Module I

(safety introduction)

Need for safety. Safety and productivity. Definitions: Accident, Injury, Unsafe act, Unsafe Condition, Dangerous Occurrence, Reportable accidents. Theories of accident causation. Safety organization-objectives, types, functions, Role of management, supervisors, workmen, unions, government and voluntary agencies in safety. Safety policy. Safety Officer-responsibilities, authority. Safety committee-need, types, advantages.

Need for safety.

- The importance of industrial safety was realized because of the fact that every year millions occupational/ industrial accidents occur which result in loss of production time equivalent to millions of man hours, machine hours etc.
- Of these about one-fifth production time is lost by those actually injured due to temporary and permanent disablement and the remaining production time is lost by fellow operators/ people in helping the injured, in taking care of the damage caused by accident etc. the loss to the industrial unit would appear much more alarming when death cases due to accidents are considered.
- It is therefore essential to identify/examine the causes of industrial accidents and take steps to control them.
- Many disciplines are concerned with this safety approach.
- Industrial engineering is one field which deals with design of efficient work place, equipment and industrial layout design.
- Other disciplines which can contribute to safe working environment are psychology, sociology and Medicare science.
- **The following steps may be taken to effectively and efficiently eliminate an unsafe working environment:**
    1. Elimination if possible of the causes of accidents.
    2. If it is not possible to eliminate the cause of accidents, make arrangements to shield the hazardous place by guards, enclosures or similar arrangements.
- Need and concern for safety is very important.
- There are some direct costs/ effects of an accident but there are certain indirect costs involved in it also e.g. machine down time, damage to machine, ideal time of nearby equipment and horror created among workers, loss of time etc. in aid cost compensation, legal implications and allied costs etc. So safety measures would not only eliminate/ avoid above cost but would mean performing their moral responsibility towards workmen/operators also.
- To protect health of all employees
- To ensure well being of all workers
- To promote positive culture in all organization or company
- To ensure accident and incident prevention
- To ensure organization development and its growth
- To ensure continual improvement of company

Safety and productivity

- The safety of people, machines, and processes is a key element of any sustainable business or organization.

- Numerous studies show that best-in-class performers achieve higher Overall Equipment Effectiveness, less unscheduled downtime, and less than half the injury rate of average performers.
- Top manufacturers continue to discredit the age-old notion that safety and productivity have separate and competitive goals.
- These leaders use a combination of integrated safety solutions and new international standards to optimize their uptime and productivity.
- Learn how you can minimize safety-related downtime that hinders your ability to be more productive.
- Workplace productivity is dependent on employee safety. As such, employers should put safety first before focusing on productivity.
- Increasing safety in the workplace can significantly boost productivity.
- An unsafe work environment lowers productivity
- Workplace productivity refers to the amount of work accomplished by employees over a given period.
- Having a workforce that is engaged and committed can help maximize productivity.
- Productivity levels can be measured by comparing input and work output.
- The quantity and quality of work delivered by each employee can either increase or reduce productivity in the workplace.
- A productive workplace offers a wide range of benefits to the company, employer, and employees:
    - Increased Performance: Workplace performance and productivity go hand in hand. When performance is increased, so does productivity. Also, increasing productivity in the workplace can motivate employees to put in more effort, thus increasing performance.
    - Improved Employee Engagement: Efficient and effective productivity in the workplace encourages employees to be more involved in their work. Additionally, such employees are always ready to take on new tasks and often aim to be the best at what they do.
    - Greater Fulfilment: Increased productivity can give employees and employers a sense of fulfilment and purpose. Those in the workplace can be happy or unhappy based on the level of productivity.
    - Promotes a Healthy Work Culture: A productive workplace can improve employee well-being. Plus, when people achieve goals as a team, they are likely to form professional work relationships.
    - Better Revenue Generation: Long-term productivity in the workplace can maximize company profits. Organizations that are productive offer better services and can easily turn a profit.
- One of the best ways that employers can increase productivity is by creating a safe_work environment.
- Research shows that employees who feel their workplace is safe are more likely to perform better than those who feel unsafe.
- Safety is improved by removing potential hazards from the workplace.
- Aside from that, employers should create a psychologically safe environment for employees.
- A well-managed and efficient workflow, on the other hand, can improve productivity levels by eliminating redundancies when tackling tasks.
- a safe workplace with minimal job hazards is often a more productive and profitable one

Safe environments minimize lost working hours

Whether your work environment is an office or an industrial facility, reducing downtime is the key to maintaining productivity. In the office, this might mean maintaining a reliable IT infrastructure. A factory, on the other hand, would rely on having machines that run at peak efficiency. In either setting, employees are necessary to maintain optimal productivity. Because businesses rely on employees in this way, injuries will lead to lost productivity in any workplace. Businesses that cut corners to save time and speed up production can often seem productive and profitable. In the long term, these environments can also be unsafe, leading to increased downtime. While safety programs and implementing safe work practices often require an initial investment, they also have a positive impact on employee health. Because healthy employees are more reliable and productive, they're also good for the bottom line.

Safety culture at work makes for engaged employees

A key aspect of finding a balance between productivity and safety is the enforcement of safety culture. A study by Lockheed Martin of their Paducah Plant found that by developing a safety culture, they were able to increase employee productivity by 24% and reduce factory costs by 20%. Lockheed Martin's study found that the major reason for this increase was their focus on reducing errors that lead to job hazards and accidents. By implementing safe job procedures, extensive training, improving pre-work preparation, and auditing all safety processes, plant personnel were able to increase safety while also reducing expenses.

Safety information and education

As part of a safe workplace and culture, updated safety information and education, with both employees and management, is integral to success and improved safety. There are many great options for online safety training available such as the OSHA and National Safety Council in the United States and the CCOHS in Canada. But in addition to these great resources, there are many, many other options for online safety training, seminars, and education for all kinds of industries and safety challenges.

Safe work practices and safe job procedures

The Infrastructure Health and Safety Association in Ontario says:
"Companies should establish safe work practices/safe job procedures for addressing significant hazards or for dealing with circumstances that may present other significant risks/liabilities for the company. They should reflect your company's approach to controlling hazards."

Well-researched safe work practices and safe job procedures help protect employees by providing specific instruction and directions around work performance and conduct that will reduce the safety risk of harm to employees, the environment, and equipment. These work practices and work procedures are the guidebooks to mitigating safety hazards specific to your organization and team.

Safe employees are happier and engaged in their work

Safe working conditions often go hand in hand with ideal operational conditions. With safeguards in place, employees can focus on their work, instead of the dangers and job hazards in their workplace. Keeping a cleaner, more organized space will help reduce safety hazards, and can also improve efficiency. Safety in the workplace is productive in other ways, too. Employees who take personal accountability in their safety are more likely to be engaged and happy at work. Many studies have

shown a link between health and safety, and happiness at work and employee productivity. To finish bringing things full circle, engaged employees are also more likely to be safe at work!

Productivity and safety: two sides of the same coin

One of the ways that personnel at Lockheed Martin's Paducah Plant improved efficiency was by reducing the paperwork for permits by combining their processes. Employee protection was still addressed through the new procedures, but reducing paperwork helped Lockheed Martin see other benefits. SafetyLine can benefit organizations in the same way, by reducing the time and effort required by manual work-alone systems and improving the health and safety of your

Accident

- An accident is an unintentionally-caused event.
- an unexpected event that results in serious injury or illness of an employee and may also result in property damage.
- Accidents which take place in the workplace are referred to as *occupational accidents*.
- Workplace accidents include events that damage property, inhibit a particular workplace function, or cause harm to a person located in the workplace.
- Occupational accidents are also referred to as work-related accidents, and the personal harm they cause may be referred to as an "occupational injury," "occupational death," or other label which specifies that the cause of the harm was occupational in nature.
- There is no universal criteria for what is and is-not considered to be an occupational accident.
- Work-related accidents may impose significant costs to the economy.
- These costs include direct costs due to property damage and lost worker hours, as well as indirect costs, such as due to a decrease in productivity from an accident-related decline in worker morale.
- Businesses may also be forced to pay compensation costs, fines, and increased insurance premiums if they are held to be liable or responsible for the accident.
- Accidents that do not cause harm to any person but which have the potential to do so are referred to as a "near miss."
- A situation which could lead to injurious or fatal accidents is referred to as an "undesired circumstance," "unsafe condition," or "unsafe act."
- Accidents can be caused by human (behavioral) factors, such as:
  - Unsafe conduct
  - Inattention
  - Negligence
  - Improper training
  - Inexperience
  - Drowsiness, fatigue, or illness
- As well as by environmental and workplace design factors, such as:
  - Unsafe working conditions
  - Unsafe workplace design
  - Substandard safety controls
  - Inclement weather

Injury

- An injury or illness is an abnormal condition or disorder.
- Injuries include cases such as, but not limited to, a cut, fracture, sprain, or amputation.
- Illnesses include both acute and chronic illnesses, such as, but not limited to, a skin disease, respiratory disorder, or poisoning.

- “Injury” means mental or physical harm to an employee caused by accident or disease, and also means damage to or destruction of artificial members, dental appliances, teeth, hearing aids and eyeglasses, but, in the case of hearing aids or eyeglasses, only if such damage or destruction resulted from accident which also caused personal injury entitling the employee to compensation therefore either for disability or treatment.
- An injury is damage to your body. It is a general term that refers to harm caused by accidents, falls, hits, weapons, and more.
- An injury is any physiological damage to the human body caused by immediate physical stress.
- An injury can occur intentionally or unintentionally and may be caused by blunt trauma, penetrating trauma, burning, toxic exposure, asphyxiation, or overexertion.
- Several major health organizations have established systems for the classification and description of injuries.
- Injuries can occur in any part of the body, and different symptoms are associated with different injuries.
- Treatment of an injury is typically carried out by a health professional and varies greatly depending on the nature of the injury.
- Injuries are distinct from chronic conditions, psychological trauma, infections, or medical procedures, though injury can be a contributing factor to any of these.

unsafe act

- The unsafe act is a violation of an accepted safe procedure which could permit the occurrence of an accident OR
- People make the violation of the standard rules & met with an accident.
- 80% of all injuries on duty are the result of unsafe Acts by people.
- More difficult to reduce as they revolve around people and what they do.
- Some examples of unsafe acts are:
    - Speed – operating a machine at a speed it is not designed to run at.
    - Working without authority – entering a confined space before it has been declared safe.
    - Adjusting moving machinery – lubricating bearings or changing the drive belts while the machine is still running.
    - Chance taking – Running in front of a fork lift
    - PPE not worn – not wearing safety goggles when grinding.
    - Worker standing on ladder in swimming pool
    - whilst operating an Electric Drill
    - Failure to warn
    - Failure to secure a load or improper loading •
    - Making safety devices inoperable or removing safety devices
    - Using defective equipment
    - Using equipment improperly
    - placement of work or task
    - Improper lifting •

- Servicing equipment in operation •
- Horseplay
- Failure to follow rules

- To prevent unsafe act type accidents:
  - Think about how to do the task safely prior to engaging in the work.
  - Warn co-workers of hazards. When a custodian is mopping the floor, use warning signs at conspicuous locations to warn pedestrian traffic. If something spills on the floor, warn co-workers of the hazard until the spill is cleaned. If equipment is damaged or defective, warn coworkers by taking the equipment out of service or by lockout/tagout.
  - Comply with all work rules and procedures.
  - If you are not trained to use a piece of equipment, don't use it.
  - Don't rush your work or take shortcuts. Don't try to complete a tenminute task in two minutes. Chances are that something will go wrong.
  - Use all equipment, tools, and material in the appropriate and intended manner. Don't use a chair as a ladder.
  - Use proper lifting technique, a lifting device, or get assistance.
  - Use appropriate personal protective equipment.
  - Stop and mentor employees engaged in unsafe acts.
  - Supervisors should be vigilant for unsafe acts.

Unsafe Condition

- The unsafe condition is a hazardous physical condition or circumstance which could directly permit the occurrence of an accident OR
- Working conditions/environment which are prone to have an accident.
- A study attributes 20% of all injuries on duty to unsafe working conditions.
- They all relate to physical or mechanical defects, which can be corrected relatively cheaply and permanently.
- It is always the first area to be tackled when working on an accident/incident reduction programme.

Some examples of unsafe conditions are:

- Poor guarding – inadequate or inefficient
- Defective Conditions – hand tools, equipment, substances
- Poor Layout – work flow, overcrowding and congestion
- Substandard housekeeping. (A place for everything and everything in its place always). Eg Waste bins, Aisles, Storage, signs & notices
- Loud noise – can't hear instructions etc
- Inadequate illumination or ventilation – can't see clearly or breathe properly
- Inadequate or improper protective equipment

- Defective tools, equipment or materials
- Congestion or restricted action
- Inadequate warning systems
- Poor housekeeping or disorderly workplace •
- Hazardous environmental conditions; gases, dusts, smokes, fumes, vapors •
- Noise exposures
- High or low temperature exposures

- To prevent unsafe condition type accidents:
  - Think about how to do the task safely prior to engaging in the work. Ensure that you have all appropriate equipment, tools and material to safely do the job. If you don't have the correct equipment, e.g., personal protective equipment, tell your supervisor before starting the work.
  - Inspect all equipment, tools and material before use. Make certain the item is in good working condition and is appropriate for the task.
  - Make certain that you have enough space to complete the job. Many injuries are caused because employees didn't have sufficient room to do a job.
  - Injuries occur everyday because employees choose not to say anything about known hazards. Employees identifying unsafe conditions should cease their activity and report the condition to their immediate supervisor for corrective action.

Dangerous occurrence

- Dangerous occurrences are certain unintended, specified events, which may not result in a reportable injury, but which do have the potential to cause significant harm.
- Dangerous occurrences usually include incidents involving:
  - Lifting equipment
  - Pressure systems
  - Overhead electric lines
  - Electrical incidents causing explosion or fire
  - Explosions, biological agents
  - Radiation generators and radiography
  - Breathing apparatus
  - Diving operations
  - Collapse of scaffolding
  - Train collisions
  - Wells
  - Pipelines or pipeline works

Theories of accident causation

- Accident causation theory is the art and science that seeks to understand the deeper roots of why accidents happen.
- Understanding accident causation theory is essential in determining why workplace incidents occur and so that we can prevent re-occurrences.

- There are several major theories concerning accident causation, each of which has some explanatory and predictive value.
    1. The domino theory developed by H. W. Heinrich, a safety engineer and pioneer in the field of industrial accident safety.
    2. Human Factors Theory
    3. Accident/Incident Theory
    4. Epidemiological Theory
    5. Systems Theory
    6. The energy release theory, developed by Dr. William Haddon, Jr., of the Insurance Institute for Highway Safety.
    7. Combination Theory
    8. Behaviour Theory
- Accident theories guide safety investigations. They describe the scope of an investigation.

Heinrich's Domino Theory

- According to Heinrich, an "accident" is one factor in a sequence that may lead to an injury.
- The factors can be visualized as a series of dominoes standing on edge; when one falls, the linkage required for a chain reaction is completed.
- Each of the factors is dependent on the preceding factor
    - after studying the reports of 75,000 industrial accidents, Heinrich concluded that
    - 88 percent of industrial accidents are caused by unsafe acts committed by fellow workers.•
    - 10 percent of industrial accidents are caused by unsafe conditions.
    - 2 percent of industrial accidents are unavoidable.
- Heinrich's study laid the foundation for his Axioms of Industrial Safety and his theory of accident causation, which came to be known as the domino theory
- Heinrich's Axioms of Industrial Safety
    1. Injuries result from a series of preceding factors.
    2. Accidents occur as the result of physical hazard or an unsafe act.
    3. Most accidents are the result of unsafe behavior.
    4. Unsafe acts and hazards do not always result in immediate accidents and injuries.
    5. Understanding why people commit unsafe acts helps to establish guidelines for corrective actions.
    6. The severity of the injury is largely fortuitous and the accident that caused it is preventable.
    7. Best accident prevention techniques are analogous to best quality / productivity techniques.
    8. Management should assume safety responsibilities.
    9. The supervisor is the key person in the prevention of industrial accidents.
    10. Cost of accidents include both direct costs and indirect costs.

- According to Heinrich, these axioms encompass the fundamental body of knowledge that must be understood by decision makers interested in preventing accidents.
- Any accident prevention program that takes all 10 axioms into account is more likely to be effective than a program that leaves out one or more axioms
- According to Heinrich, there are five factors in the sequence of events leading up to an accident. These factors can be summarized as follows:
    1. Ancestry and social environment. Negative character traits that may lead people to behave in an unsafe manner can be inherited (ancestry)or acquired as a result of the social environment
    2. Fault of person Negative character traits, whether inherited or acquired, are why people behave in an unsafe manner and why hazardous conditions exist.
    3. Unsafe act/mechanical or physical hazard .Unsafe acts committed by people and mechanical or physical hazards are the direct causes of accidents.
    4. Accident. Typically, accidents that result in injury are caused by falling or being hit by moving objects.
    5. Injury. Typical injuries resulting from accidents include lacerations and fractures.
- Heinrich's theory has two central points: (1) injuries are caused by the action of preceding factors and (2) removal of the central factor (unsafe act/ hazardous condition) negates the action of the preceding factors and, in so doing, prevents accidents and injuries.

Human Factors Theory

- The human factors theory of accident causation attributes accidents to a chain of events ultimately caused by human error. It consists of the following three broad factors that lead to human error: overload, inappropriate response, and inappropriate activities

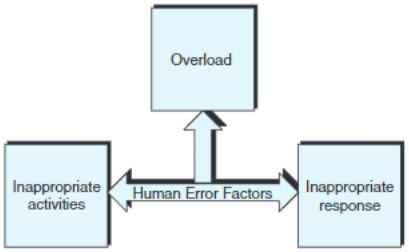

Figure 3–1
Factors that cause human errors.

Overload

- Overload amounts to an imbalance between a person's capacity at any given time and the load that person is carrying in a given state.
- A person's capacity is the product of such factors as his or her natural ability, training, state of mind, fatigue, stress, and physical condition.
- The load that a person is carrying consists of tasks for which he or she is responsible and added burdens resulting from **environmental factors** (noise, distractions, and so on**), internal factors** (personal problems, emotional stress, and worry), and **situational factors** (level of risk, unclear instructions, and so on).
- The state in which a person is acting is the product of his or her motivational and arousal levels

Inappropriate Response and Incompatibility

- How a person responds in a given situation can cause or prevent an accident.
- If a person detects a hazardous condition but does nothing to correct it, he or she has responded inappropriately.
- If a person removes a safeguard from a machine in an effort to increase output, he or she has responded inappropriately.
- If a person disregards an established safety procedure, he or she has responded inappropriately. Such responses can lead to accidents.
- In addition to inappropriate responses, this component includes workstation incompatibility.
- The incompatibility of a person's workstation with regard to size, force, reach, feel, and similar factors can lead to accidents and injuries

Inappropriate Activities

- Human error can be the result of inappropriate activities
- An example of an inappropriate activity is a person who undertakes a task that he or she doesn't know how to do.
- Another example is a person who misjudges the degree of risk involved in a given task and proceeds based on that misjudgement.
- Such inappropriate activities can lead to accidents and injuries.

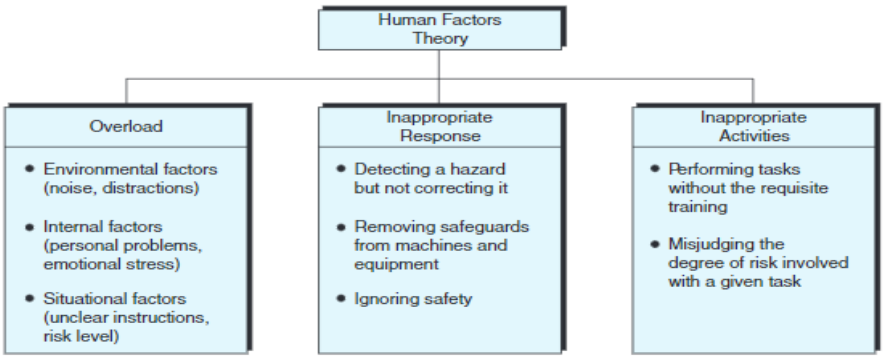

Figure 3–2
Human factors theory.

Accident/Incident Theory

- The accident/incident theory is an extension of the human factors theory. sometimes referred to as the Petersen accident/incident theory.
- Petersen introduced such new elements as ergonomic traps, the decision to err, and systems failures, while retaining much of the human factors theory.
- In this model, overload, ergonomic traps, or a decision to err lead to human error.
- The decision to err may be conscious and based on logic, or it may be unconscious.
- A variety of pressures such as deadlines, peer pressure, and budget factors can lead to unsafe behaviour
- Another factor that can influence such a decision is the "It won't happen to me" syndrome.
- The systems failure component is an important contribution of Petersen's theory.
- First, it shows the potential for a causal relationship between management decisions or management behavior and safety.
- Second, it establishes management's role in accident prevention as well as the broader concepts of safety and health in the workplace.

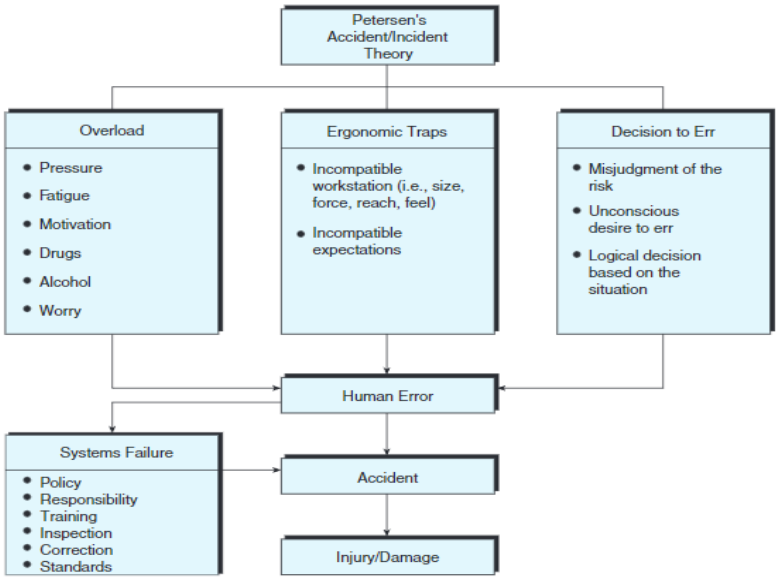

Figure 3–3
Accident/incident theory.

- Following are just some of the different ways that systems can fail, according to Petersen's theory:
  - Management does not establish a comprehensive safety policy.
  - Responsibility and authority with regard to safety are not clearly defined.
  - Safety procedures such as measurement, inspection, correction, and investigation ignored or given insufficient attention.
  - Employees do not receive proper orientation.
  - Employees are not given sufficient safety training

EPIDEMIOLOGICAL THEORY OF ACCIDENT CAUSATION

- Traditionally, safety theories and programs have focused on accidents and the resulting injuries.
- However, the current trend is toward a broader perspective that also encompasses the issue of industrial hygiene.
- Industrial hygiene concerns environmental factors that can lead to sickness, disease, or other forms of impaired health.
- This trend has, in turn, led to the development of an epidemiological theory of accident causation.
- Epidemiology is the study of causal relationships between environmental factors and disease.
- The epidemiological theory holds that the models used for studying and determining these relationships can also be used to study causal relationships between environmental factors and accidents or diseases
- The key components are **predispositional characteristics and situational characteristics.**
- These characteristics, taken together, can either result in or prevent conditions that may result in an accident.
- For example, if an employee who is particularly susceptible to peer pressure (predispositional characteristic) is pressured by his coworkers (situational characteristic) to speed up his operation, the result will be an increased probability of an accident
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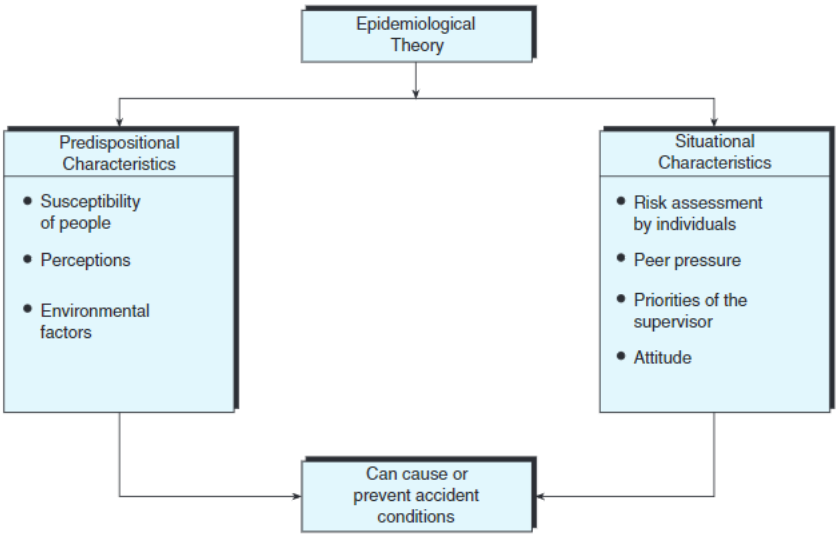

Figure 3–4
Epidemiological theory.

SYSTEMS THEORY OF ACCIDENT CAUSATION

- A system is a group of regularly interacting and interrelated components that together form a unified whole. This definition is the basis for the systems theory of accident causation.
- This theory views a situation in which an accident may occur as a system comprised of the following components: person (host), machine (agency), and environment.
- The likelihood of an accident occurring is determined by how these components interact.
- Changes in the patterns of interaction can increase or reduce the probability of an accident.
  - For example, an experienced employee who operates a numerically controlled five axis machining centre in a shop environment may take a two-week vacation. Her temporary replacement may be less experienced. This change in one component of the system (person/host) increases the probability of an accident. Such a simple example is easily understood. However, not all changes in patterns of interaction are this simple. Some are so subtle that their analysis may require a team of people, each with a different type of expertise.
- The primary components of the systems model are the person/machine/environment, information, decisions, risks, and the task to be performed.
- Each of the components has a bearing on the probability that an accident will occur.

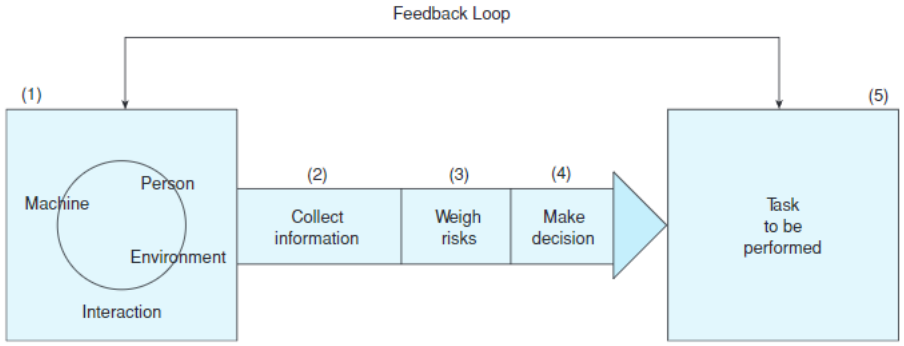

Figure 3–5
Systems theory model.

- As this model shows, even as a person interacts with a machine within an environment, three activities take place between the system and the task to be performed.

- Every time a task must be performed, there is the risk that an accident may occur.
- Sometimes the risks are great; at other times, they are small.
- This is where information collection and decision making come in.
- Based on the information that has been collected by observing and mentally noting the current circumstances, the person weighs the risks and decides whether to perform the task under existing circumstances.
- For example, say a machine operator is working on a rush order that is behind schedule. An important safety device has malfunctioned on his machine. Simply taking it off will interrupt work for only five minutes, but it will also increase the probability of an accident. However, replacing it could take up to an hour. The operator and his supervisor may assess the situation (collect information), weigh the risks, and make a decision to proceed. If their information was right and their assessment of the risks accurate, the task will probably be accomplished without an accident.
- However, the environment in which the machine operator is working is unusually hectic, and the pressure to complete an order that is already behind schedule is intense.
- These factors are stressors that can cloud the judgment of those collecting information, weighing risks, and making the decision.
- When stressors are introduced between points 1 and 3 in Figure 3–5, the likelihood of an accident increases.
- For this reason, five factors should be considered before beginning the process of collecting information, weighing risks, and making a decision:
    - Job requirements
    - The workers' abilities and limitations
    - The gain if the task is successfully accomplished
    - The loss if the task is attempted but fails
    - he loss if the task is not attempted
- These factors can help a person achieve the proper perspective before performing the above-mentioned tasks. It is particularly important to consider these factors when stressors such as noise, time constraints, or pressure from a supervisor may tend to cloud one's judgment.

COMBINATION THEORY OF ACCIDENT CAUSATION

- There is often a degree of difference between any theory of accident causation and reality.
- The various models presented with their corresponding theories in this chapter attempt to explain why accidents occur.
- For some accidents, a given model may be very accurate. For others, it may be less so. Often the cause of an accident cannot be adequately explained by just one model or theory.
- Thus, according to the combination theory, the actual cause may combine parts of several different models. Safety personnel should use these theories as appropriate both for accident prevention and accident investigation.
- However, they should avoid the tendency to try to apply one model to all accidents

BEHAVIORAL THEORY OF ACCIDENT CAUSATION

- The behaviour theory of accident causation and prevention is often referred to as behaviour -based safety (BBS)
- BBS has both proponents and critics.
- One of the most prominent proponents of BBS is E. Scott Geller, a senior partner of Safety Performance Solutions, Inc., and a professor of psychology.
- It is appropriate that Geller is a professional psychologist because BBS is the application of behavioural theories from the field of psychology to the field of occupational safety.
- According to Geller, there are seven basic principles of BBS:
    1. intervention that is focused on employee behaviour;
    2. identification of external factors that will help understand and improve employee behaviour (from the perspective of safety in the workplace);

3. direct behaviour with activators or events antecedent to the desired behaviour, and motivation of the employee to behave as desired with incentives and rewards that will follow the desired behaviour;
4. focus on the positive consequences that will result from the desired behaviour as a way to motivate employees;
5. application of the scientific method to improve attempts at behaviour interventions;
6. use of theory to integrate information rather than to limit possibilities; and
7. planned interventions with the feelings and attitudes of the individual employee in mind.

Safety organization

- Safety organization can be defined as the structure and process by which groups of people (employees) are divided into sections or departments, each section or department is assigned specific safety function or duty.
- Authority and responsibility of everybody is clearly defined and interrelationship between them is specified for the accomplishment of organizational safety goals.
- A large unit may have safety department which may have groups of people for division of such safety function and responsibilities.
- But in a small unit (majority) if such division is not possible and only a few persons are available for safety work, they will be assigned specific duty and other departmental heads (production, purchase, personnel etc.) will be explained their role and responsibility towards safety goals.
- All supervisors shall be integrated with safety as part of their duty. 'Safety is everybody's duty' will be explained to all with their safety duty given in writing or by displaying at their workplaces.

Need (Significance) of Organization

- Organization is the foundation or framework of the whole structure of management and contributes greatly to success and continuity of an enterprise in the following ways

1. Facilitates administration and other functions of management process.
2. Facilitates growth and diversification.
3. Permits optimum use of technological improvements.
4. Encourages use of human beings.
5. Stimulates creativity.
6. Attains maximum efficiency with minimum costs.

Objectives of safety organization

- To prevent accidents in future
- To provide safe work environment
- Safety consciousness
- Integrate safety policies with job process
- Compliance of rules as per factory act
- Ensure and modify on identified risk
- Training to ensure safety
- Invite cooperation and suggestions from the employees
- To take measures after accident
-

FUNCTIONS & DUTIES OF SAFETY ORGANIZATION

- Monitoring implementation of all directives issued by Rly Board & HQs in matters pertaining to safety.
- Ensuring super checks of functioning of operational & maintenance machinery on the division.
- Super check of coaching & goods trains, conduct night inspections, joint inspections with officers of civil, engineering, S& T, electrical & Mechanical departments.

- Implementation of safety circular & safety drives on the division.
- Co-ordination of improvement in crew & guard booking lobbies, running rooms for running staff.
- To coordinate disaster management functions, relief, & restoration etc. •
- Assisting authorities in conducting inquires in serious accidents.
- Counselling & monitoring of staff involved in maintenance & operations

Role of management in safety

- This might seem obvious, because the role of management in overall workforce output is fundamental.
- Management decisions are at the forefront of working practices and outcomes.
- But when it comes to safety critical areas, it's important to consider the way in which management structures, decision making and overall input can support, enhance and improve best practice.
- It's very easy for complacency to creep into the management of aspects such as workforce safety.
- Where an excellent safety record is demonstrable, aspects such as verbal and written communications can take a backseat, with a regression in their presence or simply a standing still and relying on old systems to continue working.

- Timely payment of compensation
- Compliance of applicant
- Following specific rules and regulations
- Appointment of medical, welfare and safety officers
- Formation of committee(safety, welfare, pollution control, canteen..)
- Education and training employees
- Promote coverage of employee under act

Role of supervisor in safety

- There's an unofficial rule of safety management that goes like this: a safety program will only be as strong as the leasteffective shift supervisor.
- Every rule has its exceptions, but it's exceedingly difficult to achieve sustained safety success in a workplace where supervisors and other leaders lack the skills and knowledge to support the company's safety efforts.
- Supervisors may not set an organization's direction but they're the ones who are ultimately responsible for translating a company's policies and intentions into action.
- Even when a new safety initiative is driven by the safety officer, at most workplaces it's up to team leaders to oversee it on a daily basis.
- To put it simply, supervisors are where the rubber meets the road.
- If you're skeptical of the impact that supervisors have on safety, try this quick thought experiment.
- The most commonly cited workplace safety challenges include recurring injuries, a lack of worker engagement and buy-in, employees taking shortcuts or not following rules, a lack of personal accountability for safety, and competing organizational priorities.
- Pick any one of these issues and consider how the problem's impact would change if every supervisor in the workplace had strong communication skills, understood advanced safety concepts like human factors, and had experience with empowering their team to improve on the issue.
- It's not hard to imagine that safety-oriented supervisors would result in employees taking fewer shortcuts and more personal accountability for their own safety.

- Workers would feel more engaged and more capable of focusing on production without casting safety by the wayside. And, essentially, supervisors could be an effective liaison between the safety manager and workers in an effort to root out repeated injuries.
- Now picture the opposite: a set of supervisors who lack the ability to have difficult safety conversations with workers, who aren't able to spot safety issues (let alone anticipate them before they occur), and who are unpracticed in leading with a safety-first mindset.
- Supervisors aren't magicians, of course. They're only one of many factors that determine a workplace's overall degree of safety success.
- The best team of supervisors in the world can't overcome a flimsy organizational safety program.
- But the inverse is also true—it's hard to see how an otherwise strong safety system can succeed at the highest level with frontline leaders who simply don't 'get' safety.
- In effect, supervisors represent an invisible ceiling on safety outcomes.
- Once we acknowledge supervisors' importance to workplace safety, big questions arise. Which specific traits determine a supervisor's impact on safety? And how can safety managers and senior leaders foster the right mix of supervisory skills and knowledge to improve safety results?
- SafeStart has conducted extensive research into the essential components for supervisors to influence worker's safety attitudes and actions, and we've discovered that, across almost every industry, geographic region and size of company, there are six main qualities that can make or break a supervisor's ability to move the needle on safety outcomes.
- Notably, these qualities are all variable—everyone naturally possesses them to differing degrees, can improve them through teaching and practice, and can lose them through lack of use. This means that business leaders who want to better leverage supervisors' impact on safety should take steps to instill or improve these six traits in supervisors through training mentorship.
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Role of supervisor in safety

- Workers are responsible for their own safety on the job.
- This means that they have the right to refuse to do any act or operate any tool, appliance, or equipment when they have reasonable cause to believe that to do so would put them in danger.

The employer must ensure that:

- All work is carried out without undue risk of injury or industrial disease
- Machinery and equipment are capable of safely performing the functions for which they are used
- All permanent and temporary buildings and structures are capable of withstanding any stresses likely to be imposed on them
- All buildings, excavation structures, machinery, equipment, tools, and places of employment are maintained in good condition so workers will not be endangered
- Regular inspections are made to prevent structures, grounds, excavations, tools, equipment, machinery, and work from becoming unsafe
- Any unsafe conditions are corrected without delay
- Each worker is supplied, at no cost, with all protective safety equipment required by WorkSafeBC regulations
- All workers are instructed in the safe performance of their duties
- An accident prevention program is set up
- There is a safe means of entry to and exit from the work area
- Firefighting equipment is provided and maintained

- Workers with physical or mental impairment are not assigned to work where their impairment endangers themselves or others
- No one enters or remains, or is permitted to remain, on the premises of any place of employment while that person's ability to work is so affected by alcohol, drugs, or other substances as to endanger his or her health or safety, or that of any other person
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As a worker, you should keep the following personal responsibilities in mind:

- You must not remove any safety equipment from machines or equipment. This includes shields from grinders, mixers, etc.
- You must have had adequate instruction about a piece of machinery or equipment before you use it.
- You must make sure that no machine, equipment, or tool is used in a way that would cause injury to someone else.
- You must make sure that there are safe entrances to and exits from the workplace.
- You must make sure that the work area is safe for the movement of workers, equipment, and materials.
- You must wear protective eyewear when using grinders and other equipment that may be hazardous to the eyes.

Role of unions in safety

- Your workers deserve safe and fair working conditions. But before labour unions, they didn't have much power to negotiate for such conditions.
- Today, labour unions have huge sway over workplace safety standards, for unionized and non-unionized workers alike.
- And if your company wants to thrive, you have to be willing to come to the negotiating table.
- A study of right-to-work laws published in the BMJ *Occupational & Environmental Medicine* journal found that a 1% decrease inunionization resulted in a 5% increase in occupational fatalities.
- In Kansas, Missouri, and Nebraska, all states with right-to-work laws, there was a notable increase in workplace deaths due to falls, machine hazards, and struck-by hazards.
- And in construction, often regarded as one of the most dangerous industries in the country, a survey showed that construction firms with union workers were far more likely to engage in safety practices than those with non-union workers.
- There are many theories as to why unions help promote workplace safety.
- One likely explanation is worker protection.
- Under the wing of labour unions, workers are free to speak up about safety hazards without fear of retaliation.
- And because unions can put pressure on employers to fix safety problems, employers are incentivized to fix and prevent problems – or face significant productivity losses.
- One of the biggest advantages unions have is the power of collective bargaining.
- An individual worker can often feel that they don't have a voice, or that if they speak up alone, they won't have much power to affect change.
- By joining a union, workers agree to bargain for their rights as a collective entity.
- This gives them far greater leverage to bargain for things like better safety conditions, improved wages, and reasonable work hours.
- The fact that they cover an entire group forces employers to come to the table.

- Of course, the work of a labour union doesn't end with reaching a collective bargaining agreement.
- Once an agreement is reached, union representatives work with employees and management to ensure that the terms of the agreement are honoured on both sides.
- Unions can influence the safety of all workers because of two things:

    1. Restriction of labour supply
    2. Increase in labour demand

- Companies need workers. But workers have the right to a safe and fair working environment.
- Unions leverage this by increasing the demand for union laborers, which in turn forces companies to negotiate with them to access union workers.
- This, in turn, sets the standard for non-union workers.
- A specific workplace may not be unionized, but an industry is – and that means that the workplace must comply with industry standards.

Safety Policy

- An organization's safety policy is a recognized, written statement of its commitment to protect the health and safety of the employees, as well as the surrounding community.
- The safety policy also details the measures the company takes and will take to protect the life, limb, and health of their employees, often surpassing the requirements set out by the laws or by the standard practices of the industry.
- The Occupational Health and Safety Act requires employers to develop and implement a safety policy.
- To succeed, a safety policy requires both a commitment and endorsement from the employer and buy-in from the employees.
- There are generally three sections in a safety policy, which include:

    - **Statement of the policy -** The employer's commitment to managing health and safety and the goal of the policy
    - **Responsibility -** Stating who is responsible for implementing, enacting, and tracking each element of the policy
    - **Arrangements or procedures -** Outlines the details of procedures including the reduction of hazard policy

It may also include details about the following:

- Employee training
- Use of administrative controls, hazard isolation, locking, warnings, signs and symbols marking hazards, etc.
- Use of personal protective equipment (PPE)
- Removing hazardous materials or replacing them with less harmful alternatives
- Improved lighting and working environment
- Prevention of slip, trip, and fall incidents

Safety officer Responsibility

- A hundred things happen at once in an organization. And each of these activities needs to take place in a safe environment.

- So it’s crucial to have a person in your company who can recognize what could go wrong, act when something goes wrong, and be willing to take ownership of the situation.
- This is where the role of a safety officer comes in.
- The safety officer is an internal employee who is assigned to prevent accidents, respond to emergencies and evaluate the effectiveness of the company’s safety programs.
- A safety officer identifies safety hazards, investigates them thoroughly, and controls them before someone gets hurt.
- The safety officer is the ‘head’ of the safety department and, in most organizations, reports to the Chief Operations Officer.
- The safety officer also checks if the safety program is working effectively and efficiently to meet all requirements.
- The role of a safety officer can vary from company to company, but they all have one thing in common — ensuring the safety of everyone in the workplace.
- They verify that everyone on the site is following safe work practices and doing their jobs safely.
- In general, safety officers have three main roles:
- **Planning**

  Safety officers must create a safe environment by making sure they have all the necessary equipment for their team. They also have to ensure that they have all the required things for their team.

  An example of this would be ensuring they have shoring equipment at hand that they can use to shore up an unstable wall. Making sure that the employees have all the necessary tools to finish their work safely is also a part of the responsibility.
- **Organizing**

  Safety officers are also responsible for organizing their workload so that no harm will come to them or anyone else during their work activities. They have to make sure that employees can complete the tasks without causing any damage to the workplace or anyone else.
- **Supervising**

  Finally, safety officers are responsible for supervising everyone who works under them to ensure

that they are doing their work safely. When supervising, they need to make sure that each person knows their role in the process and where they fit in.

Safety officers handle a broad range of tasks, including various first-aid procedures and safety checks on equipment. They also help set up and operate emergency equipment correctly. In some companies, they may be the only person on-site with first-aid training. In some other companies, they will oversee a group of first-aid trainers or safety managers who do not have their own training as first-aid responders.

- Irrespective of their specific role or position in the organization, all safety officers should follow a set of responsibilities.
- The safety officer is responsible for ensuring the safe and effective operation of any and all areas and facilities in the organization. Here are some of the specific responsibilities that every safety officer has.

    - Identify and assess hazards, risks and control measures for a specific operation or process.
    - Conduct ongoing review of operations and processes to identify potential hazards, risks and control measures that should be implemented to reduce these risks, including all costs involved in implementing such measures.
    - Assess and document hazards, risks and controls in a manner consistent with established procedures and practices.
    - Set up and supervising temporary work areas.
    - Supervise the safe handling, storage & disposal of hazardous materials.
    - Supervise the operation of any potential hazards in the workplace.
    - Improve workplace safety and employee productivity by transitioning from manual safety procedures to digital safety management systems.
    - Ensure that all company employees meet all OSHA requirements.
    - Provide OSHA training if necessary.
    - Ensure that health, safety, and environmental policies are followed.
    - Investigate workplace accidents and injuries and refer them to the proper authorities.

- Ideally, a safety officer will have a degree in a technical field, such as mechanical engineering or structural engineering, and a certification in safety practices.

Safety committee-need, types, advantages.

- A safety committee is an organization group that operates within a workplace and is composed of members from its various departments, including management, frontline workers, and office staff.
- Safety committees bring together workers and employers through regularly scheduled meetings where safety issues are addressed. The goal of a safety committee is to create and nurture a culture of safety.
- The main purpose of a safety committee is to mitigate the risk of workplace injuries and illnesses.
- Its duties also include informing and educating employees about safety issues, setting achievable safety goals for the organization, and fostering a safety culture among the workforce
- Safety committees are typically formal arrangements that hold regular meetings, either weekly or monthly.
- In smaller companies, however, it is common for the safety committee to gather all staff members for a monthly or quarterly safety meeting.
- An effective safety committee should be large enough to broadly represent the workforce. It should include employees from all levels of the company, from the custodial staff to upper management.
- Safety committee best practices include making sure that everyone has the opportunity to provide input, post questions, and raise concerns.
- The main purpose of a safety committee is **to mitigate the risk of workplace injuries and illnesses**. Its duties also include informing and educating employees about safety issues, setting achievable safety goals for the organization, and fostering a safety culture among the workforce.
- A safety committee serves a variety of functions, including:
    - Developing written safety programs
    - Promoting safe work practices
    - Facilitating safety training
    - Performing workplace inspections
    - Carrying out accident investigations
    - Acting as a point of contact between employees and management
    - Reviewing injury and illness records
    - Increasing awareness about workplace safety issues
    - Identifying hazards and recommending appropriate control measures
- Safety committees help provide an overall perspective of the safety status of the organization.
- It serves as a visible body that can be approached for safety or health complaints, suggestions, and other types of feedback.
- As the committee solely deals with safety-related issues, it ensures that there are employees focused on and dedicated to coordinating safety-related activities.
- It also encourages and motivates employees to follow safety standards and signals to them that the organization is taking measures to protect their wellbeing.