Course Learning Outcomes for Unit VII

Upon completion of this unit, students should be able to:

4. Illustrate how the concepts of exposure assessment, the hierarchy of controls, workplace monitoring, and medical surveillance are used to prevent occupational injuries and illnesses.

5. Recommend action strategies to correct common workplace hazards.

7. Apply appropriate management tools necessary for the successful development, implementation, and support of decision making for OSH-related endeavors.

Reading Assignment

Chapter 8:
Ergonomic Hazards: Musculoskeletal Disorders (MSDs) and Cumulative Trauma Disorders (CTDs)

Chapter 20:
Bloodborne Pathogens in the Workplace

Unit Lesson

The assigned readings for Unit VII (Chapters 8 and 20) cover ergonomic hazards and bloodborne pathogens in the workplace, respectively.

In addition to these two topics and the need to submit a request to take your Final Exam, you will be responsible for writing and submitting a four- to six-page Safety Plan that is based upon the Case Study presented in the Syllabus. This Safety Plan submission will require that you use several of the concepts presented in the first six weeks of this course, drawn together in a coherent way to support your response to the incident that is presented. At a minimum, you should think about the following things as you prepare your report.

Preparing for an investigation: As with any emergency, ensuring that the scene is safe for entry and that injured personnel have been properly triaged should be the very first concerns when arriving at the site of an incident, accident, or location of potential exposure to toxic substances. The aspects of a situation that must immediately be considered and the preparations that must be made in order to enter the area to be investigated include, but are not limited to, answering the following questions:

- Have emergency services (police, fire, medical) been contacted?
- Have all hazardous activities been discontinued?
- Have other workers been evacuated from areas with potentially hazardous conditions?
- Is there uncontrolled energy (electrical, thermal, mechanical, chemical, pneumatic, hydraulic) that needs to be locked out before entering the site?
- Are there any potential chemical or toxic exposures present that may require special precautions, such as PPE or active monitoring, during your investigations?
- Does the investigator have the right equipment to perform the investigation (e.g., pen/paper, measurement devices, monitoring instruments, sampling supplies, camera, etc.)?

Finally, prior to the beginning of any active investigation procedures, the scene to be investigated should be secured from unauthorized entry so that all material evidence is protected. The placement of caution tape, barricades, traffic cones, security details, and/or communication to all staff should be considered to ensure...
that the integrity of the scene, the investigation tasks, the health and welfare of the public, and other employees are protected.

**Interviewing witnesses:** The course textbook (Goetsch, 2015) mentions several strategies for identifying and performing the questioning of material witnesses that could lend valuable information to an investigation. The witness list should include not only the victims and those directly present (eyewitnesses) during the incident, but also co-workers, supervisors, training instructors, maintenance personnel, emergency responders, and/or other persons that might have even a small insight into the situation being investigated. Once the witness list is established, some of the really important things to remember while conducting interviews are:

- Perform interviews as soon as is reasonably feasible following the incident, either at the scene or in a close by, neutral location for the interviewee.  
- Make sure that interviewees know that the aim of the investigation is to determine the cause of the accident so that similar accidents are prevented. 
- Be open minded, calm, understanding, and unhurried—express appreciation for the important contribution that the interviewee can and is making to the investigation. 
- Steer away from questions that can be answered by a simple “yes” or “no.” Ask open-ended questions, and let the interviewee talk while you listen—do not interrupt. 
- Do not ask questions that use “why” or “you” (e.g., why did you…?). These type of questions make people defensive and guarded.
- Repeat what the interviewee said back to them to get clarification and to avoid misrepresentation or misinterpretation of what they have stated. 
- Take notes in a casual manner that does not lend the interviewee to the feeling that they are being interrogated—let the interviewee review the notes so that they can clarify portions of their testimony or fill in missing information. 
- As indicated above, the ultimate goal of interviewing witnesses should be to determine the cause of the incident—not to assign blame.

**Basic investigative principles:** When called in to investigate an incident, the examination must take a step-wise approach with the ultimate objective being to root out causes of the incident and other potential hazards for corrective action. Personal observations that you make as you walk through the scene will be important. What things do you see? What appears to be out of place? Is there evidence of damage to equipment? Are there activities that are occurring adjacent to the problem area that may be contributing factors? Were there elements of the physical environment that could have played a role in precipitating the incident (e.g., weather, lighting, terrain, time of day, etc.)? Some of the most helpful investigation techniques are to make sketches, take pictures, and record video of the incident area to assist during the analysis phase and to serve as documentation that can be used by others to provide a review of your work. Finally, take measurements to and from any points of evidence that could be of any value to the investigation or future corrective actions that may be warranted.

**Evaluation of potential exposure sources:** In the investigation of any incident that may involve an adverse exposure event, there are additional things that must be considered by the investigator prior to and during the observation phase of the site walk through. Of primary importance is that no one else is hurt or affected by known or unidentified exposure hazards. Before entering the scene, the investigating party should discuss any work tasks or processes that were or are ongoing in the facility or at the site that may require immediate active monitoring or sampling during the walk through. In addition, the need to use respiratory protection or other personal protective equipment may be warranted and should be considered prior to entering any area where the cause of concern (i.e., potential exposure) is unknown. Direct monitoring instruments, detector tubes, passive or active personal sampling devices, passive badges, or the use of other assessment equipment should be used if deemed necessary.

**Develop an order of events:** Putting together a sequence of what happened and in what order can be helpful in understanding why the incident happened. Preparation of a sequence of events will allow you to break the incident into components or parts that may have contributed to the accident as a whole (the main event) or to separate actions (contributing events) that will require corrective action. Unsafe acts, unsafe conditions, and weaknesses in the safety program may all be acting independently until they providentially come together to result in the “perfect storm” for a major incident to occur. The order of events will be important to the dissection of the incident and the assignment of the relative contributions of the minor (surfacial) causes and the ultimate (root) cause to what occurred. Timelines and other diagmmatic
representations are helpful in providing yourself and other interested parties with the ability to see how an incident happened as the notes or final report is read.

**Making recommendations:** The causes of incidents usually are representative of issues with behaviors or physical conditions (or both) that are symptoms of design, planning, or safety program issues that need to be addressed. There are some key questions that must be answered in order to help develop and support good recommendations based on the investigation findings:

- What are the specific conditions or work practices that caused the event or problem?
- What is the history of events leading up to the event or problem?
- What are the recommended corrective actions that should be taken to mitigate the hazards found?
- What are the costs or benefits of implementing the corrective actions?
- What are the costs or downsides of not implementing the corrective actions?
- Is there a logical sequence to corrective actions based on the costs/benefits/downsides that have been identified (i.e., what options/alternatives to the response exist)?

These questions should be answered in a coherent format that accurately and clearly presents the surface (direct) and contributory (root) causal factors that led to the incident or accident.

**Preparing a Final Report**

An incident or accident report should provide the following information for consideration by decision makers: 1) a section that summarizes the incident/accident background (who, what, where, and when); 2) a description of the incident that paints a picture of the events leading up to the incident to immediately after the incident; 3) a summary of the mechanics and methods of the investigation (i.e., what components of the incident were considered and how were they evaluated?); and 4) a summary of findings that includes recommendations for corrective actions and improvement of the entire safety system.

Reference


**Suggested Reading**

Read the resources linked below for more information on subjects discussed in this unit.


**Learning Activities (Non-Graded)**

View the videos, and reflect on the importance of having safety standards and procedures.


Non-graded Learning Activities are provided to aid students in their course of study. You do not have to submit them. If you have questions, contact your instructor for further guidance and information.