

## UNIT I

**HEALTHCARE HAZARD CONTROL AND UNDERSTANDING ACCIDENTS**

Healthcare Hazard Control: Introduction, Hazard Control: Management & Responsibilities, Hazard Analysis, Hazard Correction, Personal Protective Equipment, Hazard Control Committees, Accident Causation Theories, Accident Reporting, Accident Investigations, Accident Analysis, Accident Prevention, Workers' Compensation, Orientation, Education, and Training.

**1. Healthcare Hazard Control: Introduction****P1**

Healthcare organizations seeking to maintain revenues, minimize losses, serve their communities and meet regulatory or accreditation requirements need effective safety functions. Rates of occupational injury to healthcare workers have risen over the past decade. Safety issues facing healthcare organizations include needle sticks, back injuries, slips and falls, laser hazards, chemical exposures, biological hazards, workplace violence, and community safety issues.

**International Board for Certification of Safety Managers**

- The International Board for Certification of Safety Managers (IBFCSM), founded in 1976 as a not-for-profit credentialing organization, operated for some time as the Board of Certified Hazard Control Management (BCHCM).
- The board offers qualified working healthcare professionals an opportunity to earn their
  - Certified Healthcare Safety Professional (CHSP)
  - Certified Healthcare Emergency Professional (CHEP)
  - Certified Patient Safety Officer (CPSO) credential
  - Certified Hazard Control Manager (CHCM)
  - Certified Hazard Control Manager-Security (CHCM-SEC)
  - Certified Product Safety Manager (CPSM) credential
- The board offers CHSP and CHEP credential holders with the opportunity to add the healthcare Fire Safety Management (FSM) designation to their primary certification.
- The registered healthcare safety technician-environmental services (RHST-EVS) designation fills a vital need for a credential for those responsible for cleaning and disinfecting healthcare facilities.

**1.1 Hazard Control****P1**

- IBFCSM defines a *hazard* as “any solid, gas, or liquid with the potential to cause harm when interacting with an array of initiating stimuli including human-related factors.”
- The scope of a hazard includes activity, behaviour, error, event, incident, occurrence, operation, process, situation, substance or task with potential to cause human harm, property damage and risk to the environment.
- The board defines *hazard closing* as the process of two or more hazards or causal factors attempting to occupy the same space at the same time.
- Hazard control professionals refer to this interaction of causal factors as the *accident generation cycle*.
- Proactive hazard control can improve operational efficiency, organizational effectiveness.
- The hazard control profession should focus on using management, leadership, and improvement principles to prevent accidents, injuries, and other losses.
- Well-known engineering innovations such as fire prevention technologies and safer machine designs make workplaces much safer not failing to higher accident rates.
- Passive hazard control efforts can communicate a general awareness about the importance of working safely.



**2. Hazard Control Management**

**P2**

- Hazard control management focus on developing processes or systems that can help prevent harm and loss.
- An uncorrected hazard or hazardous situation could contribute to an event resulting in property damage, job interruption, personal harm, or adverse health effects.
- The process of controlling hazards requires development of written policies, plans, or procedures.
- The hazard control functions connect with organizational structures and operational philosophies.

**Program Or Function**

- Organizations develop written safety programs to satisfy organizational mandates or to demonstrate visual compliance with regulatory requirements.
- The word function denotes the concept of performance or execution, people, things, and institutions.

**Seven Values of Hazard Control Management**

- Never-ending process
- People focused
- Leadership driven
- Operational priority
- Benefits everyone
- Reduces organizational losses
- Prevents human harm

**Proactive**

**Reactive Hazard Control**

Anticipates, recognizes, and identifies hazard.	Evaluates and investigates past incidents or accidents.
Analyzes and determines risks	Uses risk management to control losses
Controls hazards to reduce accident potential	Satisfied with reducing accident recurrence
Educates and encourages safe behaviors	Disciplines unsafe actions and behaviors
Focuses in preventing losses	Accepts some losses if not too severe
Analyzes to determine root causes	Documents errors and primary causes
Operates to open and hidden cultures	Responsive to formal culture expectations
Involves leaders in hazard control	Leaders delegate responsibilities to others

**Traditional Hazard Control Assumptions**

- **Hazard control manager**-responsible for solving safety-related problems.
- **Senior leaders** –responsible for viewing hazard control.
- **Training and education**-focuses on documentation and not human performance.
- **Organizational efforts**- focus on hazards with minimum unsafe behaviors.

**Hazard control is a good business**

- Organizational leaders making hazard control part of a good business initiative to understand accidents impact their organization in the terms of cost, time, performance, and morale.
- Proactive hazard control can also help achieve compliance with regulatory requirements.

**2.1. Hazard Control Responsibilities****P2**

- Organizations with high accident or injury rates fail to outline specific hazard control responsibilities in their plans, procedures, directives, and job descriptions.
- A senior leader ensures managers and supervisors understand the importance of their assigned hazard control responsibilities, encourage team participation and hold key managers accountable.
- Senior leaders and hazard control managers focus on the hazards, behaviors, and risks that pose the most potential harm.

**2.1.1 Senior Management Responsibilities**

- Develop, sign, and publish an organizational hazard control policy statement.
- Describe key expectations related to accomplishing hazard control objectives.
- Ensure that all organizational members can explain the major objectives.
- Managers and supervisor visibly support established objectives.
- Develop methods to track progress and provide feedback to all organizational members.

**2.1.2 Hazard Control Manager Responsibilities**

- An effective hazard control manager serves as a consultant, adviser to managers at all operational levels and attempt to correct every hazardous situation.
- The need for improving hazard control efforts remains proportional to the need for improving other organizational functions.
- Hazard control objectives focus on accident prevention, reducing operating costs and efficiently using human and other organizational resources.
- Hazard control managers teach others about accident prevention principles.
- When seeking senior leader's approval for hazard control expenditures, use a well-prepared cost-benefit analysis document.
- Hazard control managers anticipate opposition from certain segments within their organization.
- When dealing with opposition, use effective human relation and communication skills to persuade others to support hazard control objectives.
- Hazard control managers acknowledge operational managers and supervisors face issues beyond their control.
- Conducting periodic perception surveys reveal what people in the organization truly think or believe about hazard control effort.
- Guide development of hazard control training and educational sessions.
- Serve as the hazard control consultant and information center.
- Provide hazard control-related technical assistance.
- Provide information about legal and compliance requirements affecting safety and health.
- Evaluate overall hazard control performance as related to established objectives or goals.
- Maintain communication with regulatory agencies and professional safety organizations.
- Oversee accident investigations, hazard analysis, and preparation of reports or summaries.
- Monitor progress of corrective actions required to address hazards or other safety deficiencies.

**2.1.3 Supervisor Involvement**

- Supervisors possess the knowledge and experience to provide hazard control guidance to those they lead.
- Supervisors conduct area inspections, provide job training, ensure timely incident reporting, and accomplish initial accident investigations.
- Supervisors in organizations possess little control over factors such as hiring practices, working conditions, and equipment provided to them.

- Supervisors understand the role that human factors can play in accident prevention and causation.
- They must ensure that each person they supervise understands the behavior expectations of the job.
- Employees safe work agreement requires the individual to commit to working safely and adhere to organizational policies or procedures.
- Supervisors ensure their subordinates access all hazard control plans, policies, and procedures.

#### **2.1.4 Addressing Behaviors**

- Supervisor explains work rules and behavioral expectations to all new or transferred employees.
- Supervisors never tolerate individuals encourage others to disregard work rules or established procedures.
- Senior leaders, managers, and supervisors set an example for others.
- When correcting an unsafe behavior, always state the facts about the situation but limit personal opinions.
- Some individuals may not recognize a hazard or hazardous situation.
- Some recognize a hazard but not possess the ability to deal with it.
- Too many injuries occur when a person recognized the hazard but failed to respect its potential for causing harm.
- Some individuals, for unknown reasons, purposely decide to engage in unsafe or risky behaviors.

#### **2.1.5 Employee engagement**

- Employee engagement occurs when an individual personally feel their connection to their position or job. This engagement also refers to their personal commitment to the success of the organization.
- Employee engagement contributes to individual satisfaction and personal mental wellness.
- Engaged employees also help improve the productivity, morale, and motivation of others.
- Understanding employee engagement helps leaders and hazard control managers deal with the complexity of human behaviors.
- Conflicting responsibilities can lead to role misunderstandings and work-related overloads that can impact organizational objectives including hazard control efforts

#### **2.1.6 Supervisor Responsibilities**

- Enforce work rules and correct unsafe or at-risk behaviors.
- Implement hazard control policies, procedures, and practices in their areas.
- Provide job or task-related training and education.
- Immediately report and investigate all accidents in their work areas.
- Conduct periodic area hazard control and safety inspections.
- Ensure proper maintenance and servicing of all equipment and tools.
- Conduct safety and hazard control meetings on a regular basis.
- Work with organizational hazard control personnel to correct and control hazards.
- Ensure all personnel correctly use required PPE.

##### **Behavior Correction Process**

Step 1: Identify the unsafe action.

Step 2: State concern for worker's safety.

Step 3: Demonstrate the correct and safe way.

Step 4: Ensure the worker understands.

Step 5: Restate concern for personal safety.

Step 6: Follow-up.

### **2.1.7 Working with employee Organizations**

- Organizational leaders and hazard control personnel cooperate with labor groups.
- When working with labor groups never sacrifice the principles of hazard control.
- Collective bargaining organizations can help by promoting positive worker attitudes.
- Hazard control personnel advise management on labor-related hazard control and safety issues.
- Hazard control personnel also attempt to participate in collective bargaining sessions to address hazard control concerns.

### 3. Hazard Analysis P3

- Organizations use a variety of processes to analyze workplace hazards and accident causal factors.
- Hazard evaluations and accident trend analysis improve the effectiveness of established hazard controls.
- Routine analysis enables an organization to develop and implement appropriate controls for hazardous processes or unsafe operations.
- Analysis processes rely on information collected from hazard surveys, inspections, hazard reports, and accident investigations.
- This analysis process can provide a *snapshot* of hazard information.

#### 3.1 Categorizing Hazard Correction Priorities

Category 1 or A: Major hazards that require immediate correction

Category 2 or B: Serious hazards that require short-term correction

Category 3 or C: Minor hazards that require correction as soon as possible

Category 4 or D: Hazard identified but corrected on the spot

#### 3.2 Change analysis

- Change analysis is an proactive problem-solving technique.
- Change analysis helps hazard control personnel identify hazards related to new processes and job- related tasks.
- Change analysis attempt to identify all anticipated hazards and concerns generated by the change.
- Begin by defining a problem or concern.
- Identify distinctive features of any change and list all possible causes.
- Finally, select and validate all causes before continuing with corrections or controls.

#### 3.3 Creative hazard analysis

- Creative hazard analysis combines innovation with human expertise to identify, discover, and analyze hazards of a process, operation, or system.
- The analysis team understands the problem statement.
- Provide the team with sufficient information such as known hazards, related technologies, operational procedures, equipment design issues, instrumentation controls, and necessary historical information.
- As the team works through each step of the hazard process, it should collectively generate a list of *what or why* questions related to hazards.
- After completing this list of *probing* questions, the team must systematically answer each question.
- The team works to achieve a consensus on each question and answer.
- The answers that achieve consensus form the foundation for developing recommendations or dictating the requirement for additional action or study.
- The team then can make recommendations to reduce operational hazards.

#### 3.4 Risk analysis

- The phrase “safety first” implies that safety becomes the *primary objective* and not job or task accomplishment.
- Risk analysis helps hazard control personnel assess the probability that an uncontrolled hazard could contribute to an accident event with resulting organizational losses.
- Risk assessments consider the potential severity associated with an adverse event occurrence.
- Risk personnel consider hazards with acceptable risks as safe and those with unacceptable risks as unsafe.

### 3.5 Phase hazard analysis

- Phase hazard analysis processes work very well for construction projects and other settings with rapidly changing work environments.
- Consider *phase hazards* as a new or unique set of hazards not present during operations.
- Prior to transitioning to a new phase, conduct an analysis to identify and evaluate new or potential hazards.
- Use the information gained through analyses to develop action plans that can ensure implementation of appropriate controls.

### 3.6 Process Hazard Analysis

- Process hazard analysis recommend during the design and development phases of any hazardous project or operation under development.
- The OSHA Process Safety Management standard requires completion of a process hazard analysis for any activity involving the use of highly hazardous chemicals.
- Process hazard analysis permits employers to accomplish detailed studies to identify every potential hazard.
- The analysis must include all tools and equipment, each chemical substance, known hazards, and every job-related task.
- The analysis must show that each element of the process poses no hazard, poses an uncontrolled hazard, or poses a hazard controllable in all circumstances.

### 3.7 Job Hazard Analysis

- Job hazard analysis (JHA) permits the examination of job-related tasks, operations, and process to discover and correct inherent risks and hazards.
- Supervisors and other experienced personnel can perform the JHA process for understanding potential job hazards by using an effective teaching tool.
- Organizations should develop, conduct and update a JHA for all tasks, processes with standardized procedures and formats.

#### 3.7.1 Job Hazard Analyses steps

- Step A: Break the job down—Examine each step in the process for hazards or unsafe conditions that could develop during job accomplishments
- Step B: Identify hazards—Document process hazards, environmental concerns, and any anticipated human issues
- Step C: Evaluate hazards—Assess identified hazards and behaviors to determine their potential roles in an accident event
- Step D: Develop and design hazard controls—Develop or design the best hazard control based on evaluating each hazard.
- Step E: Implement required controls—Coordinate and obtain management approval for implementation
- Step F: Revise and publish the JHA information—Update the JHA and then communicate implementation actions with the organizational members.

#### 3.7.2 Job Design

- The concept of job design refers primarily to administrative changes that help improve working conditions.
- Designing safe work areas must address workstation layout, tools and equipment, and the body position needed to accomplish the job.
- Safe work area design reduces static positions and minimizes repetitive motions and awkward body positions.



## 4. Hazard Control and Correction

**P3**

- Organizations use the concept known as *hierarchy of controls* to reduce, eliminate, and control hazards or hazardous processes.
- Hazard controls include actions such as using *enclosure*, *Substitution*, and *attenuation* to reduce human exposure risks.
- Substitution involves replacing a highly dangerous substance with a less hazardous one.
- Attenuation refers to taking actions to weaken or lessen a potential hazard.
- Passive hazard controls would not require continuous or even occasional actions from system users.
- Active controls require operators and users to accomplish a task at some point during the operation to reduce risks and control hazards

### 4.1 Hazard Correction Monitoring System

- Implement a system to report and track hazards correction actions.
- Establish a timetable for implementing hazard controls.
- Prioritize hazards identified by inspections, reporting, and accident investigations.
- Require employees to report hazards using established processes.
- Provide quick feedback about the status of hazard correction.
- Delegate responsibility for correcting and documenting completion actions.
- Permit supervisors

### 4.2 Common *Never-Ever* Hazards

- Obstacles preventing the safe movement of people, vehicles, or machines
- Blocked or inadequate egress routes and emergency exits
- Unsafe working and walking surfaces
- Using worn or damaged tools and equipment or misusing tools
- Failing to identify hazards and provide proper equipment including PPE
- Operating equipment with guards removed or bypassed
- Permitting the presence of worn, damaged, or unguarded electrical wiring, fixtures, or cords
- Lack inadequate warning, danger, or caution sign in hazardous areas.

### 4.3 Engineering Control

- Seek to eliminate hazards by using appropriate engineering controls.
  - Make the modifications as necessary to eliminate hazards and unsafe conditions.
  - Design of machine guards, automobile brakes, traffic signals, pressure relief valves, and ventilation demonstrates engineering controls at work.
  - For example, proper ventilation can remove or dilute air contaminants in work areas.
  - Using engineering, design, and technical innovation remains the top priority for controlling or eliminating hazards.
  - Establishing preventive and periodic maintenance processes can help ensure tools and equipment operate properly and safely.
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- Preventive maintenance address engineered hazard controls and emergency equipment.
  - If needed, schedule shutdowns address preventive and predictive maintenance issues.
  - Ensure the preventive maintenance addresses safety and hazard control issues as well as operational or production requirements

#### **4.4 Hierarchies for Controlling Hazards**

- Engineering and technological innovation remains the preferred type of hazard control.
- Substitution results in using a less hazardous substance or piece of equipment.
- Isolation moves either workers or hazardous operations to reduce risks.
- Work practices such as policies or rules can reduce human exposure to the hazard.

#### **4.5 Administrative controls**

- Administrative controls limit human exposures through the rotation and scheduling.
- Use PPE when other controls prove inadequate.
- Administrative controls such as scheduling to limit worker exposure to many workplace hazards such as working in hot areas.
- However, OSHA prohibits employee scheduling to meet the requirement of air contaminant exposure limits.
- Scheduled maintenance and other high exposure operations during evenings or weekends can reduce exposures.
- Work–rest schedule for very hazardous or strenuous tasks.

#### **4.6 Work Practice Controls**

- Controls reduce hazard exposure through development of standard operating procedures (SOPs).
- Conducting training and education about the safe use of tools and equipment.
- Practices include knowing emergency response procedures for spills, fire prevention principles, and dealing with employee injuries.
- Job-related education and training helps individuals work safely and minimize hazard exposure risks.

## 5. Personal Protective Equipment

P4

- OSHA requires PPE to protect the eyes, face, head, and extremities such as protective clothing, respiratory devices, protective shields, and barriers.
- Employers assess the workplace to determine hazards that would require the use of PPE.
- OSHA requires the employer to verify completion of the assessment through a written certification that identifies the workplace, certifying person, and assessment date for PPE.
- Never permit use of defective or damaged PPE.
- Employees demonstrate the ability to use PPE properly before using it on the job.
- PPE comply with applicable American National Standards Institute (ANSI) standards.
- PPE create hazards such as heat disorders, physical stress, impaired vision, and reduced mobility.
- Review PPE policies at least annually.
- Employer verify affected employees receive and understand required training through a written certification that contains the name of each employee, dates of training, and topics covered.

### 5.1 Eye and Face Protection (29 CFR1910.133)

- Protective eye and face devices must comply with ANSI Z-87, Occupational and Educational Eye and Face Protection.
- Employers provide suitable eye protection when flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially injurious light radiation, or any combination hazard exists in the workplace.
- Eye protectors prove adequate against particular hazards with a reasonably comfortable fit when worn under designated conditions.
- Finally, keep eye protectors disinfected and in good repair.

### 5.2 Head Protection (29 CFR 1910.135)

- Ensure workers wear appropriate head protection that can resist penetration and absorb the shock of blows.
- OSHA head protection hats to meet the requirement of ANSI Z-89.1, Industrial Head Protection, and Z-89.2, Requirements for Industrial Protective Helmets for Electrical Workers.
- Evaluate the need for using protective hats to protect against electric shock.

### 5.3 Foot Protection (29 CFR 1910.136)

- Today's safety shoes come in a variety of styles and materials.
- Select safety shoes made of sturdy materials with impact-resistant and metatarsal guards to protect against puncture wounds.
- Protective footwear must comply with the requirements found in the ANSI Z-41.1 Standard.

### 5.4 Arm and Hand Protection (29 CFR 1910.137)

- Employers provide appropriate protection when hazard assessments reveal engineering and work practice controls cannot eliminate injury risks.
- Potential hazards include skin absorption of harmful substances, chemical or thermal burns, electrical dangers, bruises or abrasions, cuts or punctures, fractures, and amputations.
- Protective equipment includes gloves, finger guards, arm coverings, and elbow-length gloves.
- The nature of the hazard and the operations involved will affect the selection of gloves.
- Require employees to use gloves designed for the specific hazards and tasks.

### 5.5 Body and Torso Protection

- Hazards require the use of body protection clothing or equipment.
- For eg, exposure to address biohazards or chemical hazards during the mixing of dangerous drugs would require body protection.
- However, other hazards that could pose a risk to the body include heat sources, hot metal exposures during welding operations, hot liquids, and radiation exposures.
- Body protection clothing can vary and could include gowns, vests, jackets, aprons, coveralls, and full bodysuits.
- Manufacturer or supplier selection guides for information on the effectiveness of specific materials against specific hazards.
- Inspect clothing to ensure proper fit and function.

## 6. Hazard Control Committees

**P4**

- Safety committees can help review results of inspections, audits, and other evaluations.
- An effective committee must work hard to interact with all organizational members to improve their hazard control awareness.
- Top management ultimately must take responsibility for committee successes and failures.
- Top management provide supporting systems, authority, and necessary resources to help ensure committee success.
- Committee membership includes nonsupervisory and hourly personnel with representation from key functions, departments, and divisions.
- Organizations refrain from using the term *committee* and opt to use another term such as *advisory panel*.

### 6.1 Hazard Survey Teams

- Organizations establish a hazard survey team to supplement the established hazard control committee.
- This team functions best when comprised of screened volunteers with no formal supervisory responsibilities.
- This team help inspectors conduct walking hazard surveys to identify unsafe conditions and risky behaviors.
- Provide the team with a pre tour educational session that informs them of tour expectations and procedures.
- The team should meet after the survey to discuss and validate the findings.
- The organization can start determining corrective actions.
- Team members should remember what they learned during the survey.

### 6.2 Basic Safety Committee Duties

- Participate in self-inspections and hazard surveys.
- Encourage organizational members to work safely.
- Assist with the JHA processes.
- Provide input for hazard control policies, procedures, and rules.
- Promote hazard control efforts at organizational meetings.
- Assist supervisors with initial accident investigations.
- Communicate employee hazard control concerns to management.

### 6.3 Hazard Control Evaluation

- OSHA uses injury and illness rates to assess effectiveness of occupational safety and health efforts.
- Insurance companies use an experience model to determine good and poor risks for underwriting workers' compensation coverage.

- The audit forms would help evaluators rate each component against pre published standards.
- Evaluators should review policies, plans, and organizational records.
- They should also conduct interviews, personally observe, and use employee
- Questionnaires to help validate audit scores assigned to each component.
- Organizational leaders must then evaluate all other related initiatives designed to support the hazard control function.
- Evaluations must assess reporting accuracy and effectiveness of hazard analysis activities.
- Review hazard surveys and self-inspection reports to determine accuracy and comprehensiveness.

#### **Areas to evaluate**

- Evaluate senior leader commitment by determining time and resources allocated to hazard control efforts.
- Review and assess the information included in organizational property damage reports.
- Organizations can also conduct risk measurements by reviewing historical accident and injury frequency and severity data.

#### **6.4 Improving Hazard Control Effectiveness**

- Hazard analysis defines and pinpoint organizational problems or trends.
- Improve the hazard control function proportionally with improvements made in other areas.
- Hazard control as a production tool that can improve the bottom line.
- Provide off-the-**job** safety and health education to all employees on regular basis.
- Recognize the existence of covert cultures operating within the organization.

#### **Accreditation Standards**

- Safety and security risks associated with the environment of care (EOC) should be assessed.
- Best identified risk from internal sources using ongoing monitoring of the environment, results of root cause analyses (RCA) and results of annual proactive risk assessments of high-risk processes from credible external sources such as Sentinel Event Alerts.
- One or more persons should be assigned to manage the activities.
- Risks within the EOC, includes
  - Safety of patient
  - Staff and visitors
  - Security of patients, staff, visitors, facility
  - Hazardous materials and waste
  - Medical equipment
  - Utility systems.
- An annual environmental tour conducted in non- patient-care areas allows for evaluation of the effectiveness of activities intended to minimize or eliminate risks in that environment.
- Evaluate each management plan's objectives, scope, and performance for effectiveness at least every 12 months.

#### **6.5 Hazards**

- The Joint Commission requires environmental tours to identify hazards at least semi-annually in all patient or clinical areas.
- Large organizations develop a schedule for conducting environmental tours.
- Attempt to identify hazards by location, category, or specific topics such as electrical.
- Documentation for outside agencies should never be the goal of a good hazard surveillance plan.

- Identify hazards throughout the facility during the annual or semi-annual tours would not be realistic.
- Team leader must be able to develop and maintain an effective plan.
  
- Surveillance involves collecting, obtaining, and using employee data or information to determine trends, problems, and risks associated with hazards.
- Two primary types of surveillance.
  - *Passive* surveillance involves utilizing existing data to describe past trends.
  - Active or proactive surveillance involves collecting data to describe current trends and identify problem areas.
- Documentation collected through recordkeeping provides data for an analysis of trends.
- The availability and access to these records will depend on hospital policy and legal limitations such as access to employee medical records.
- The person accessing and reviewing these records must be cognizant of the limitations of access to such information.
- This active or proactive surveillance uses a number of tools to obtain information.

### 6.6 Environmental Tours

- Approaches are used to conduct hazard surveys and environmental tours in a healthcare organization.
- Organizations establish their own policies and procedures for these tours depending on facility size, staffing, and organizational structure.
- Conducting tours and surveys gives decentralized approach. This decentralized approach must use several *hazard survey documents* to ensure effectiveness.
- Hazard survey documents include
  - General hazard guides
  - Well-developed general safety checklists
  - Demand response or algorithm type of checklists.
- Hazard guides serve as specific documents that provide guidance in the identification of hazards related to exposures such as radiation, lasers or hazardous drugs.
- Each department or function should develop their own guides or checklists.
- It is not possible in many organizations for the healthcare safety staff or director to conduct thorough tours or surveys of safety subsystems.
- The decentralization of safety does not mean that the designated safety staff has no real responsibilities.

### 6.7 Facility Hazard Index

- The information obtained in the OSHA PPE assessment can also be used by healthcare safety personnel to create a personal management tool called the FHI.
- The FHI has the same basic purpose as does the Life Safety Statement of Conditions (SOC) but in reality is closer to an HVA. It presents a *hazard picture* of the entire facility and campus.
- The FHI should present information about the key hazards existing within the facility.
- The index could contain information on the five basic hazard categories: (1) biological, (2) chemical, (3) physical, (4) ergo-environmental, and (5) psychosocial.
- The hazard list should be updated at least annually.
- Facility personnel document the following information about each hazard listed in FHI document:
  - complete hazard description
  - date listed and reason listed
  - applicable hazard analysis information

- risk reduce controls
- PPE issued to employees
- training or education provided as result of the hazard.





## 7. Accident Causation Theories

P5

- An accident as *an unplanned event that interferes with job or task completion* which result in measureable loss such as personal injury or property damage, no measurable loss.
- Accident occurs from unsafe acts, hazardous conditions, or both.
- Accident prevention efforts must emphasize development of necessary policies, procedures, rules to outline organizational objectives, goals, and responsibilities.
- Hazard control managers must endeavour to obtain management's attention and support by communicating accidents resulted in injuries or property damage can cause interruption of production or other operations.

### 7.1 Henri Heinrich's Five-Factor Accident Sequence

- Heinrich suggested that an individual's life experiences and background will make them to take risks during job or task accomplishment.
- Heinrich believed that removing a *single* causal factor from a potential situation could result in preventing an accident.
- Interrupting or breaking the *accident cycle* by preventing unsafe acts or correcting an unsafe condition could reduce accident risks for individuals engaging in risky behaviors.
- Heinrich proposed an accident sequence in which a single causal factor could actuate the next step in the cycle process.
- He believed that a person's background and social environment could impact engagement in faulty behaviour, personal injury and/or property damage.
- Heinrich's conclusions pointed to multiple causation theory.

### Accident Causes

- Hazard control personnel should use root cause processes to discover, document, and analyze accident causal factors.
- Accident investigations and RCA focus on discovering information about system operation, deterioration, and original design errors
- Hazard closing occurs when two or more hazards attempt to occupy the same space at the same point in time as similar to the accident generation cycle into motion.
- Hazard control efforts must eliminate the hazard or dangerous situation to reduce or eliminate the potential for harm.
- Attempt to reduce hazardous exposures by providing controls such as warning systems, monitoring equipment, and danger information.
- Attempt to motivate safe behavior through education, training, and supervision.

### 7.2 Multiple Causation Theory

- This theory promotes the idea that accidents result from various hazards or other factors.
- Accident prevention professionals describe these factors as primary and secondary causes.
- Most investigators agree that accidents happen due to multiple and sometimes complex causal factors interaction.
- Causal factors seldom contribute equally in their ability to trigger an event or contribute to accident severity.
- Human factors such as an unsafe act, error, poor judgment, lack of knowledge, and mental impairment can interact with other contributing factors creating an opportunity for an accident to occur.

### 7.3 Biased Liability Theory

- Biased liability promotes the *view* that once an individual becomes involved in an accident, the chances of that same person becoming involved in a future accident increases or decreases when compared to other people.
- The accident proneness theory promotes the *notion* that some individuals will simply experience more accidents than others because of some personal tendency.

### 7.4 Accident Pyramid

- Heinrich believed that unsafe acts led first to minor injuries and then over a period of time to a major injury event.
- The concept of the accident pyramid remained unchallenged many years. But, some recent studies challenge the assumed shape of the equilateral triangle used by Heinrich.
- Professionals now believe the actual shape of the model would depend on organizational structure and culture.

### 7.5 Prevention of Fatal events

- The article, authored by Fred Manuele, suggested that accident prevention efforts should focus more on preventing fatal events.
- He highlighted some specific examples that lead to fatalities in industrial settings.

**8. Accident Reporting****P6**

- The accurate reporting of accidents and injuries permits an organization to collect and analyze loss-related information.
- Reporting process should focus on the importance of tracking hazards, accidents, and injuries, including any organizational trends.
- Educate all personnel to understand the need for maintaining a systematic process that accurately and consistently provides updated information.
- Maintain records that enable managers at all levels to access data.
- Managers assist others with changing policies, modifying operational procedures, and providing job-related training.
- Electronic reporting will encourage people to conform to your expectations and report nearmisses, accidents, and injuries in a timely manner.
- Electronic submission will save paper and retyping or scanning.
- Input and track all safety incidents across the organization through one centralized online portal.
- Create incident reports sorted by employee, workgroup, unit or department, type of injury, or body part.
- Customizable dashboards provide instant access to safety incident metrics by providing real-time data.
- Manage the entire accident life cycle of incident reporting, responding, investigating, taking corrective action, tracking, and developing summary reports.



## 9. Accident Investigations

**P7**

- A successful accident investigation involves discovering and analyzing causal factors.
- Large organizations would benefit if the responsible supervisor conducted the initial investigation in terms of causal factors.
- The *immediate causal* factors reveal details about the situation at the time of occurrence.
- Organizations policies and procedures must be strictly followed by using *sound* investigational techniques.
- Investigations should seek to find out what, when, where, who, how, and *most of all* why.
- Investigators with all the necessary tools and equipment to conduct a thorough investigation.
- Before attempting to discover and document causal factors identify and document a list of witnesses.
- Investigators use diagrams, sketches, and measurements to support their understanding of what happened for future analysis efforts.
- Evaluate all known human, situational, and environmental factors.
- Investigators should develop written notes about any items removed from the scene including their positions at the accident scene.

### 9.1 Classifying Causal Factors

- Initial documenting and classifying causal factors three categories.
  - *Operational factors* (unsafe job process, lack of job training)
  - *Human motivational factors* (risky behaviors, job stress)
  - *Organizational factors*(hazard control policies & procedures, management deficiencies)

### 9.2 Interviewing Witnesses

- Interview a witness at the scene of the accident or in a quiet location.
- Document information using their words to describe the event.
- Allow the witness to talk and listen carefully and validate all statements.
- Take notes or get approval to record the interview.
- Use probing questions that require witnesses to provide detailed answers.
- Ensure that logic and not emotion directs the interview process.
- Always close the interview on a positive note.

## 10. Accident Analysis

**P7**

- Hazard evaluations and accident trend analysis improve the effectiveness of established hazard controls.
- Routine analysis enable the organizations to implement appropriate controls in work procedures, hazardous processes, and unsafe operations.
- Analysis processes rely on information collected from hazard surveys, inspections, hazard reports, and accident investigations.
- This analysis process can provide a *snapshot* of hazard information.
- Analyzes determine how and why an accident occurred.
- When using accident investigation evidence, remember that the information can exist in a physical or documentary form.
- Analysis evaluates sequence of events, extent of damage, human injuries, surface causal factors, hazardous chemical agents, sources of energy, and unsafe behaviors.
- A good accident analysis should create a *word picture* of the entire event.
- The final analysis report includes detailed recommendations for controlling hazards discovered during the investigation and analysis.

### 10.1 Root Cause Analysis

- RCA processes can help *connect* the dots of accident causation by *painting* a picture of accident.
- Organizations many times fail to use effective and systematic techniques to identify and correct system root causes.
- A root cause process must involve teams using systematic methods.
- RCA focus remains on the identification of problems and causal factors that triggers the unwanted event.
- An effective RCA process lays a foundation for designing and implementing appropriate hazard controls.
- When root causes go unchecked, surface causes will manifest in the form of an unwanted event.
- For simplicity reasons, system-related root causes fall into two major classifications.
  - Design flaws such as inadequate or missing policies, plans, processes, or procedures that impact conditions and behaviors.
  - Operational weaknesses, refer to failures related to implementing or carrying out established policies, plans, processes, or procedures.
- When discovered and validated, *specific* root causes can provide insight to an entire process or system.
- Process helps to identify what fed the problem that impacted the system.
- Finally, RCA provides insight for developing solutions or changes that will improve the organization.

### 10.2 Common Causal Factors

#### Poor supervision

- Lack of proper instructions
- Job and/or safety rules not enforced
- Inadequate PPE, incorrect tools, and improper equipment
- Poor planning, improper job procedures, and rushing the worker

#### Worker job practices

- Use of shortcuts and/or working too fast
- Incorrect use or failure to use protective equipment
- Horseplay or disregard of established safety rules
  
- Physical or mental impairment on the job
- Using improper body motion or technique

#### Unsafe materials, tools, and equipment

- Ineffective machine guarding
- Defective materials and tools
- Improper or poor equipment design
- Using wrong tool or using tool improperly
- Poor preventive maintenance procedures

#### Unsafe conditions

- Poor lighting or ventilation
- Crowded or poorly planned work areas
- Poor storage, piling, and housekeeping practices
- Lack of exit and egress routes
- Poor environmental conditions such as slippery floors

### 10.3 Accident Report

- While preparing an accident investigation report, the analysis results make specific and constructive recommendations.
- Never make general recommendations just to save time and effort.
- Use previously drafted sequence of events to describe what happened.
- Photographs and diagrams may save many words of description.
- Identify clearly if evidence is based on facts, eyewitness accounts or assumptions.
- State the reasons for any conclusions and follow up with the recommendations.
- An accident analysis process must consider all known and available information about an event.
- Clarify any previously reported information and verify any data or facts uncovered during the investigation.
- Review and consider witness information and employee statements or suggestions.

## 11. Organizational Functions That Support Accident Prevention P7

### 11.1 Interfacing Support Functions

- The non-involvement of staff functions and service components in hazard control can hinder success.
- Every department and function of a modern organization contributes to the effectiveness of the hazard control management function.
- A greater interrelationship among staff and support functions that interface with accident prevention such as personnel, procurement, and maintenance.
  
- These functions operate in parallel tracks with little or no interaction.
- They must work in harmony to make an impact on preventing accidents and controlling hazards.

### 11.2 Operational And Support Functions

- Operational and line elements remains conscious of their roles in accident prevention in terms of organizational policy, regulations, procedures, safety inspections, and other activities to support the hazard control function.
- Technical advances result in acceleration of organizational activities without the provision for accompanying related safeguards by management.
  
- Planning, research, budget, and legal functions interfaces with accident prevention and hazard control efforts.

### 11.3 Human Resources

- The HR function recruit, evaluate, and place the right person in the right.
- HR professionals identify all hazardous occupations and determine the knowledge, skills, abilities, physical requirements, and medical standards required to perform the job in a safe manner.
- All employees must receive appropriate orientation, training, and education necessary to support safe job accomplishments.

### 11.4 Facility Management

- Facility management functions should ensure proper design layout, lighting, heat, and ventilation in work areas.
- Review specifications for new facilities, major renovations to existing facilities and any plans for renting or leasing new work or storage areas.

- Maintenance activities should provide preventive maintenance service to avoid breakdown of equipment and facilities.
- Coordinate efforts with engineering, purchasing, and safety in reporting obsolete and/or hazardous equipment.
- Ensure that maximum safety is built into the work environment.
- It is much more efficient to correct a hazardous situation than to guard it or instruct employees to avoid it.

#### **11.4.1 Facility Management Hazard Control Issues**

- Coordinate implementation of hazard controls during design of all work areas.
- Appropriate engineering actions eliminate or guard known hazards.
- Implement regular inspections to identify equipment and material-related hazards.
- Take immediate action to eliminate identified hazards and unsafe conditions.
- Ensure the installation of proper lighting, ventilation, and environmental controls.

#### **11.5 Purchasing/Receiving**

- Organizational purchasing, contracting or material management functions considers safety requirements and standards when ordering equipment and tools.
- A hazard control manager informs purchasing personnel about necessary standards, requirements, and safety factors to include in their purchasing specifications.
- Ensure the receipt of safety data sheets when accepting hazardous materials.
- Purchasing functions must follow up and provide information concerning hazardous supplies and equipment.

#### **11.6 Employee Health**

- Occupational health professionals and hazard control managers coordinate and communicate issues on a continuous basis.
- Provides prompt emergency treatment of all injuries and illnesses.
- The coordination of safety and health functions helps workers learn how to protect themselves from hazards.
- Employee health monitor, manage or coordinate all workers' compensation injuries, reports on progress, imposition of necessary work restrictions, and return-to-work evaluations.
- Pre-employment placement evaluations should focus on job-related issues with a thorough job analysis as part of the evaluation.
- If the evaluation indicates no medical causes for performance problems, refer the employee back to management for appropriate administrative action.
- A pre-placement assessment develops a baseline for medical surveillance and helps determine capability of performing essential job functions.
- Assessments may include an update of the occupational and medical histories, biological monitoring, and medical surveillance.
- Rehabilitation involves facilitating the employee's recovery to injury or illness state.
- Inform occupational health about the rehabilitation of workers with any illnesses or injuries including those not considered work related.

##### **11.6.1 Components of the Employee Health Function**

- Bloodborne Pathogen Exposure Control Plan (29 CFR 1910.1030)
- Personal Protective Equipment (29 CFR 1910.132)
- Eye protection (29 CFR 1910.133)
- Fire safety (NFPA 101, 29 CFR 1910.38, local and state codes)
- Immunizations (CDC and health department recommendations)
- Radiation safety (29 CFR 1910.1096)



- Reproductive hazards (OSHA, Nuclear Regulatory Commission [NRC], and NIOSH recommendations)
- Confidentiality of medical records (Health Insurance Portability and Accountability Act [HIPAA] and OSHA standards)
- Hazard communication (29 CFR 1910.1200)
- Work-related injuries (29 CFR 1904) and worker's compensation statutes
- OSHA recordkeeping (29 CFR 1904)
- Hearing protection (29 CFR 1910.95)
- Work-related stress and shift work (NIOSH publications)

### 11.7 Shift Workers

- Many shift workers hold down more than one job.
- Second and third-shift workers tend to possess more stress-related problems than those working day shifts methods
- ISD requires development of competencies before designing educational and training sessions.
- The sessions presented focus on the competencies both in the classroom and in realistic operational or job settings.
- The phrases *job-related training* or *job safety training* to refer to ISD.
- Training relates to the acquisition of specific skills, while education refers to the incorporation of knowledge, skills, and attitudes into a person's behavior.
- Effective training strive to promote understanding, positively impact worker attitudes, and improve individual performance.
- Training includes transfer of knowledge and skills that relate to real-world activities.

#### 11.7.1 Shift Work Principles

- Provide special orientation sessions for new shift workers.
- Never schedule organizational training after a work shift.
- Conduct job training sessions before or during the scheduled work shift.
- Never schedule shift workers to attend training on their off days.
- Provide mandatory education sessions for all shift workers.
- Provide handouts (with the latest research) on how to improve sleep patterns.
- Encourage workers to share the information with their families.
- Provide flexible scheduling during a crisis and for special occasions.
- Encourage workers to communicate their feelings about the job with supervisors.
- Never promote overtime among shift workers.
- Short naps can help improve worker alertness and productivity.
- Show concern about workers' off-the-job activities such as traveling to and from work.
- Encourage workers to seek medical assistance if needed.



## 12. Workers' Compensation

P8

### 12.1 Workers' Compensation Laws Ensure That

- Employees injured or disabled on the job receive monetary benefits.
- Providing benefits for dependents workers killed because of co-workers work-related accidents or illnesses.
- Protect employers and fellow workers.
- Workers' compensation provides benefits to the injured worker including medical coverage and wages during periods of disability.
- Employers can obtain coverage through commercial insurance carriers, own self-insurance program or by being placed in a state-controlled risk fund.
- The state or the National Council of Compensation Insurance (NCCI), an independent rating organization, determines basic rates paid by employers.
- Factors affecting rates can include
  - (1) Company or fund quoting the coverage
  - (2) Classification code(s) of the employer,
  - (3) Payroll amount for the work force covered
  - (4) Experience rating.
- The Federal Employment Compensation Act provides workers' compensation for non-military, federal employees.
- The act covers medical expenses due to the disability of employee.
- A disabled employee receives two-thirds of his or her normal monthly salary during the disability.
- The Long-shore and Harbor Workers' Compensation Act provides workers' compensation to specified employees of private maritime employers.
- The Black Lung Benefits Act provides compensation for miners suffering from *black lung* or pneumoconiosis.
- The World Health Organization (WHO) defines impairment as any loss or abnormality of psychological, physiologic, or anatomic structures or functions.
- The American Medical Association (AMA) defines impairment as loss, loss of use, or derangement of any body part, system, or function.

### 12.2 Return-to-Work/Modified Duty Positions

- Any *return-to-work initiative* accommodates injured workers by modifying jobs to meet their work capabilities during their recovery.
- Early return to work options can accelerate an employee's return by addressing the physical, emotional, attitudinal, and environmental factors
- Working with managed care provider and worker will move them to full production status in their assigned jobs.
- Senior management must commit to returning injured workers to productive roles.
- Develop profiles of jobs considered suitable for early return participants.
- Profile should define the job in terms of overall physical demands, motions required, environmental conditions, the number of times performed each week, and its duration.
- Communicate the availability of early return jobs with care providers, claims adjusters, and the injured worker.



### 13. Orientation, Education, And Training

P9

- Orientation can be defined as the process that informs participants how to find their way within the organization.
- Safety and hazard control topics only make up a portion of any new employee orientation session.
- Many organizations attempt to present detailed safety and hazard control information during new employee orientation sessions.
- Education refers to the incorporation of knowledge, skills, and attitudes into a person's behavior and includes the connotation of thinking.
- ISD educational and training methods to ensure the competency of individuals working in or supporting operations.
- Effective training must strive to promote understanding, positively impact worker attitudes, and improve individual performance.
- Training must facilitate the transfer of knowledge and skills that relate to real-world activities.

#### Providing adequate sessions

- Organizations do not honestly evaluate training and education effectiveness.
- They maintain attendance or participation documentation. However, this documentation may not document and validate retention or competency.
- Employee safety meetings to educate workers about on-and off-the-job safety topics.
- Publish an education and training policy statement to out- line goals and objectives.
- Organizations delegate a number of training responsibilities to the individual departments, employ a full-time educational coordinator.
- Large or specialized departments in some organizations, such as laboratories, conduct most of their own training.

#### 13.1 Training And Hazard Control

- Hazard control managers and training personnel coordinates education and training objectives to ensure organizational needs.
- Conducting schedule training for employees transferring to new jobs or work areas.
- Implementing an effective hazard control education and training function, consider the following elements:
  - Identify needs
  - Develop objectives,
  - Determine learning methods
  - Conduct the sessions
  - Evaluate effectiveness
- Evaluate training includes
  - Student opinions expressed on questionnaires
  - Conducting informal discussions
  - Supervisor's observations of individual performance
  - Documenting reduced injury or accident rates
  - Revise the content of the session
- Engineering controls remain the preferred way of preventing accidents involving hazards related to unsafe mechanical and physical hazards.
- However, education and training serves as the most effective tool in preventing accidents by human causes.

### 13.2 Training Methods

- An instructional presentation employs a variety of methods to improve learning.
- The use of pre-test permits instructors to evaluate the knowledge of participants before the session begins.
- A pre-test can motivate some participants to learn key concepts and principles.
- Informal discussions and lectures will incorporate time for questions and answers to encourage participation.
- Demonstration methods permit the instructor to use a hands-on Technique to promote the application of knowledge.
- Training content must directly apply to the hazards, procedures, equipment, and behaviors encountered on the job.
- People will receive instruction when they understand how they can apply the training to real-world situations.
- Education and training methods include lectures, videos, class discussions, demonstrations, written exercises, small-group exercises, hands-on exercises and combination methods.
- Trainers develop and use games to review critical material, especially in refresher training sessions.
- To validate retention and learning methods often used include discussion, written tests and quizzes, trainee demonstrations or presentations, and on-the-job observation.
- Organizations use interactive software and other web-based learning opportunities to meet training objectives.
- Computer-generated and web- based sessions can permit the learner to control the flow of information during the training session.
- Organizations overlook the need to provide informational sheets and hand-outs to support training requirements and provide future reference information.
- Multimedia-presented visual aids in today's world can enhance learning. Using computer-generated slides, overhead transparencies, white boards, videos, and flip charts does not guarantee the mastery of training objectives

#### Basic Questions to Ask about Training Sessions

- Did the session cover critical issues or hazards?
- Did the presenter use an appropriate instructional method
- Did the session simulate or address real situations?
- Did the participants demonstrate a motivation to learn during the session?
- Did the instructors encourage active participation by all participants?
- Did the presenter ask participants to critique or evaluate the session?

### 13.3 Off-The-Job Safety Education

- An organization presents off-the-job topics to all employees.
- Providing sessions that address off-the-job hazard control, safety, and health topics sends the message that the organization cares about its people.
- Addressing real-world issues such as summer and winter hazards, holiday safety, and traffic safety topics.
- A health topic addresses eating healthy, the importance of exercise, managing stress, home-related topics such as fire safety and fall prevention.

### 13.4 Instructional Systems Design

- Organizations with complex systems or processes may benefit by implementing ISD educational and training methodologies.
- ISD helps organizations identify what an employee should know and what competencies related to hazard control he or she must demonstrate.

- ISD approach promotes and supports acceptable performance by an employee or worker.
- ISD identifies deficiencies in task knowledge and work competencies.
- Determine information about hazards and behaviors by conducting system and job tasks analysis.
- Understanding systems and processes help hazard control managers validate knowledge and performance requirements of job or task.