL), a subsidiary of Vedanta Group, conducted regular safety audits across its mining and smelting operations. The audits uncovered significant gaps in machinery maintenance, particularly in equipment used for mineral processing. This finding led to the implementation of a more robust maintenance schedule and the replacement of outdated machinery, which directly contributed to a reduction in machinery failures and accidents.

Legal Case: Bhopal Gas Tragedy and Its Aftermath: In the aftermath of the Bhopal disaster, India's legal framework on industrial safety evolved significantly. The **Factories Act, 1948**, was strengthened, and safety audits were made mandatory for high-risk industries. Courts held that regular safety audits and equipment checks were necessary to prevent such catastrophes, and the **Supreme Court of India** directed the implementation of stricter safety measures across chemical plants.

3. Employee Feedback

Engaging employees in safety measures and gathering feedback on existing protocols can provide valuable insights into areas for improvement. Employee feedback helps organizations identify practical improvements and make the workplace safer.

Example: Automobile Manufacturer in Pune: A leading automobile manufacturer in Pune implemented a suggestion box system where employees could anonymously provide feedback on safety measures. As a result, employees highlighted issues with the comfort and functionality of protective gear. The management responded by redesigning the protective gear, improving both safety and employee satisfaction.

Legal Framework: In India, the **Factories Act, 1948** and **Occupational Safety, Health and Working Conditions Code, 2020** advocate for employee participation in health and safety issues. The Act mandates that employers consult employees on safety and welfare matters, ensuring that their feedback is considered in safety decision-making.

4. Benchmarking

Benchmarking involves comparing an organization's safety performance with that of industry peers, especially global standards. This process helps identify gaps and highlights areas for improvement.

Example: Reliance Petrochemicals benchmarks its safety performance against global standards like those set by the **Occupational Safety and Health Administration (OSHA)** and the **American Petroleum Institute (API)**. Reliance uses these benchmarks to gauge its performance, ensuring that it maintains a competitive edge in safety compliance. The company

implements best practices that align with the highest global standards in workplace safety, such as reducing lost-time injury rates and minimizing accidents.

Case Law: In the **Union Carbide Corporation v. Union of India** case (1991), the Indian Supreme Court stressed the importance of following international safety standards in industries dealing with hazardous materials. It emphasized the role of benchmarking against global safety norms and the need for stringent regulatory frameworks to prevent disasters like the Bhopal Gas Tragedy. This judgment has influenced Indian companies, including Reliance, to adopt international safety benchmarks.

The key performance measurements, including KPIs, safety audits, employee feedback, and benchmarking, are crucial for ensuring the effectiveness of Process Safety Management (PSM) in industrial operations. By leveraging these performance indicators and adhering to legal and industry standards, Indian companies can significantly improve their safety performance. Legal cases like Bhopal have prompted India to strengthen its regulatory framework, mandating safer industrial practices, and encouraging companies to adopt proactive safety measures.

In conclusion, adherence to safety and health standards such as BIS (IS 14489:1998, IS 15001:2000), OSHA's Process Safety Management (PSM) principles, OHSAS 18001, and EPA standards is crucial for ensuring workplace safety and environmental protection. These frameworks provide guidelines for risk assessment, hazard control, and continuous improvement. Performance measurements like KPIs, safety audits, employee feedback, and benchmarking help assess the effectiveness of safety systems. By implementing these standards and regularly evaluating their performance, organizations can enhance safety, comply with regulations, and ensure a healthier work environment.

QUESTIONS:

1. What are the safety standards established by the Bureau of Indian Standards for occupational health and safety?
2. How does Process Safety Management contribute to workplace safety?
3. How can performance measurements like KPIs and safety audits help in assessing the effectiveness of safety management?
4. What are the differences between BIS standards and OSHA's safety management principles?
5. How can organizations ensure continuous improvement in safety management through regular benchmarking and employee feedback?

MCQ:

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1. **Which of the following is a key standard established by the Bureau of Indian Standards (BIS) for occupational health and safety?**
 - a) IS 14489:1998
 - b) OSHA 18001
 - c) IS 15001:2000
 - d) Both a and c
2. **How does Process Safety Management (PSM) help improve workplace safety?**
 - a) By focusing on reactive measures after incidents occur
 - b) By identifying hazards and implementing controls before incidents happen
 - c) By only focusing on environmental pollution
 - d) By ignoring worker feedback on safety issues
3. **Which of the following performance measurements is used to assess the effectiveness of safety management systems?**
 - a) Employee satisfaction surveys
 - b) Safety audits
 - c) Market share analysis
 - d) Product development time
4. **What is the primary difference between BIS standards and OSHA's Process Safety Management principles?**
 - a) BIS standards focus on environmental protection, while OSHA focuses on workplace hazards
 - b) BIS standards are only for the pharmaceutical industry, while OSHA applies globally
 - c) OSHA focuses on proactive hazard management, while BIS focuses on reactive measures
 - d) BIS standards are more focused on local compliance, while OSHA sets international guidelines
5. **How can organizations ensure continuous improvement in safety management?**
 - a) By ignoring employee feedback
 - b) By conducting regular benchmarking and considering employee suggestions
 - c) By solely focusing on regulatory compliance
 - d) By reducing safety training costs

Answers:

1. d) Both a and c
2. b) By identifying hazards and implementing controls before incidents happen
3. b) Safety audits
4. a) BIS standards focus on environmental protection, while OSHA focuses on workplace hazards
5. b) By conducting regular benchmarking and considering employee suggestions

TRUE OR FALSE:

1. BIS standards include IS 14489:1998 and IS 15001:2000 for occupational health and safety.
Answer: True
2. Process Safety Management (PSM) focuses on identifying hazards and implementing controls before incidents happen.
Answer: True
3. Safety audits are not a relevant performance measurement for assessing the effectiveness of safety management systems.
Answer: False
4. OSHA's Process Safety Management principles are focused on proactive hazard management, while BIS standards are focused on reactive measures.
Answer: False
5. Regular benchmarking and employee feedback are crucial for continuous improvement in safety management.
Answer: True

Sources: These standards and principles are widely available through official websites like:

- Bureau of Indian Standards (BIS): <https://www.bis.gov.in>
- OSHA: <https://www.osha.gov>
- EPA: <https://www.epa.gov>
- OHSAS 18001: Information can be found on organizations offering safety certification (e.g., BSI Group or ISO standards bodies).



SAFETY MANAGEMENT

Unit Structure :

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Organising for Safety, Health & Environment Organisation: Structure, Function, Responsibility
- 3.3 Safety Committee: Structure & Function
- 3.4 Relevance of WTO regarding Safety, Health& Environment
- 3.5 Employee Participation in safety
- 3.6 Role of Trade Union in safety
- 3.7 Safety Promotion & Safety Awards
- 3.8 Exercise Questions

3.0 OBJECTIVES

After studying this unit students will be able to –

- Understand the concepts & functioning of Health, Safety & environment in development of an Organisation
- Understand the relevance of WTO with regards Safety
- Analyse the role of Trade Union in safety

3.1 INTRODUCTION

Meaning of Safety Management:

A safety management system is defined as a series of policies and procedures organizations use to reduce accidents and illnesses in the workplace. A sound SMS includes a systematic approach to managing safety, including organizational structures, accountabilities, policies, and procedures.

3.2 STUCTURE, FUNCTIONS OF SAFETY MANAGEMENT

❖ Elements of a safety management system

According to ISO 45001, a certified safety management system should include:

- Strategic direction
- Leadership and worker participation

ELEMENTS OF A SAFETY MANAGEMENT SYSTEM
Based on ISO 45001



- Risk assessment
- Resources and support
- Opportunities
- Performance evaluation
- Ongoing Improvement

1. **Strategic Direction:** An ISO 45001 compliant safety management system must be aligned with the organisation's overall strategic direction. A safety management system doesn't act as a stand-alone process but as an integral element of the entire business's operation. This involves identifying barriers to achieving your intended safety objectives and determining stakeholder expectations around safety.
2. **Leadership and Worker Participation:** It's the responsibility of a business's leadership staff to establish, implement and continually improve the safety management system. It's also their job to ensure active worker participation across the board. This involves providing all necessary training, resources and time needed to keep employees actively engaged and participating in OHS requirements and getting involved in consultation.
3. **Risk Assessment and Planning:** Identifying, assessing and mitigating hazards to workplace safety is at the core of a safety management system. Along with risk assessment, businesses should also look for potential opportunities which could help them improve their OHS performance. Risk assessment and planning encompasses hazard identification, risk assessment, controls, legal requirements and objective setting.
4. **Resources and Support:** Making a plan and conducting risk assessments is only the beginning. Your safety management objectives must be realistic and achievable. For this to happen your safety management system must receive the required support and resources it needs to operate. This can include budgetary, training and staffing requirements.
5. **Opportunities:** An ISO 45001 compliant safety management system must take into account the impacts of change. Both planned and unplanned changes to your business can impact your safety management needs and produce both unforeseen hazards and new opportunities. Your business needs to be aware of changes and be on the lookout for opportunities to improve.
6. **Performance evaluation:** A business's safety management system must be evaluated continually to ensure that it's working to its full capacity and achieving its objectives. The system should include processes for assessing staff consultation and participation, risk assessment, hazard identification and planning, and operational control.

7. **Ongoing Improvement:** A successful risk management system focuses on eliminating the root causes of safety hazards, rather than responding to safety issues in a reactive way. Through ongoing improvement and continual removal of non-conformity issues businesses can work towards achieving and exceeding their safety objectives.

❖ FUNCTIONS OF SAFETY MANAGEMENT

1. **Safety Policy and Objectives:** Employers should make safety an integral part of company values, demonstrating their commitment daily. Specifically, top management needs to set safety goals as policy, while being visible and personally involved in meeting them. Safety accountability and responsibilities should be clearly defined such as the role of the leadership team to manage safety in the same way that they oversee other areas of the business and the duty of technical managers to assure the effectiveness of safety risk controls.
2. **Safety Risk Management:** In order to effectively control safety risks, designated staff should perform a series of interconnected processes collectively called Safety Risk Management (SRM). It generally focuses on anticipating and mitigating risks at the process level. Listed below are the 5 steps that go into the safety risk management component of SMS:
 3. **System Description and Task Analysis:** As a system design function, system description, and task analysis are used by a cross-functional team within the organization to state the facts about the activities and workplace conditions (equipment, environment, etc.) involved in their processes. Systems factors and attributes should also be considered such as procedures, process measures, and interfaces, among others.
1. **Hazard Identification:** Hazards are identified as deficient conditions impacting activities that can result in injury, illness, or death to people and/or system, equipment, or property damages or losses. It is important to note that a hazard is any real or potential condition, including typical hazardous conditions related to human error such as time pressure, shift turnovers, and lack of system knowledge.
2. **Risk Analysis:** Risks are derived from hazards based on the judgment of key safety personnel. Analyzing risk involves considering the likelihood and severity of adverse consequences. Since a single hazard can have multiple consequences, increased exposure to hazards can also make it more likely for grave consequences to recur. On the other hand, severity is mainly driven by the nature of the consequence itself.
3. **Risk Assessment:** To assist with decision-making, perform a risk assessment and establish whether a safety risk is acceptable or not. A risk matrix is used as a tool for evaluating the combined effects of likelihood and severity, prioritizing which safety risks to address in

what sequence for adequate resource allocation. If deemed acceptable, the SRM component of SMS is complete and the risk moves to the next component for monitoring. Otherwise, risk controls should be put in place to mitigate or reduce the risk.

4. **Risk Control:** The safety management system element of risk control, also known as risk mitigation, enables the implementation of safety measures to safeguard people, property, or the environment. While the severity of risks may be lessened to a certain degree, decreasing their probability or likelihood is what happens in most situations. Risk controls applied to working conditions can be effective instruments for risk reduction and failure prevention.

Sample Risk Matrix for the Safety Risk Assessment Element of SMS by FAAS Team

Risk Likelihood		Risk Severity				
		Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely Improbable	1	1A	1B	1C	1D	1E

4. **Safety Assurance:** Safety Assurance (SA) is the component of a safety management system that deals with the monitoring of risk controls during operations. After strategically placing control measures, their performance and effectiveness should be assessed as well. Common SA functions include internal audits, investigations, and employee reporting systems.
5. **Safety Promotion:** Interchangeably used with Safety Culture, Safety Promotion is defined as the activities that support the SMS implementation in an organization such as training, knowledge-sharing, and communication. To promote safety as a company core value, employees should understand the safety management system, learn from shared experience, and develop an awareness of hazards. Management should also be able to explain why particular actions are taken in order to consistently foster an environment for open reporting of safety concerns.

3.3 SAFETY COMMITTEE: STRUCTURE & FUNCTIONS

Meaning: A safety committee in an organization is responsible for promoting workplace safety and identifying potential hazards. The committee's primary goal is establishing and maintaining a workplace safety culture. A safety committee includes employees from different departments in the organization who are responsible for identifying

potential workplace hazards, developing strategies to mitigate or eliminate them, and promoting a safety culture throughout the workplace.

Safety committees, sometimes overseen by the corporate governance committee, are crucial, as they provide the following benefits:

- Promote a safety culture by identifying potential hazards before accidents or injuries occur.
- Identify potential hazards within the workplace through regular inspection and reviewing incident reports.
- Develop safety policies and implement the procedures within the organization.
- Improve communication by providing a forum for employees to discuss safety concerns and make suggestions for improving workplace safety.

Safety committees ensure a safe and healthy workplace environment, ultimately improving the overall health and well-being of employees.

Safety Committee Responsibilities/Functions

A safety committee's responsibilities help to maintain a safe and healthy work environment for all employees. Although the specific responsibilities differ depending on the organization, the following are the general key responsibilities of a safety committee.

1. Develop a Safe Work Environment: The safety committee conducts regular workplace safety inspections to identify potential hazards. This includes inspecting equipment, facilities, and work processes to ensure they meet safety standards.

Also, the committee performs employee safety training, like how to properly use safety equipment, emergency procedures, and best practices for avoiding workplace hazards.

The safety committee also monitors safety performance within the organization by identifying trends and patterns in safety incidents and recommending improvements to safety policies and procedures

2. Craft Safety and Wellness Programs: The safety committee should assess the workplace to identify potential hazards and risks through safety audits, incident reports, and employee feedback. Based on the assessment, the committee members should develop wellness initiatives and safety programs promoting employee health and well-being, such as exercise classes, mental health support services, and healthy eating programs

Then, to ensure the safety and wellness programs are effective, the safety committee should solicit employee feedback, involve employees in developing safety policies and wellness initiatives, and encourage participation in the programs.

3. Organize and Lead Safety Training: Committee members need to identify the specific training needs based on the nature of the work and the potential hazards and risks. Once the committee has identified the training needs, they develop a comprehensive training plan. The plan should include each training session's objectives, content, and delivery methods.

The safety committee also selects a qualified, experienced trainer to lead the training sessions. The trainer should have the expertise to deliver the training content effectively and engage participants.

To conduct the training, the safety committee should prepare all the necessary training materials, such as handouts, visual aids, and demonstration equipment. The materials should be clear, concise, and easy to understand.

4. Conduct Workplace Safety and Inspection Checks: Workplace safety checks identify potential hazards and risks and ensure the workplace meets safety standards. The committee members should review the relevant regulations and guidelines that apply to the workplace. This strategy will help the committee understand workplace safety requirements and identify the areas that need inspection.

The safety committee should also systematically inspect each work area during the safety check. Committee members should look for hazards such as loose wires, equipment, machinery, and tripping or sharp objects.

3.4 RELEVANCE OF WTO REGARDING SAFETY, HEALTH & ENVIRONMENT

Article 20 of the General Agreement on Tariffs and Trade (GATT) allows governments to act on trade in order to protect human, animal or plant life or health, provided they do not discriminate or use this as disguised protectionism. In addition, there are two specific WTO agreements dealing with food safety and animal and plant health and safety, and with product standards in general. Both try to identify how to meet the need to apply standards and at the same time avoid protectionism in disguise. These issues are becoming more important as tariff barriers fall — some compare this to seabed rocks appearing when the tide goes down. In both cases, if a country applies international standards, it is less likely to be challenged legally in the WTO than if it sets its own standards.

Sustainable development and protection and preservation of the environment are fundamental goals of the WTO. They are enshrined in the Marrakesh Agreement, which established the WTO, and complement the WTO's objective to reduce trade barriers and eliminate discriminatory treatment in international trade relations.

The WTO contributes to the protection and preservation of the environment through its objective of ensuring sustainable development

and avoiding protectionism, through its rules and enforcement mechanism, and through work in different WTO bodies.

Work in the WTO

- **Regular Trade and Environment Committee:** The Trade and Environment Committee is the standing forum dedicated to dialogue between governments on the impact of trade policies on the environment, and of environment policies on trade. Created in 1995, the Committee has followed a comprehensive work programme. Under the Doha Development Agenda, the regular committee is also looking at the effects of environmental measures on market access, the intellectual property agreement and biodiversity, and labelling for environmental purposes.
- **Negotiations:** In the Doha Round, WTO members received a mandate to negotiate certain aspects of the link between trade and the environment, particularly the relationship between the WTO's agreements and those of other agencies, and market access for environmental goods and services. These talks take place in "Special Sessions" of the Trade and Environment Committee.
- **Environmental Goods Agreement :** Separately, eighteen participants representing 46 WTO members are negotiating an Environmental Goods Agreement
- i. **Room Document on 'Mission LiFE' initiative** including the compilation of various speeches / remarks / messages from the Mission LiFE launch event has been circulated in the Committee on Trade & Environment (CTE) of WTO on 2nd February, 2023. The Mission LiFE – Lifestyle for Environment was launched by Hon'ble Prime Minister of India and H.E. Secretary General of the United Nations Mr. Antonio Guterres on 20 October 2022. The launch ceremony took place in Kevadiya, Gujarat. The launch event was addressed by Hon'ble Prime Minister and H.E. Secretary General of the United Nations Mr. Antonio Guterres. Additionally, video messages by heads of ten nations as of the event date were also played at the event. This document is a collection of these addresses and messages, which describe various perspectives of mindful consumption.
- ii. **The Room Document on "Concerns on Emerging Trend of using Environmental Measures as Protectionist Non-Tariff Measures"** has been submitted in the Committee on Trade and Environment which focuses upon increasing use of unilateral measures impacting trade and being justified as environmental measures. Key areas of concern highlighted are Carbon Border Adjustment Mechanism (CBAM), ban on import of products based on determination of deforestation free supply chain, Green Tariff Rate Quotas and measures prescribing Maximum Residue Limits (MRLs). Room Document emphasised upon harmonized application of international instruments under Multilateral Environment Agreements (MEAs) and the WTO Agreement. Room Document has drawn intervention from various WTO member countries and also support

from many Member countries on the core theme. 28 interventions were made including those on behalf of ACP Group (62 WTO members, 8 WTO observers, 9 non-members non-observers), Africa Group (44 WTO members, 9 WTO observers) and EU (27 WTO members).

3.5 EMPLOYEE PARTICIPATION IN SAFETY

Ensuring workplace safety isn't just about having the right protocols in place — it's about getting everyone involved. Encouraging employees to participate in safety programs can significantly reduce accidents and create a healthier work environment.

Why Employee Engagement is Important

Employee participation in safety programs is crucial for several reasons. When employees are actively involved, they are more likely to follow safety protocols, report hazards, and contribute to a culture of safety. According to the National Safety Council, there are thousands of preventable work deaths each year — many of which can be avoided with proper safety training.

Benefits of Employee Participation

- **Enhanced Safety Awareness** – Employees become more aware of potential hazards and how to avoid them.
- **Improved Communication** – Open dialogue about safety concerns leads to quicker identification and resolution of issues.
- **Increased Morale** – Employees feel valued and empowered when they have a say in safety matters.

❖ Strategies to Encourage Participation

- ❖ Getting employees involved in safety programs can be tricky, but with the right strategies, you can make it easier and more effective.

1. Create a Safety Committee: Forming a safety committee with representatives from various departments is an excellent way to involve employees. This committee can meet regularly to discuss safety concerns, review incident reports, and brainstorm solutions. Having a diverse group of employees on the committee ensures that different perspectives and ideas are considered, leading to more comprehensive safety strategies.

How to Implement: Invite volunteers or elect representatives for the safety committee. Ensure the committee has a clear mission and holds regular meetings. Provide committee members with the resources and authority to address safety issues.

2. Provide Comprehensive Training: Offering regular and comprehensive safety training services ensures employees are well-informed about safety protocols. Training should be interactive and relevant to their roles, helping employees understand how safety procedures apply to their daily tasks. Well-trained employees are more confident in handling safety issues and more likely to adhere to safety protocols.

How to Implement: Schedule training sessions regularly and use a variety of formats, such as workshops, online modules, and hands-on practice. Tailor training materials to different roles within the company to ensure relevance and engagement.

3. Recognize and Reward Safe Behaviour: Positive reinforcement can go a long way in promoting safety. Recognize employees who consistently follow safety protocols or contribute to safety improvements. Public acknowledgment of safe behavior not only boosts employee morale but also sets a positive example for others to follow.

How to Implement: Develop a safety incentive program with awards for employees who demonstrate exceptional safety practices. Highlight their achievements in company newsletters or meetings to reinforce the importance of safety.

4. Foster Open Communication: Encourage employees to speak up about safety concerns without fear of retaliation. Open communication channels are essential for identifying and addressing safety issues before they become serious problems. Employees who feel their feedback is valued and acted upon are more likely to report hazards and suggest improvements.

How to Implement: Set up anonymous suggestion boxes, conduct regular safety meetings, and ensure management is approachable and responsive. Create a culture where safety is prioritized, and everyone feels responsible for maintaining it.

5. Involve Employees in Safety Planning: Including employees in the development and review of injury and illness prevention plans ensures that their insights and concerns are considered. This involvement can lead to more practical safety measures, as employees often know firsthand the risks and challenges in their work areas.

How to Implement: Conduct workshops or focus groups where employees can share their experiences and suggestions for improving safety. Involve them in creating and updating safety procedures and make sure they understand the reasoning behind these measures. This approach not only enhances safety protocols but also fosters a sense of ownership and responsibility among employees.

❖ Measuring the Success of Employee Safety Programs

It's important to see how well your safety programs are working so you can keep improving them.

- **Tracking Participation Rates** – Track how many employees actively participate in safety programs. Use attendance records from training sessions and involvement in safety committees as indicators.
- **Gathering Feedback** – Solicit feedback from employees about the safety program guidelines. Use surveys, focus groups, and one-on-one interviews to gather insights on what's working and what needs improvement.
- **Monitoring Incident Reports** – A decrease in workplace accidents and incidents can be a sign that your safety program is effective. Regularly review incident reports to identify trends and areas for improvement.

3.6 ROLE OF TRADE UNION IN SAFETY, HEALTH & ENVIRONMENT

Trade unions play a significant role in promoting and protecting the interests of workers in India. They are responsible for safeguarding workers' rights and ensuring that employers comply with labour laws. Trade unions also strive to improve the working conditions of their members by negotiating with employers over wages, hours, benefits, and other working conditions.

They strive to ensure that workers are not exploited and are provided with a safe and healthy working environment. Trade unions also play a critical role in protecting and promoting the rights of workers to collective bargaining and collective action. They also help in resolving workplace disputes and grievances and can provide legal assistance when needed.

1. **Building Awareness and Education:** One of the primary roles of labour unions is to educate workers about their rights and the importance of safety in the workplace. Unions conduct training programs, workshops, and seminars to raise awareness about potential hazards and safe practices. By disseminating information and providing resources, unions empower workers to make informed decisions regarding their safety and health.

In addition to educating individual workers, unions also work towards community awareness. They collaborate with local organizations, schools, and government agencies to promote workplace safety initiatives. By engaging the broader community, labour unions create a culture of safety that extends beyond the workplace.

2. **Collaborating with Employers and Legislators:** Labour unions work closely with employers and legislative bodies to establish and enforce safety standards. Through collective bargaining agreements, unions negotiate for comprehensive safety protocols, including training requirements, protective equipment, and emergency response plans. These agreements ensure that employers are committed to providing and maintaining safe working conditions.

Furthermore, unions advocate for the adoption and implementation of robust health and safety regulations at the legislative level. They actively participate in discussions and provide expertise to shape effective policies. By working with legislators, labor unions contribute to the development of laws that prioritize worker safety and hold employers accountable for maintaining a safe working environment.

3. **Workplace Inspections and Oversight:** Labour unions often establish health and safety committees within workplaces to conduct regular inspections and identify potential hazards. These committees, made up of both union representatives and workers, work collaboratively with management to rectify safety issues promptly. Through effective communication and proactive measures, unions ensure that the workplace remains safe and conducive to employee well-being.

Additionally, unions engage with regulatory agencies to ensure compliance with existing safety regulations and actively participate in investigations following workplace accidents to hold accountable those responsible for negligence. By advocating for thorough investigations and penalties for safety violations, labor unions discourage employers from cutting corners in the name of profit at the expense of worker safety.

4. **Protecting Whistleblowers:** Workers who report safety violations or raise concerns about hazardous conditions often face retaliation. Labor unions play a crucial role in protecting whistleblowers by providing legal and emotional support. They advocate for strong whistleblower protection laws and ensure that workers' rights are safeguarded, enabling individuals to come forward without fear of retribution.

By championing the protection of whistleblowers, labor unions contribute to creating an environment where workers feel safe voicing their concerns and ensuring that safety hazards are addressed promptly. The ability to report violations without fear of reprisal is essential for maintaining a workplace culture that prioritizes worker safety.

5. **Occupational Health Services:** Labor unions recognize the importance of access to quality healthcare services for workers. They often establish or support occupational health programs that offer specialized care for work-related injuries, illnesses, and mental health

concerns. These services provide workers with comprehensive medical support and facilitate early intervention, reducing the long-term impact of occupational hazards.

Unions work towards ensuring that workers have the resources they need to maintain their health and well-being. By providing access to occupational health services, unions contribute to the early detection and prevention of work-related health issues, leading to improved overall worker health and safety outcomes.

- 6. Continued Advocacy and Research:** Labour unions are not complacent in their efforts to improve worker safety and health. They engage in ongoing advocacy and research to address emerging challenges and evolving risks. Unions partner with experts, academic institutions, and government agencies to analyse data, identify trends, and propose innovative solutions to ensure safer working environments.

Through research and collaboration, labour unions stay informed about the latest developments in technology, industry practices, and health and safety standards. They use this knowledge to advocate for effective policies and procedures that address emerging risks and protect workers from novel hazards.

3.7 SAFETY PROMOTION & SAFETY AWARDS

Meaning : Safety promotion is the process used to communicate, develop and sustain safety in your business. It helps your business improve safety performance by communicating lessons learned, broader safety information, and the distribution of Safety Management System (SMS) principles and associated procedures. It sets the tone for both business and individual behaviour, and supports the business's policies, procedures and processes, providing a focus on safety efforts. When safety promotion is combined with safety risk management and safety assurance, it provides the means for a business to manage its safety risks. Safety promotion can be the difference between having an effective SMS and having an SMS that just sits on a shelf. It can set the tone for your SMS and encourage the development of a strong safety culture.

Why promote safety?

Supporting and promoting safety in your business clearly establishes management's commitment to your SMS. In addition, ongoing safety promotion activities demonstrate to internal and external parties how seriously your business considers safety. Having safety at the forefront, and constantly spreading the message about safety initiatives, lessons learned, good news stories and safety issues, helps develop a culture where safety comes first when any task is carried out and when anything new happens. When promoting safety, you may need to promote a change of mindset or attitude and explore safer alternatives. It can be difficult to promote safety if employees already have a negative attitude towards

safety. It's important to demonstrate that safety is much more than a hard hat or pair of safety glasses—it's a mindset. Keeping the information current and relevant when promoting safety is just as important as promoting safety itself.

How can you promote safety? Safety can be promoted through lessons learned, safety information, safety procedures and key safety messages from the leaders in the business.

Promoting safety can be achieved by:

- conducting thorough risk assessments and involving everyone in the process
- encouraging employees and third parties to report any safety concerns
- responding in a timely way to safety concerns, hazards, risks and any incidents
- thoroughly investigating incidents and near misses, and communicating lessons learned
- making safety a primary focus in inductions
- developing and encouraging safety leaders in your business
- promoting and attending safety meetings and safety training sessions.

Leaders can support safety promotion in the business by:

- making themselves available (e.g. having an open door policy)
- demonstrating a commitment to safety and leading by example
- being consistent and responding and acting promptly to safety issues
- being involved in new employee inductions, training and safety activities
- promoting good news stories and lessons learned.

SAFETY AWARDS:

To recognize the contributions that employees make in fostering a culture of health and safety in the workplace. The different types of safety awards are as follows:

- 1) **CEO award:** This award recognises how an individual CEO takes an active role in aligning and championing their organisation's health, safety and wellbeing interests with management at a specific site or business unit.
- 2) **Green Award:** This award recognises women that are breaking through and shaping future leadership in the health, safety, wellbeing or the environmental management world.
- 3) **National Safety Awards:** These are used to celebrate those who exemplify security and protection. This form of recognition honours individuals who maintain a safe workplace.
- 4) **Safety Innovation Award:** Large Enterprises with innovative Projects / Products in Safety, EHS can Nominate for this Award. The

Innovation is to ensure the Safety of People, stakeholders and Environment. Nominations from various industrial categories are invited.

- 5) **CSR Award:** Global Safety Summit Annual CSR awards acknowledge the Best Practices and Contributions in the CSR.
- 6) **Safe Driver Award:** This safe driver award serves as an excellent award choice acknowledging the top-performing drivers for their sustained record of safety over millions of miles.
- 7) **New Lifetime Achievement Award:** Are awarded by various organizations, to recognize contributions over the whole of a career, rather than or in addition to single contributions. This new award is voted for by the Trustees of British Safety Council and given to people who have made an outstanding performance.
- 8) **EHS Excellence Awards:** Recognize industries that excel in Environmental, Health, and Safety (EHS) practices, highlighting the critical role of responsible and sustainable operations. These awards encourage industries to enhance their EHS standards, emphasizing reduced environmental impact, improved workplace safety, and a proactive health culture for employees.
- 9) **Safety Culture Transformation Award:** This award recognises organisations that have made a significant and lasting impact on workplace safety through a comprehensive, sustained culture shift. It celebrates initiatives that have changed attitudes, behaviours, and practices related to safety, leading to measurable improvements in safety performance, risk management, and employee engagement.
- 10) **Sector Awards:** These awards are used to celebrate those who exemplify security and protection. This form of recognition honours individuals who maintain a safe workplace.

3.8 EXERCISE QUESTIONS

I) Answer the Following:

- 1) Explain the elements of safety management system.
- 2) Explain the functions of Safety Committee.
- 3) List out the relevance of WTO regarding Safety, Health & environment.
- 4) Enumerate the Role of Trade Unions in safety, health & environment.
- 5) Write a note on Safety promotion & awards.
- 6) Analyze the need to promote safety.
- 7) Who is a Whistleblower. How do trade Unions protect Whistle Blowers.

II) Fill in the Blanks:

- 1) **A safety management system** is defined as a series of policies and procedures organizations use to reduce accidents and illnesses in the workplace.
- 2) In order to effectively control safety risks, designated staff should perform a series of interconnected processes collectively called **Safety Risk Management (SRM)**.
- 3) **Green Award** This award recognises women that are breaking through and shaping future leadership in the health, safety, wellbeing or the environmental management world.
- 4) **EHS Excellence Awards**-Recognize industries that excel in Environmental, Health, and Safety (EHS) practices, highlighting the critical role of responsible and sustainable operations.
- 5) **New Lifetime Achievement Award**-Are awarded by various organizations, to recognize contributions over the whole of a career, rather than or in addition to single contributions.
- 6) **Trade unions** play a significant role in promoting and protecting the interests of workers in India.
- 7) **Sector Awards**-These awards are used to celebrate those who exemplify security and protection.



DIRECTING SAFETY

Unit Structure:

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Leadership-Role, Function & attribution of a leader
- 4.3 Essential rules in communication with employees with conducting training
- 4.4 Team Building & Group Dynamics
- 4.5 Financial Costs to individual worker & family, organisation & society
- 4.6 Procedures for compilation
- 4.7 Utility & Limitations of cost data
- 4.8 Budgeting for safety
- 4.9 Exercise Questions

4.0 OBJECTIVES

After studying this unit students will be able to –

- Understand & Interpret the concepts of safety leadership
- Analyse the function & attributes essential in a leader.
- Evaluate & Estimate financial costs, budget data with regards safety.

4.1 INTRODUCTION

Meaning of Directing Safety:

1. Urwick and Brech-Directing is the guidance; the inspiration, the leadership of those men and women that constitute the real core of the responsibility of management.
2. J. L. Massie Directing concerns the total manner in which a manager influences the actions of subordinates. It is the final action of a manager in getting others to act after all preparations have been completed.

Process of Directing For Safety:

The process of directing consists of the following steps

1. **Issue orders and instructions.** They should be clear, complete and within capabilities of the followers.
2. **Provide and continue guidance and supervision** to ensure that the assigned tasks are carried out effectively and efficiently.
3. **Maintain discipline and reward** for good work.
4. **Inspire and motivate to work hard** to achieve the goals.

Principles of Direction: They are

1. **Harmony of objectives :** Management should take care of personal goals of employees with the organizational goals.
2. **Unity of command:** One subordinate should get orders/instructions from one superior only.
3. **Direct supervision** - There should be personal or direct supervision.
4. **Good communication** - Helps to improve understanding and speed of work.
5. **Maximum contribution :** Managers should try to get maximum possible contribution from each subordinate.
6. **A appropriate techniques:** The techniques should be suitable to superior, subordinates and situation to get efficiency.
7. **Strategic use of informal organization :** Some informal group should be contacted to decide direction.
8. **Comprehension:** Orders should be clear, complete and understandable.
9. **Good Leadership** Managers should guide and counsel subordinates to win their Confidence and trust.
10. **Follow-up** Managers should follow-up their orders and modify if necessary.

Techniques of direction:

Generally four techniques are available for directing. They are delegation of authority, supervision, orders and instructions.

By delegation of authority a superior entrusts his subordinates with certain rights or powers: He assigns a part of his work and authorizes him to do work.

Supervision means expert overseeing of subordinates at work to ensure compliance of plans and procedures. At operating level it is most useful and effective.

The terms order, instruction, directive and command are used interchangeably in management literature. They mean to initiate, modify

or stop an activity. It is a primary tool by which activities are started, altered, guided and terminated.

2.2 LEADERSHIP ROLE, FUNCTIONS & ATTRIBUTION OF A LEADER

Meaning:

It is an indivisible part of the process of directing as explained in earlier part. It is a tool or means which makes direction effective.

Dr. Terry says that managers have to manage business which means that they have to provide leadership. They have to instil in them desire to achieve the goals, a desire to improve their performance and a sense of cooperation.

If the managers fail to provide such leadership the employees will search the leadership outside which may lead to conflict or distraction.

Definitions:

1. Koontz and O' Donnell - Leadership is influencing people to follow in the achievement of common goal.
2. Terry - It is the ability of influencing people to strive willingly for natural objectives.
3. R. T. Livingston - it is the ability to awaken in others the desire to follow a common objective.

Role and Functions of a Leader

1. He should be clear about common objectives (goals) and should communicate them clearly.
2. He has to influence, guide, instruct, inspire and supervise his subordinates to work efficiently and effectively.
3. He has to generate (awaken) desire in followers to achieve the common goal.
4. He works along with his followers shows them how to work and gets their cooperation in return.
5. He should convince the followers that in protection of organizational (group) goals, lies the protection of their personal goals.
6. He has to provide continuous guidance till the achievement of goals.
7. Depending on situation he should alter, modify or stop order and should not be rigid in his decision.
8. He has to set an example by his own behavior. Urwick has rightly said that 'It is not what a leader says, still less what he writes, that influences subordinates. It is what he is. And they judge what he is by what he does and how he behaves.

Attributes of a Leader:

Certain qualities are necessary for leadership but they must be applied at the correct place and time. Dr. Terry mentioned following qualities of a leader.

1. **Energy** Physical and mental fitness to work by self and to guide for a longer time.
2. **Teaching ability** - He should be a good teacher.
3. **Emotional stability** - should be free from bias and anger and not emotional.
4. **Empathy** - It means the ability to understand other's view point. He should have respect for others and their beliefs.
5. **Objectivity** - He should be objective to others and should find out reasons for requests or refusal by his subordinates.
6. **Enthusiasm is required in a leader**. He should be self motivated and capable of motivating others.
7. **Knowledge of HR** - Leader has to deal with human beings and therefore he should possess knowledge of human resources.
8. **Communicative skill** - He should be effective in his speech, talk and forceful impression.
9. **Social skill** - He should mix with his followers freely and socially. He should appreciate opinion and work with close co-operation.
10. **Technical competence** - Doubtlessly he must be technically more competent so that he successfully teach technical aspects.

4.3 ESSENTIAL RULES IN COMMUNICATION WITH EMPLOYEES WHILE CONDUCTING TRAINING

There are several things you can do to improve workplace communication between you and your employees:

1. **Be open and honest:** Demonstrating and encouraging open communication can earn your employees' trust and make them feel like valued members of the organization. Start by being honest and transparent about your expectations. Be comfortable telling employees about the strategies that work as well as the ones that do not. By encouraging employees to assess things that are not working, you can find solutions as a team and make them feel involved in the process.
2. **Be approachable:** Make sure your staff feels comfortable coming to you with ideas or concerns. Tell them they can talk to you anytime they want. Leave your office door open when you do not need privacy. Maintain a positive and friendly attitude, including with your body language and nonverbal communication.
3. **Communicate clearly:** Your tone, language and communication style can help you deliver messages and goals to your employees clearly,

whether in person or through email. Use easy-to-understand words instead of technical language to avoid confusion. Prepare for meetings by planning what you want to say and how to say it. When communicating with employees via email, keep your message simple and concise, with short paragraphs. You might use bullet points or an outline format to organize the main points of your message. If you can give your employees a clear and strong understanding of your goals, they have a better chance of reaching them.

4. **Encourage feedback:** Let your employees know you value their ideas and opinions by encouraging feedback. You might create an anonymous suggestion box where they can share their thoughts without judgment. During meetings or group projects, encourage them to critique your ideas, too. When they do, acknowledge their opinions. Send occasional employee surveys asking if they understand their goals and responsibilities and what you or the organization can do to communicate better. Give your employees feedback, as well, while maintaining a balance between critical and positive advice. Tell them how they are performing, areas where they can improve and things they have done well recently. Recognize small and large achievements in private and during meetings in front of the team.
5. **Update your employees:** When employees are busy working on their individual tasks, they might not be aware of the status of broader projects and goals. Try to remove the barrier between management and staff by giving your employees updates on the business. Tell them which projects were successful and which ones were not. If the company is reorganizing roles, launching new products or updating policies, inform your employees before they hear about it in a company-wide email or press release. Updating your employees on business matters helps gain their trust.
6. **Choose the right method:** You can communicate with your employees in a variety of ways, from meetings to video conferencing to emails. To deliver an effective message, make sure you choose the correct communication method for the situation and the employee. Some employees, for example, prefer email for all their communications. Others understand information more clearly when you talk about it in person. Generally, however, you should communicate the following in person:
 - Training or instructions
 - Major news, such as a promotion
 - Urgent information
 - Tasks or questions that require immediate action or response
 - Sensitive information you do not want in writing
 - Conflict resolution

Experiment with communication platforms such as chat programs or apps and video conferencing tools to find a method that works best for your team.

7. Meet regularly: Schedule regular team meetings to encourage communication and share information between employees. Weekly meetings are opportunities to:

- Provide updates
- Discuss progress on projects
- Talk about challenges
- Solve problems as a group
- Make sure employees understand their responsibilities
- Set goals
- Provide feedback
- Answer questions

Prepare an agenda, and keep meetings short so employees find them helpful rather than time-consuming. Meetings can be in person or virtual using video conference or group chat programs.

8. Understand your staff: Get to know your employees so you can understand their needs, how they communicate best and what type of feedback they like to receive. Ask questions to learn more about them, and show empathy when they ask for help or encounter challenges. Tailor your communication strategies to each team member's style, so you understand each other and can help maximize their potential.

9. Meet individually: In addition to team meetings, schedule regular one-on-one meetings with each member of your team. They might be more open to sharing ideas and giving and receiving feedback in a private setting than in front of a group. Individual meetings also show your employees you value their opinions and work. They give you an opportunity to connect with your employee on a more personal level. One-on-one meetings can be quick and informal, and you might schedule them once a month.

10. Listen: Active listening is an important communication skill that makes your employees feel appreciated. Pay attention to what your employees say, and try to fully understand what they are communicating. Examples of active listening include:

- Showing concern
- Summarizing what the employee told you to show you understand
- Using body language such as eye contact and nodding
- Responding with affirmations such as "I understand"
- Asking open-ended questions

Active listening requires you to understand, respond to and remember what your employee said. This communication skill is important during scenarios such as problem-solving, dispute resolution, interviewing and training.

- 11. Be responsive:** When your employees communicate with you, act on it to show you take their ideas and concerns seriously. Respond to emails as soon as possible, ideally within 24 hours. Follow up on verbal conversations with email summaries of the important points. If you tell an employee you are going to do something, do it. Responsive managers make employees feel heard and appreciated.

4.4 TEAM BUILDING & GROUP DYNAMICS

Meaning: Team building is defined as the ongoing process of using daily interactions, activities, exercises and other formalized strategies to organize a group of employees into a cooperative and cohesive group. By nurturing a sense of mutual trust, community and cooperation, team building aims to unite employees under shared goals. In turn, effective team building can drive productivity, efficiency and employee satisfaction.

To nurture collaboration, team building generally addresses these skills and characteristics:

- **Active listening:** Active listening refers to the ability to listen to and respond to another person's verbal and non-verbal cues and provide thoughtful feedback.
- **Communication:** Interacting and sharing thoughts, ideas and needs while also remaining open to others' feedback.
- **Problem-solving:** Analyzing current or past challenges to find solutions and assessing and understanding previous errors or failures.
- **Trust and reliability:** A sense of shared responsibility between individuals that supports trust around tasks, deadlines, behavior and other aspects of work.
- **Positive outlook:** Motivation, excitement and mutual support are all aspects of workplace positivity.
- **Conflict management:** The ability to mediate and settle disputes with others fairly.

❖ **Benefits of team building**

- ❖ Team building can provide numerous benefits for your organization, and a thoughtful strategy can highlight specific opportunities within your workplace and even get employees excited about team activities. The benefits of team building include:

- **Performance:** Teams are often motivated to perform better when they're working toward a shared goal, which can increase productivity and give your customers a better experience.
- **Employee satisfaction:** A cohesive team creates a more positive environment, which can lead to an increase in employee satisfaction and retention.
- **Innovation and creativity:** Positive team relationships encourage creativity and innovation, which can help your company improve its products, services and strategies.
- **Professional development:** When a team works well together, individuals can explore or reveal their talents, which might include strong leadership skills. These skills can help improve your workplace and give employees opportunities for advancement.
- **Workplace culture:** When team building drives trust, empathy and communication, it can likewise promote feelings of inclusion, safety, belonging and support and enable your workforce to embrace its diversity.

❖ Three components of effective team building

Building a strong team is an ongoing process that you must consistently facilitate and guide. Here are three effective ways to support productive and happy teams:

1. **Establish and maintain trust and respect:** Building trust and transparency within a team means everyone can rely on each other to make the right decisions and complete their assigned work. It also means that each person believes their colleagues will act with the needs and goals of the team in mind. In addition, team members demonstrating respect through emotional intelligence and self-awareness can foster a safe and supportive working environment.

For successful collaboration, create a space for people to share their ideas, experiment and potentially fail. When people feel respected and safe to express themselves around others, they're more likely to share creative and innovative ideas.

2. **Create accountability:** One way to create a sense of accountability is to set ground rules. When employees have clear expectations and rules, they may communicate more openly. These rules could include procedures for managing and monitoring deadlines, communication methods with colleagues and work style.

Holding weekly or even daily team meetings can help build accountability. Frequent meetings can make employees feel seen and heard. Workers can also receive support on projects, provide support to team members and hold each other accountable.

3. **Strengthen communication:** Strengthening communication between team members can help them connect and grow together. This can include sharing constructive feedback, expressing needs, adapting to different communication styles and more.

Communication includes verbal, written and nonverbal methods. For verbal communication, always focus on solutions for problems. When writing emails or notes, make sure the tone is positive, encouraging and constructive. Demonstrating active listening to a speaker shows consideration and value for their ideas.

❖ GROUP DYNAMICS

Meaning and Definitions of Group Dynamics

Group dynamics deals with the attitudes and behavioural patterns of a group. It can be used as a means for problem-solving, teamwork, and to become more innovative and productive as an organization.

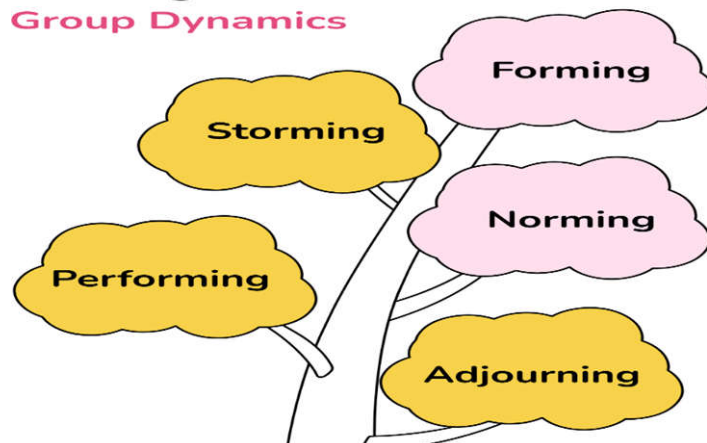
According to Cartwright and Zander, group dynamics is a set of psychological, behavioural tools or procedures which help to change the nature of groups, teams available in the organization to collaborate and work together for attaining the objective of the organization.

Group Dynamics' meaning can be explained simply as it is a social process with which the people can form into groups or teams to attain a set of common goals. It is a continuous process where the groups can be formed as the goals keep on changing until to achieve the final goal of the organization.

❖ 5 Stages of Group Dynamics

These are also known as phases of group dynamics. Since group dynamics is a continuous process, it has five different stages for forming a group every time. All the group formation stages are sequential and significant. So let us understand all 5 stages of group development elaborately.

Five stages of Group Dynamics



- **Forming:** It is the first stage in the cycle of group development. Different members can be formed into a group by setting common goals. So far, each individual has different tasks And goals to reach their workplace. The main criteria for forming a group are their

abilities, work culture, designation, affiliation, etc. It is the most important stage in the phases of group dynamics.

- **Storming:** It is critical and crucial among the group formation stages. Usually, dyads and triads can appear here. This is a stage where people can segregate themselves according to their similarities and special interests. This led to the conflicts between the group members, and one should try to settle down the conflict and help to coordinate with each other.
- **Norming:** It is the third level in stages of group dynamics. Here allocation of tasks can be formulated. It can be done by the diet or triad of groups or entirely by the management. After structuring these norms to every group, the hierarchy and designations were also allocated in that particular group, who need to report and whom to be reported. The group members can take higher dogs and responsibilities to maintain their group identity.
- **Performing:** It is the actual working stage among the phases of group dynamics. After taking the work, every group member has started performing their tasks by putting all their efforts. The head of the group can supervise and correlate all the work done by his group members, and he needs to report to his supervisor. Every group member has to follow the norms and should exhibit all their efforts collectively to increase the effectiveness of the entire group.
- **Adjourning:** It is the final stage of all 5 stages of group development. Here, after performing their tasks, the group members May reallocate into other groups. Here some people may be happy with the output and some other way unhappy with the output. It is a morning process that can be decided by the management or the team lead.

❖ TYPES OF GROUP DYNAMICS

Groups can be classified under many heads. But the most common way of classifying groups is based on norms and rules:

1. Formal Groups
2. Informal Groups
3. Organized Groups
4. Spontaneous Groups
5. Task Groups
6. Functional Groups

- **Formal Groups:** They are usually formed on the basis of specific norms, rules, and values. The most common example of this kind is the army and school.

- **Informal Groups:** The nature of this group is not strictly defined. While the rules and regulations are quite flexible. Common examples are social clubs and play groups.
- **Organized Groups:** These groups are formed for a specific purpose and after careful planning. Examples of these groups are family and school.
- **Spontaneous Groups:** They are usually formed suddenly and without any prior planning. Examples include audiences at music concerts and sports spectators.
- **Task Groups:** They consist of a group of people gathered together to achieve a common task within a limited time frame. One common example is a special task force.
- **Functional Groups:** They are created when a group of people join together to accomplish a specific task within unlimited time. Unlike task groups, they continue to exist even after the achievement of the goals.

4.5 FINANCIAL COST TO INDIVIDUAL WORKER FAMILY, ORGANISATION & SOCIETY

Meaning: Finance costs, also known as financing expenses, refer to the costs incurred by a business for borrowing funds or for the use of capital. Here are some common examples:

1. **Interest Expense:** The most common form of finance cost, this is the interest paid on loans, bonds, or other forms of debt.
2. **Loan Fees:** Charges associated with obtaining a loan, such as origination fees, processing fees, or underwriting fees.
3. **Lease Payments:** Costs associated with leasing equipment or property, which may include interest components.
4. **Amortization of Discounts or Premiums:** If bonds are issued at a discount or premium, the amortization of these amounts is considered a finance cost.
5. **Bank Charges:** Fees charged by banks for maintaining accounts or processing transactions related to financing.
6. **Foreign Exchange Losses:** Costs incurred due to fluctuations in currency exchange rates when borrowing in a foreign currency.
7. **Costs of Hedging:** Expenses related to financial instruments used to mitigate risks associated with interest rate fluctuations or currency risks.
8. **Factoring Fees:** Costs associated with selling accounts receivable to a third party (factor) for immediate cash.

Understanding these costs is crucial for businesses as they can significantly impact profitability and cash flow.

❖ TYPES OF FINANCIAL COSTS TO INDIVIDUAL, WORKER & FAMILY

- **Fixed Costs:** Fixed costs do not vary with the number of goods or services a company produces over the short term. For example, suppose a company leases a machine for production for two years. The company has to pay \$2,000 per month to cover the cost of the lease, no matter how many products that machine is used to make. The lease payment is considered a fixed cost as it remains unchanged.
- **Variable Costs:** Variable costs fluctuate as the level of production output changes, contrary to a fixed cost. This type of cost varies depending on the number of products a company produces. A variable cost increases as the production volume increases, and it falls as the production volume decreases. Businesses can also decide to forego an activity or production to avoid the associated expenses—called the avoidable costs.
- For example, a toy manufacturer must package its toys before shipping products out to stores. This is considered a type of variable cost because, as the manufacturer produces more toys, its packaging costs increase, however, if the toy manufacturer's production level is decreasing, the variable cost associated with the packaging decreases.
- **Operating Costs:** Operating costs are expenses associated with day-to-day business activities but are not traced back to one product. Operating costs can be variable or fixed. Examples of operating costs, which are more commonly called operating expenses, include rent and utilities for a manufacturing plant.
- Operating costs are day-to-day expenses, but are classified separately from indirect costs – i.e., costs tied to actual production. Investors can calculate a company's operating expense ratio, which shows how efficient a company is in using its costs to generate sales.
- **Opportunity Costs:** Opportunity cost is the benefits of an alternative given up when one decision is made over another. This cost is, therefore, most relevant for two mutually exclusive events. In investing, it's the difference in return between a chosen investment and one that is passed up. For companies, opportunity costs do not show up in the financial statements but are useful in planning by management.
- For example, a company decides to buy a new piece of manufacturing equipment rather than lease it. The opportunity cost would be the difference between the cost of the cash outlay for the equipment and the improved productivity versus how much money could have been saved in interest expense had the money been used to pay down debt.

- **Sunk Costs:** Sunk costs are historical costs that have already been incurred and will not make any difference in the current decisions by management. Sunk costs are those costs that a company has committed to and are unavoidable or unrecoverable costs. Sunk costs are excluded from future business decisions.
- **Controllable Costs:** Controllable costs are expenses managers have control over and have the power to increase or decrease. Controllable costs are considered when the decision of taking on the cost is made by one individual. Common examples of controllable costs are office supplies, advertising expenses, employee bonuses, and charitable donations. Controllable costs are categorized as short-term costs as they can be adjusted quickly.

4.6 PROCESS FOR COMPILATION OF FINANCIAL COST

When performing compilation, the accountant should prepare adequate documentation that provides information on the work that has been carried out. Some of the documentation includes the engagement letter, financial statements, and communication with management regarding significant issues identified during the audit.

Once the audit is completed, the accountant prepares a compilation report that states that he/she has not audited the financial statements, and therefore, the audit should not be viewed as an assurance that the financial statements have complied with the financial accounting framework or as an opinion on the accuracy of the financial statements.

Where the financial statements have been materially misstated, the accountant should desist from issuing financial statements that are misleading. Instead, the accountant should obtain more information from the management, and if the information is not forthcoming, he/she should withdraw from the engagement.

Compilation Documentation Requirements

The three main documentation that an accountant is required to prepare during compilation engagement include:

1. **Engagement letter:** The engagement letter is an agreement to provide compilation engagement to a client, and it defines the services to be performed by the professional accountant/auditor and the compensation to be paid. For the engagement letter to be legally binding, it must be signed by the authorized representatives of both the service provider and the client.

Some of the information contained in an engagement letter includes the services to be provided, the amount and timing of payments, specific due dates, how the parties can terminate the contract, etc. Most compilation engagement letters will state that the accountant will

prepare and present financial statements and provide a compilation service.

Directing Safety

2. **Financial statements:** When an accountant accepts the audit engagement terms, he/she is tasked with preparing and presenting the financial statements of the client's company. He/she is required to follow the accepted reporting framework (IFRS or US GAAP) when preparing the financial statements. Depending on the terms of the engagement, the accountant may be required to prepare a single financial statement or a set of key financial statements.

The financial statements can cover a short period such as a month, quarter, or annual period, depending on the requirements of the management. The accountant may include a reference to the compilation report note at the bottom of each financial report to notify the reader that a compilation report exists.

3. **Compilation report:** A compilation report is a report prepared by the accountant tasked with performing compilation service by a client and should accompany the compiled financial statements. Unlike an audit or review report, a compilation report comprises a single paragraph, without paragraph titles. It should identify the entity (client), compiled financial statements, and the period covered.

The report should include a statement that the management is responsible for the financial statements, that the financial statements have not been reviewed or audited, and the accountant does not express an opinion or assurance on the financial statements.

At the bottom, the report should include a signature of the accountant or accountant's firm, the accountant's city and state, and date of the report (date when accountant completed compilation procedures).

4.7 UTILITY & LIMITATIONS OF COST DATA

Meaning of Cost Data: Cost Data includes all of the costs that an Asset or Group of Assets will incur throughout the life span of an asset. It is essential that all Cost Data is collected before and throughout the LCC (Life Cycle Cost)Analyses to maximize reliability and accuracy.

For example, if the asset is a fleet of service vehicles, you would want to collect the following types of Cost Data:

- Maintenance Costs
- Replacement Parts
- Energy Costs
- Driver Costs

By collecting all of the above Cost Data, you can create an analysis to maintain, track, and predict costs throughout the lifespan of the fleet of service vehicles.

❖ **UTILITY/USES OF COST DATA:**

Here is the list of major uses of costs data in any business organization:

1. **Setting prices of products:** One reason for the need to know costs data is to help Marketing managers make pricing decisions. Without having accurate and up-to-date knowledge about the business costs, the marketing department may not be able to set appropriate product prices. This may lead to loss of sales revenue as customers may not be attracted by mispriced products, or even causing the business to make a serious loss instead of profit. Other departments in the firm such as Finance also need costs data for conducting costing: Full-Costing or Contribution-Costing.
2. **Calculating the profit:** The basic formula for calculating profit is the most important business equation. Business costs account for as much as half of that equation with Sales Revenue accounting for another half. Therefore, it is impossible for any business manager in the world to calculate profit or loss without first correctly calculating costs. If businesses do not keep valid records of all their costs, then they surely will not be able to take effective decisions to improve their profitability through pricing and cost reductions.
3. **Constructing The Break-Even Analysis:** Each and every business organization can only survive in the long-term, if it makes profit – its Sales Revenue exceeds Total Costs (TC). The Break-Even Analysis is used to calculate and analyze the relationship between Sales Revenue, Costs and Output produced. It determines the level of output that must be produced and sold in order for the firm to stop making a loss and start earning a profit. And, in order to construct The Break-Even Analysis, the classification of costs must be conducted first.
4. **Setting budgets for the business:** Current and future business budgets will most likely be based on past costs data. Historical financial information from past time periods will be used to do so. Also, actual cost levels can then be compared with original targets and budgets as well as with past time periods.
5. **Measuring efficiency:** By having detailed knowledge about costs, the firm is able to measure profitability both of the whole business as well as each division, department and product. Annual comparisons can also be made in order to assess improvements over time. If the business's costs keep increasing, appropriate goals to work for can be set up. This will also give employees quantitative targets to achieve. Without those numbers, the concerned employees would not know clearly what has to be done in regards to costs and profits.

6. **Choosing the suitable location for business operations:** Calculating the costs of operating a business in different locations is a pretty standard job for Operations managers. Costs data can assist them when deciding between relocation of current business operations or any future expansion. Comparing the costs of alternative locations can increase the chances of the most suitable and profitable option being decided on.
7. **Choosing the appropriate method of production:** Operations managers usually decide which approach towards production they choose – either being labour intensive or capital intensive. If they choose the first one, then labour costs in the firm will be much higher. This is preferable in those countries where wage rates are very low. If they choose the second one, the costs related to purchasing or leasing the machinery along with regular maintenance will dominate. This is preferable in those countries where wage rates are very high. Comparing costs data can also help Operations managers make decisions about the use of scarce resources.
8. **Choosing whether to buy or make products:** All manufacturing businesses have to consider cost-reducing decisions on a daily basis. One of those decisions is '*A Make or Buy Decision*'. There are actually three possibilities. Should the business manufacture the product by itself? Should the business purchase some components to assemble the product within its own factory? Or, should the business buy the ready product from outside suppliers based on the cost-benefit analysis, and then just resell it to its own customers? Costs data will help solve this dilemma as the decision must be based on a careful consideration of the costs and other qualitative factors.
9. **Continuing or stopping production of a loss-making product:** Managers may also need to decide whether production of a product should be stopped. The business may no longer wish to produce a product that does not only not generate any profit but also its contribution towards paying fixed costs is minimal. This kind of decision regarding product discontinuation would not be possible unless accurate costing was made first based on costs data. After analysing costs data, the company may need to decide otherwise and increase production of a product instead of stopping it. Or, switch to making a completely new product.

❖ LIMITATIONS OF COST DATA

1. **Value Relevance:** Critics argue that historical cost may not reflect the true economic value of assets, especially when their market values change significantly. This can lead to an understatement of the asset value on the balance sheet.
2. **Ignored Inflation:** It does not consider the impact of inflation, which can erode the purchasing power of money over time. This can lead to an overestimation of the real value of certain assets.

3. **Selective Applications:** In some cases, historical cost may not be the most relevant measure. For example, in the case of investments in financial instruments, market values are often considered more informative.

4.8 BUDGETING FOR SAFETY

Meaning: A safety budget is a financial plan that outlines the allocation of resources for various safety-related activities and initiatives within an organization. It helps ensure that sufficient funds are available to maintain a safe and healthy work environment.

The main elements of a safety budget typically include:

1. **Personnel Costs:** Salaries and benefits for safety personnel such as safety officers, trainers, and inspectors. Costs related to safety training and development.
2. **Safety Equipment and Gear:** Expenses for purchasing, maintaining, and replacing personal protective equipment (PPE) like helmets, gloves, goggles, and safety vests. Costs for safety devices and machinery, including safety barriers, fire extinguishers, first-aid kits, and safety signage.
3. **Safety Programs and Initiatives:** Funding for safety awareness campaigns, workshops, and educational programs. Resources for safety committees or teams.
4. **Training and Certification:** Costs associated with safety training programs and certifications for employees. Fees for external safety training providers or courses.
5. **Safety Inspections and Audits:** Funds for conducting regular safety inspections and audits of the workplace. Expenses for third-party safety audits, if required.
6. **Emergency Response:** Budget for developing and maintaining emergency response plans. Funds for equipment and resources needed during emergencies, such as fire suppression systems, evacuation procedures, and medical facilities.
7. **Safety Consultation:** Costs for hiring safety consultants or experts for specialized safety assessments and recommendations.
8. **Safety Communication:** Expenditure for creating and disseminating safety-related materials, including posters, newsletters, and digital communications.
9. **Incident Investigation:** Funds for investigating and documenting workplace incidents, accidents, or near-misses. Costs related to implementing corrective actions.

- 10. Regulatory Compliance:** Budget for ensuring compliance with local, state, and federal safety regulations and standards. Penalties and fines for non-compliance, if applicable.
- 11. Safety Software and Technology:** Costs associated with safety management software, tracking systems, and technology for reporting and data analysis.
- 12. Contingency Fund:** An allocated amount for unforeseen safety-related expenses or emergencies.
- 13. Documentation and Record-keeping:** Budget for maintaining safety records, reports, and documentation required by regulatory agencies.
- 14. Continuous Improvement:** Funds for continuous improvement initiatives to enhance safety performance over time.
- 15. Return on Investment (ROI) Analysis:** Resources for evaluating the effectiveness of safety programs and initiatives and making adjustments as needed.
- 16. Training and Development:** Ongoing training and development expenses to keep safety personnel updated on best practices and new regulations.

❖ What Are the Benefits of Budgeting for Safety?

Budgeting for safety is in an organization's best interests. There are a number of benefits:

1. **Employees are safer and happier.** Employees know when they are being valued by the organization, and they will work harder for an organization that values their safety.
2. **The budget is more likely to be realistic.** Ultimately, the business is going to need to make expenditures for safety. If these expenses aren't contained within the budget, the project could run over.
3. **The budget is less likely to be hit by a single, large expense.** If a safety incident occurs, the effects of it will be dramatic. The more the organization invests in safety, the less likely this is.
4. **contained within the budget, the project could run over.**
5. **The project is less likely to be delayed.** When safety incidents happen, projects have to be delayed. Equipment may need to be fixed, and employees may not be available.

4.9 EXERCISE QUESTIONS

I) Answer the following:

- 1) Explain the principles , process of safety direction.
- 2) Describe the Role of effective leader & their attribution.

- 3) What are the essential rules in communication with employees while conducting training
- 4) Write a note on team building.
- 5) Enumerate on the concept of Group Dynamics.
- 6) List out the various financial costs to individual workers , families, Organisation & society.
- 7) Describe the process for compilation of financial costs.
- 8) Explain the Utility & limitations of Cost Data.
- 9) Write a note on Budgeting for Safety.
- 10) Enlist the various elements of Safety Budget.

II) Fill in the Blanks:

1. **Directing** is the guidance; the inspiration, the leadership of those men and women that constitute the real core of the responsibility of management.
2. **Leadership** is influencing people to follow in the achievement of common goal.
3. **Team building** is defined as the ongoing process of using daily interactions, activities, exercises and other formalized strategies to organize a group of employees into a cooperative and cohesive group.
6. **Group dynamics** deals with the attitudes and behavioural patterns of a group. It can be used as a means for problem-solving, teamwork, and to become more innovative and productive as an organization.
7. There are **5 Stages** of Group Dynamics
8. **Functional Groups**: They are created when a group of people join together to accomplish a specific task within unlimited time.
9. **Cost Data** includes all of the costs that an Asset or Group of Assets will incur throughout the life span of an asset.
10. A **compilation report** is a report prepared by the accountant tasked with performing compilation service by a client and should accompany the compiled financial statements.
11. **Sunk costs** are historical costs that have already been incurred and will not make any difference in the current decisions by management.

