Job Hazard Analysis

Course Number 17283

4 Hours

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Continuing Education for Wisconsin Dwelling Contractor Qualifier Licenses

What is the purpose of this course?

The purpose of this course is to help employers, foremen, supervisors, and employees analyze their jobs and recognize workplace hazards so they can be reported. It explains what job hazard analysis is and offers guidelines to help conduct step-by-step analysis.

What is a hazard?

A hazard is the potential for harm. In practical terms, a hazard is often associated with a condition or activity that, if left uncontrolled, can result in an injury or illness. (See Appendix 2 for a list of common hazards and descriptions.) Identifying hazards and eliminating or controlling them as early as possible will help prevent injuries and illnesses in the workplace.

What is a job hazard analysis?

A job hazard analysis is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.

exam questions...

1. **What is a hazard?**
   a. An injury
   b. An illness
   c. The potential for harm
   d. An uncontrolled environment

2. **After identifying an uncontrolled hazard, what should be done?**
   a. Take steps to eliminate the hazard or reduce the risk level
   b. Notify only those co-workers you believe are at risk
   c. Ignore the hazard
   d. Contact the local authorities

Why is job hazard analysis important?

Many workers are injured and killed at the workplace every day in the United States. You can help prevent workplace injuries and illnesses by looking at your workplace operations, establishing proper job procedures, and ensuring that all employees are trained properly.

One of the best ways to determine and establish proper work procedures is to conduct a job hazard analysis. A job hazard analysis is one component of the larger commitment to a safety and health management system.

What is the value of a job hazard analysis?

Supervisors can use the findings of a job hazard analysis to eliminate and prevent hazards in their workplaces. This is likely to result in fewer worker injuries and illnesses; safer, more effective work methods; reduced workers' compensation costs; and increased worker productivity. The analysis also can be a valuable tool for training new employees in the steps required to perform their jobs safely.

For a job hazard analysis to be effective, management must demonstrate its commitment to safety and health and follow through to correct any uncontrolled hazards identified. Otherwise, management will lose credibility and employees may hesitate to go to management when dangerous conditions threaten them.

exam question...

3. **Which of the following should be done to prevent workplace injuries and illnesses?**
   a. Properly train all employees
   b. Analyze workplace operations
   c. Establish job procedures
   d. All of the above

What jobs are appropriate for a job hazard analysis?

A job hazard analysis can be conducted on many jobs in your workplace. Priority should go to the following types of jobs:

- Jobs with the highest injury or illness rates;
- Jobs with the potential to cause severe or disabling injuries or illness, even if there is no history of previous accidents;
- Jobs in which one simple human error could lead to a severe accident or injury;
- Jobs that are new to your operation or have undergone changes in processes and procedures; and
- Jobs complex enough to require written instructions.

exam question...

4. **True or false? A job that is new to an operation should take priority when conducting job hazard analyses.**
   a. True
   b. False

Where do I begin?

Involve your employees. It is very important to involve employees in the hazard analysis process. Employees have a unique understanding of the job, and this knowledge is invaluable for finding hazards. Involving employees will help minimize oversights, ensure a quality analysis, and get workers to "buy in" to the solutions because they will share ownership in their safety and health program.

Review your accident history. Review with employees the worksite's history of accidents and occupational illnesses that needed treatment, losses that required repair or replacement, and any "near misses" — events in which an accident or loss did not occur, but could have. These events are indicators that the existing hazard controls (if any) may not be adequate and deserve more scrutiny.

Conduct a preliminary job review. Discuss with your employees the hazards they know exist in their current work and surroundings. Brainstorm with them for ideas to eliminate or control those hazards.

If any hazards exist that pose an immediate danger to an employee's life or health, take immediate action to protect the worker. Any problems that can be corrected easily should be corrected as soon as possible. Do not wait to complete your job hazard analysis. This will demonstrate your commitment to safety and health and enable you to focus on the hazards and jobs that need more study because of their complexity. For those hazards determined to present unacceptable risks, evaluate types of hazard controls. More information about hazard controls is found in Appendix 1.

List, rank, and set priorities for hazardous jobs. List jobs with hazards that present unacceptable risks, based on those most likely to occur and with the most severe consequences. These jobs should be your first priority for analysis.

Outline the steps or tasks. Nearly every job can be broken down into job tasks or steps. When beginning a job hazard analysis, watch the employee perform the job and list each step as the worker takes it. Be sure to record enough information to describe each job action without getting overly detailed. Avoid making the breakdown of steps so detailed that it becomes unnecessarily long or so broad that it does not include basic steps. You may find it valuable to get input from other workers who have performed the same job. Later, review the job steps with the employee to make sure you have not omitted something. Point out that you are evaluating the job itself, not the employee's job performance. Include the employee in all phases of the analysis— from reviewing the job steps and procedures to discussing uncontrolled hazards and recommended solutions.

Sometimes, in conducting a job hazard analysis, it may be helpful to photograph or videotape the worker performing the job. These visual records can be handy references when doing a more detailed analysis of the work.

exam questions...

5. **What are some indicators that existing hazard controls may not be adequate?**
   a. Previous accidents
   b. Losses that required repair
   c. "Near misses"
   d. All of the above

6. **If hazards exist that pose an immediate danger to an employee's life or health, what should be done?**
   a. Make note of the hazard to come back to at a later time
   b. Take immediate action to protect the worker
   c. Warn workers of the hazard
   d. None of the above

7. **What can be a handy reference when doing a job hazard analysis?**
   a. Photographs or video tapes of the worker performing the job
   b. Written complaints about the job
   c. Eliminating any jobs that have a high risk factor
   d. All of the above

How do I identify workplace hazards?

A job hazard analysis is an exercise in detective work. Your goal is to discover the following:

- What can go wrong?
- What are the consequences?
- How could it arise?
- What are other contributing factors?
- How likely is it that the hazard will occur?

To make your job hazard analysis useful, document the answers to these questions in a consistent manner.

Describing a hazard in this way helps to ensure that your efforts to eliminate the hazard and implement hazard controls help target the most important contributors to the hazard.

Good hazard scenarios describe:

- Where it is happening (environment),
- Who or what it is happening to (exposure),
- What precipitates the hazard (trigger),
- The outcome that would occur should it happen (consequence), and

- Any other contributing factors.

A sample form found in Appendix 3 helps you organize your information to provide these details.

Rarely is a hazard a simple case of one singular cause resulting in one singular effect. More frequently, many contributing factors tend to line up in a certain way to create the hazard.

exam questions...

8. Which of the following is not a goal of job hazard analysis?

a. Identifying potential consequences
b. Identifying potential contributing factors
c. Identifying ways to make the job easier
d. Identifying what can go wrong

9. What should be described in a good hazard scenario?

a. Consequence
b. Trigger
c. Environment
d. All of the above

10. True or false? Most hazards are a simple case of one singular cause resulting in one singular effect.

a. True
b. False

Here is an example of a hazard scenario:

In the metal shop (environment), while clearing a snag (trigger), a worker's hand (exposure) comes into contact with a rotating pulley. It pulls his hand into the machine and severs his fingers (consequences) quickly.

To perform a job hazard analysis, you would ask:

- **What can go wrong?** The worker's hand could come into contact with a rotating object that "catches" it and pulls it into the machine.
- **What are the consequences?** The worker could receive a severe injury and lose fingers and hands.
- **How could it happen?** The accident could happen as a result of the worker trying to clear a snag during operations or as part of a maintenance activity while the pulley is operating. Obviously, this hazard scenario could not occur if the pulley is not rotating.
- **What are other contributing factors?** This hazard occurs very quickly. It does not give the worker much opportunity to recover or prevent it once his hand comes into contact with the pulley. This is an important factor, because it helps you determine the severity and likelihood of an accident when selecting appropriate hazard controls. Unfortunately, experience has shown that training is not very effective in hazard control when triggering events happen quickly because humans can react only so quickly.
- **How likely is it that the hazard will occur?** This determination requires some judgment. If there have been "near-misses" or actual cases, then the likelihood of a recurrence would be considered high. If the pulley is exposed and easily accessible, that also is a consideration. In the example, the likelihood that the hazard will occur is high because there is no guard preventing contact, and the operation is performed while the machine is running.

exam questions...

11. In this example, what is the "exposure" element of the job hazard?

a. The metal shop
b. The severing of his fingers
c. The worker's hand
d. Clearing the snag

12. In this example, what is the "trigger"?

a. The metal shop
b. The severing of his fingers
c. The worker's hand
d. Clearing the snag

13. In this example, what is the "consequence"?

a. The metal shop
b. The severing of his fingers
c. The worker's hand
d. Clearing the snag

14. True or false? In this example, the likelihood that the hazard will occur is low because there haven't been any "near misses".

a. True
b. False

The examples that follow show how a job hazard analysis can be used to identify the existing or potential hazards for each basic step involved in grinding iron castings.

Grinding Iron Castings: Job Steps

Step 1. Reach into metal box to right of machine, grasp casting, and carry to wheel.

Step 2. Push casting against wheel to grind off burr.

Step 3. Place finished casting in box to left of machine.

Example Job Hazard Analysis Form

***Job Location*:** Metal Shop	***Analyst*:** Joe Safety	***Date*:**
***Task Description*:** Worker reaches into metal box to the right of the machine, grasps a 15-pound casting and carries it to grinding wheel. Worker grinds 20 to 30 castings per hour.		
Hazard Description: Picking up a casting, the employee could drop it onto his foot. The casting's weight and height could seriously injure the worker's foot or toes.		
Hazard Controls: 1. Remove castings from the box and place them on a table next to the grinder. 2. Wear steel-toe shoes with arch protection. 3. Change protective gloves that allow a better grip. 4. Use a device to pick up castings.		

***Job Location*:** Metal Shop	***Analyst*:** Joe Safety	***Date*:**
***Task Description*:** Worker reaches into metal box to the right of the machine, grasps a 15-pound casting and carries it to grinding wheel. Worker grinds 20 to 30 castings per hour.		
***Hazard Description*:** Castings have sharp burrs and edges that can cause severe lacerations.		
Hazard Controls: 1. Use a device such as a clamp to pick up castings. 2. Wear cut-resistant gloves that allow a good grip and fit tightly to minimize the chance that they will get caught in grinding wheel.		

***Job Location*:** Metal Shop	***Analyst*:** Joe Safety	***Date*:**
***Task Description*:** Worker reaches into metal box to the right of the machine, grasps a 15-pound casting and carries it to grinding wheel. Worker grinds 20 to 30 castings per hour.		
***Hazard Description*:** Reaching, twisting, and lifting 15-pound castings from the floor could result in a muscle strain to the lower back.		
Hazard Controls: 1. Move castings from the ground and place them closer to the work zone to minimize lifting. Ideally, place them at waist height or on an adjustable platform or pallet. 2. Train workers not to twist while lifting and reconfigure work stations to minimize twisting during lifts.		

Repeat similar forms for each job step.

exam questions...

15. Which of the following categories should be included on a job hazard analysis form?
a. Task description
b. Analyst
c. Hazard controls
d. All of the above

16. Which of the following are hazard controls that could be used to prevent injury or illness?
a. Slowing the rate of grinding
b. Wearing steel-toe shoes
c. Reducing the weight of the casting
d. Moving the metal box further from the grinding wheel

17. If a job has 5 steps, how many hazard forms should be created for that job?
a. 1
b. 3
c. 5
d. 7

How do I correct or prevent hazards?

After reviewing your list of hazards, consider what control methods will eliminate or reduce them. For more information on hazard control measures, see Appendix 1. The most effective controls are engineering controls that physically change a machine or work environment to prevent employee exposure to the hazard. The more reliable or less likely a hazard control can be circumvented, the better. If this is not feasible, administrative controls may be appropriate. This may involve changing how employees do their jobs.

Discuss recommendations with all employees who perform the job and consider their responses carefully. If you plan to introduce new or modified job procedures, be sure they understand what they are required to do and the reasons for the changes.

What else do I need to know before starting a job hazard analysis?

The job procedures discussed in this booklet are for illustration only and do not necessarily include all the steps, hazards, and protections that apply to your industry. When conducting your own job safety analysis, be sure to consult the Occupational Safety and Health Administration standards for your industry. Compliance with these standards is mandatory, and by incorporating their requirements in your job hazard analysis, you can be sure that your health and safety program meets federal standards. OSHA standards, regulations, and technical information are available online at www.osha.gov.

Why should I review my job hazard analysis?

Periodically reviewing your job hazard analysis ensures that it remains current and continues to help reduce workplace accidents and injuries. Even if the job has not changed, it is possible that during the review process you will identify hazards that were not identified in the initial analysis.

It is particularly important to review your job hazard analysis if an illness or injury occurs on a specific job. Based on the circumstances, you may determine that you need to change the job procedure to prevent similar incidents in the future. If an employee's failure to follow proper job procedures results in a "close call," discuss the situation with all employees who perform the job and remind them of proper procedures. Any time you revise a job hazard analysis, it is important to train all employees affected by the changes in the new job methods, procedures, or protective measures adopted.

exam questions...

18. What are the most effective hazard controls?
- a. Administrative controls
- b. New job procedures
- c. Controls that physically change a machine or work environment to prevent employee exposure to the hazard
- d. Reviewing job hazard analyses

19. True or false? The more easily a hazard control can be circumvented, the better.
- a. True
- b. False

20. What are some benefits of periodically reviewing your job hazard analyses?
- a. Ensuring that it remains current
- b. Ensuring that it continues to help reduce accidents and injuries
- c. Identify hazards that were not identified in the initial analysis
- d. All of the above

21. True or false? After revising a job hazard analysis, employees do not need to be trained as long as the new safety procedures are posted near the jobsite.
- a. True
- b. False

When is it appropriate to hire a professional to conduct a job hazard analysis?

If your employees are involved in many different or complex processes, you need professional help conducting your job hazard analyses. Sources of help include your insurance company, the local fire department, and private consultants with safety and health expertise. In addition, OSHA offers assistance through its regional and area offices and consultation services. Contact numbers are listed at the back of this publication.

Even when you receive outside help, it is important that you and your employees remain involved in the process of identifying and correcting hazards because you are on the worksite every day and most likely to encounter these hazards. New circumstances and a recombination of existing circumstances may cause old hazards to reappear and new hazards to appear. In addition, you and your employees must be ready and able to implement whatever hazard elimination or control measures a professional consultant recommends.

exam question...

22. What outside sources are available to help conduct job hazard analyses?
- a. Regional OSHA offices
- b. Local fire departments
- c. Insurance companies
- d. All of the above

OSHA ASSISTANCE, SERVICES, AND PROGRAMS

How can OSHA help me?

OSHA can provide extensive help through a variety of programs, including assistance about safety and health programs, state plans, workplace consultations, Voluntary Protection Programs, strategic partnerships, training and education, and more.

How does safety and health program management assistance help employers and employees?

Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. In fact, an effective safety and health program forms the basis of good worker protection and can save time and money— about $4 for every dollar spent— and increase productivity.

The following are four general elements that are critical to the development of a successful safety and health management program:

- Management, leadership and employee involvement;
- Worksite analysis;
- Hazard prevention and control; and
- Safety and health training.

exam questions...

23. For every dollar spent on implementing a safety and health program, about how much money can be saved?

a. $50 per employee
b. $100 per day
c. $4 for every dollar spent
d. $40 per employer

24. Which of the following is not an element critical to a successful safety and health program?

a. Reducing costs of employee health benefits
b. Safety and health training
c. Worksite analysis
d. Hazard prevention and control

How can consultation assistance help employers?

In addition to helping identify and correct specific hazards, OSHA's consultation service provides free, onsite assistance in developing and implementing effective workplace safety and health management systems that emphasize the prevention of worker injuries and illnesses.

Comprehensive consultation assistance provided by OSHA includes a hazard survey of the worksite and an appraisal of all aspects of the employer's existing safety and health management system. In addition, the service offers assistance to employers in developing and implementing an effective safety and health management system. Employers also may receive training and education services, as well as limited assistance away from the worksite.

Who can get consultation assistance and what does it cost?

Consultation assistance is available to small employers (with fewer than 250 employees at a fixed site and no more than 500 corporate wide) who want help in establishing and maintaining a safe and healthful workplace.

Funded largely by OSHA, the service is provided at no cost to the employer. Primarily developed for smaller employers with more hazardous operations, the consultation service is delivered by state governments employing professional safety and health consultants. No penalties are proposed or citations issued for hazards identified by the consultant. The employer's only obligation is to correct all identified serious hazards within the agreed-upon correction time frame.

Can OSHA assure privacy to an employer who asks for consultation assistance?

OSHA provides consultation assistance to the employer with the assurance that his or her name and firm and any information about the workplace will not be routinely reported to OSHA enforcement staff.

exam questions...

25. How much does it cost to use OSHA's consultation service?

a. $250 for small employers
b. $500 for large corporate employers
c. There is no cost
d. Cost is dependent on the size of the employer

26. True or false? Penalties will be proposed for hazards identified by the OSHA consultant.

a. True
b. False

27. True or false? OSHA assures that the employer's name and information will not be reported to OSHA enforcement staff.

a. True
b. False

Can an employer be cited for violations after receiving consultation assistance?

If an employer fails to eliminate or control a serious hazard within the agreed-upon time frame, the Consultation Project Manager must refer the situation to the OSHA enforcement office for appropriate action. This is a rare occurrence, however, since employers request the service for the expressed purpose of identifying and fixing hazards in their workplaces.

Does OSHA provide any incentives for seeking consultation assistance?

Yes. Under the consultation program, certain exemplary employers may request participation in OSHA's Safety and Health Achievement Recognition Program (SHARP). Eligibility for participation in SHARP includes, but is not limited to, receiving a full-service, comprehensive consultation visit, correcting all identified hazards, and developing an effective safety and health management system.

Employers accepted into SHARP may receive an exemption from programmed inspections (not complaint or accident investigation inspections) for a period of 1 year initially, or 2 years upon renewal.

exam questions...

28. What must be done in order to be eligible for SHARP (Safety and Health Achievement Recognition Program)?

a. Receiving a full-service consultation visit

b. Correcting all identified hazards

c. Developing a safety and health management system

d. All of the above

29. Once accepted into SHARP, initially how long is the employer exempt from programmed inspections?

a. 1 year

b. 2 years

c. 6 months

d. 5 years

What are the Voluntary Protection Programs?

Voluntary Protection Programs (VPPs) represent one part of OSHA's effort to extend worker protection beyond the minimum required by OSHA standards. VPP— along with onsite consultation services, full-service area offices, and OSHA's Strategic Partnership Program (OSPP)— represents a cooperative approach which, when coupled with an effective enforcement program, expands worker protection

How does VPP work?

There are three levels of VPP recognition: Star, Merit, and Demonstration. All are designed to do the following:

- Recognize employers who have successfully developed and implemented effective and comprehensive safety and health management systems;
- Encourage these employers to continuously improve their safety and health management systems;
- Motivate other employers to achieve excellent safety and health results in the same outstanding way; and
- Establish a relationship between employers, employees, and OSHA that is based on cooperation.

How does VPP help employers and employees?

VPP participation can mean the following:

- Reduced numbers of worker fatalities, injuries, and illnesses;
- Lost-workday case rates generally 50 percent below industry averages;
- Lower workers' compensation and other injury- and illness-related costs;
- Improved employee motivation to work safely, leading to a better quality of life at work;
- Positive community recognition and interaction;
- Further improvement and revitalization of already-good safety and health programs; and a
- Positive relationship with OSHA.

How does OSHA monitor VPP sites?

OSHA reviews an employer's VPP application and conducts a VPP Onsite Evaluation to verify that the safety and health management systems described are operating effectively at the site. OSHA conducts Onsite Evaluations on a regular basis, annually for participants

at the Demonstration level, every 18 months for Merit, and every 3 to 5 years for Star. Each February, all participants must send a copy of their most recent Annual Evaluation to their OSHA regional office. This evaluation must include the worksite's record of injuries and illnesses for the past year.

Can OSHA inspect an employer who is participating in the VPP?

Sites participating in VPP are not scheduled for regular, programmed inspections. OSHA handles any employee complaints, serious accidents, or significant chemical releases that may occur at VPP sites according to routine enforcement procedures.

exam questions...

30. How many levels of VPP (Volunteer Protection Programs) are there?

a. No levels

b. 1

c. 2

d. 3

31. What are Volunteer Protection Programs designed to do?

a. Motivate other employers to achieve excellent safety and health results

b. Recognize employers who have successfully implemented effective safety and health management systems

c. Encourage employers to continuously improve their safety and health management systems

d. All of the above

32. True or false? Participation in a VPP can lower workers' compensation and other injury- and illness-related costs.

a. True

b. False

33. How often will OSHA conduct a VPP Onsite Evaluation to verify that the safety and health management systems are operating effectively for the Merit Level?

a. Annually

b. Every 18 months

c. Every 3 years

d. Every 5 years

34. True or false? Sites participating in VPP are scheduled for regular, programmed inspections.

a. True

b. False

How can a partnership with OSHA improve worker safety and health?

OSHA has learned firsthand that voluntary, cooperative partnerships with employers, employees, and unions can be a useful alternative to traditional enforcement and an effective way to reduce worker deaths, injuries, and illnesses. This is especially true when a partnership leads to the development and implementation of a comprehensive workplace safety and health management system.

What is OSHA's Strategic Partnership Program (OSPP)?

OSHA Strategic Partnerships are alliances among labor, management, and government to foster improvements in workplace safety and health. These partnerships are voluntary, cooperative relationships between OSHA, employers, employee representatives, and others such as trade unions, trade and professional associations, universities, and other government agencies. OSPPs are the newest member of OSHA's family of cooperative programs.

What do OSPPs do?

These partnerships encourage, assist, and recognize the efforts of the partners to eliminate serious workplace hazards and achieve a high level of worker safety and health.

Whereas OSHA's Consultation Program and VPP entail one-on-one relationships between OSHA and individual worksites, most strategic partnerships seek to have a broader impact by building cooperative relationships with groups of employers and employees.

What are the different kinds of OSPPs?

There are two major types:

- Comprehensive, which focuses on establishing comprehensive safety and health management systems at partnering worksites; and
- Limited, which helps identify and eliminate hazards associated with worker deaths, injuries, and illnesses, or have goals other than establishing comprehensive worksite safety and health programs.

OSHA is interested in creating new OSPPs at the national, regional, and local levels. OSHA also has found limited partnerships to be valuable. Limited partnerships might address the elimination or control of a specific industry hazard.

What are the benefits of participation in the OSPP?

Like VPP, OSPP can mean the following:

- Fewer worker fatalities, injuries, and illnesses;
- Lower workers' compensation and other injury- and illness-related costs;
- Improved employee motivation to work safely, leading to a better quality of life at work and enhanced productivity;
- Positive community recognition and interaction;
- Development of or improvement in safety and health management systems; and
- Positive interaction with OSHA.

exam questions...

35. OSHA Strategic Partnerships are alliances amongst whom?

a. Employees and employers
b. OSHA and employers
c. Labor, management, and government
d. Employees and OSHA

36. What are the types of OSPPs?

a. Comprehensive
b. Limited
c. Both a and b
d. Corporate

37. True or false? OSPP can mean fewer worker fatalities, injuries, and illnesses.

a. True
b. False

APPENDIX 1

Hazard Control Measures

Information obtained from a job hazard analysis is useless unless hazard control measures recommended in the analysis are incorporated into the tasks. Managers should recognize that not all hazard controls are equal. Some are more effective than others at reducing the risk.

The order of precedence and effectiveness of hazard control is the following:

1. Engineering controls.
2. Administrative controls.
3. Personal protective equipment.

Engineering controls include the following:

- Elimination/minimization of the hazard— Designing the facility, equipment, or process to remove the hazard, or substituting processes, equipment, materials, or other factors to lessen the hazard;
- Enclosure of the hazard using enclosed cabs, enclosures for noisy equipment, or other means;
- Isolation of the hazard with interlocks, machine guards, blast shields, welding curtains, or other means; and
- Removal or redirection of the hazard such as with local and exhaust ventilation.

Administrative controls include the following:

- Written operating procedures, work permits, and safe work practices;
- Exposure time limitations (used most commonly to control temperature extremes and ergonomic hazards);
- Monitoring the use of highly hazardous materials;
- Alarms, signs, and warnings;
- Buddy system; and
- Training.

Personal Protective Equipment— such as respirators, hearing protection, protective clothing, safety glasses, and hardhats— is acceptable as a control method in the following circumstances:

- When engineering controls are not feasible or do not totally eliminate the hazard;
- While engineering controls are being developed;
- When safe work practices do not provide sufficient additional protection; and
- During emergencies when engineering controls may not be feasible.

Use of one hazard control method over another higher in the control precedence may be appropriate for providing interim protection until the hazard is abated permanently. In reality, if the hazard cannot be eliminated entirely, the adopted control measures will likely be a combination of all three items instituted simultaneously.

APPENDIX 2

Common Hazards and Descriptions

Hazards	Hazard Descriptions
Chemical (Toxic)	A chemical that exposes a person by absorption through the skin, inhalation, or through the blood-stream that causes illness, disease, or death. The amount of chemical exposure is critical in determining hazardous effects. Check Material Safety Data Sheets (MSDS), and/or OSHA 1910.1000 for chemical hazard information.
Chemical (Flammable)	A chemical that, when exposed to a heat ignition source, results in combustion. Typically, the lower a chemical's flash point and boiling point, the more flammable the chemical. Check MSDS for flammability information.
Chemical (Corrosive)	A chemical that, when it comes into contact with skin, metal, or other materials, damages the materials. Acids and bases are examples of corrosives.
Explosion (Chemical Reaction)	Self- explanatory.
Explosion Pressurization)	Sudden and violent release of a large amount of (Over gas/energy due to a significant pressure difference such as rupture in a boiler or compressed gas cylinder.
Electrical (Shock/ Circuit)	Contact with exposed conductors or a device that is incorrectly or inadvertently grounded, such as Short when a metal ladder comes into contact with power lines. 60Hz alternating current (common house current) is very dangerous because it can stop the heart.
Electrical (Fire)	Use of electrical power that results in electrical overheating or arcing to the point of combustion or ignition of flammables, or electrical component damage.
Electrical (Static/ESD)	The moving or rubbing of wool, nylon, other synthetic fibers, and even flowing liquids can generate static electricity. This creates an excess or deficiency of electrons on the surface of material that discharges (spark) to the ground resulting in the ignition of flammables or damage to electronics or the body's nervous system.
Electrical (Loss of Power)	Safety-critical equipment failure as a result of loss of power.
Ergonomics (Strain)	Damage of tissue due to overexertion (strains and sprains) or repetitive motion.
Ergonomics (Human Error)	A system design, procedure, or equipment that is error-provocative. (A switch goes up to turn something off).
Excavation (Collapse)	Soil collapse in a trench or excavation as a result of improper or inadequate shoring. Soil type is critical in determining the hazard likelihood.
Fall (Slip, Trip)	Conditions that result in falls (impacts) from height or traditional walking surfaces (such as slippery floors, poor housekeeping, uneven walking surfaces, exposed ledges, etc.)
Fire/Heat	Temperatures that can cause burns to the skin or damage to other organs. Fires require a heat source, fuel, and oxygen.
Mechanical/ Vibration (Chaffing/ Fatigue)	Vibration that can cause damage to nerve endings, or material fatigue that results in a safety-critical failure. (Examples are abraded slings and ropes, weakened hoses and belts.)
Mechanical Failure	Self explanatory; typically occurs when devices exceed designed capacity or are inadequately maintained.
Mechanical	Skin, muscle, or body part exposed to crushing, caught-between, cutting, tearing, shearing items or equipment.
Noise	Noise levels (>85 dBA 8 hr TWA) that result in hearing damage or inability to communicate safety-critical information.
Radiation (Ionizing)	Alpha, Beta, Gamma, neutral particles, and X-rays that cause injury (tissue damage) by ionization of cellular components.
Radiation Ionizing)	Ultraviolet, visible light, infrared, and microwaves (Non- that cause injury to tissue by thermal or photochemical means.
Struck By Acceleration)	Accelerated mass that strikes the body causing (Mass injury or death. (Examples are falling objects and projectiles.)
Struck Against	Injury to a body part as a result of coming into contact of a surface in which action was initiated by the person. (An example is when a screwdriver slips.)
Temperature (Heat/Cold)	Temperatures that result in heat stress, Extreme exhaustion, or metabolic slow down such as hypothermia.
Visibility	Lack of lighting or obstructed vision that results in an error or other hazard.
Weather Phenomena	Self explanatory.

APPENDIX 3

Sample Job Hazard Analysis Form

Job Title:	*Job Location*:	*Analyst*	*Date*
Task #	*Task Description*:		
Hazard Type:	*Hazard Description*:		
Consequence:	*Hazard Controls*:		
Rational or Comment:			

exam questions...

38. Which of the following are hazard control measures?

a. Engineering controls.
b. Administrative controls.
c. Personal protective equipment.
d. All of the above

39. What is a fall hazard?

a. Conditions that result in falls from height or traditional walking surfaces
b. Noise levels that result in hearing damage
c. Soil collapse in a trench or excavation
d. Damage of tissue due to overexertion

40. What is a visibility hazard?

a. Damage of tissue due to overexertion
b. Noise levels that result in hearing damage
c. Lack of lighting or obstructed vision that results in an error or other hazard
d. Temperatures that result in heat stress, extreme exhaustion, or metabolic slow down

ANSWER SHEET

First Name: _____ Last Name: _____ Date: _____

Address: _____ City: _____ State: _____ ZIP: _____

Phone: _____ Email: _____

Wisconsin Dwelling Contractor Qualifier Number: _____

** See instructions on the inside cover page to submit your exams and pay for your course.

Job Hazard Analysis - *Questions start on page 3*

1. Ⓐ Ⓑ Ⓒ Ⓓ	9. Ⓐ Ⓑ Ⓒ Ⓓ	17. Ⓐ Ⓑ Ⓒ Ⓓ	25. Ⓐ Ⓑ Ⓒ Ⓓ	33. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ	10. Ⓐ Ⓑ	18. Ⓐ Ⓑ Ⓒ Ⓓ	26. Ⓐ Ⓑ Ⓒ Ⓓ	34. Ⓐ Ⓑ
3. Ⓐ Ⓑ Ⓒ Ⓓ	11. Ⓐ Ⓑ Ⓒ Ⓓ	19. Ⓐ Ⓑ	27. Ⓐ Ⓑ	35. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ	12. Ⓐ Ⓑ Ⓒ Ⓓ	20. Ⓐ Ⓑ Ⓒ Ⓓ	28. Ⓐ Ⓑ	36. Ⓐ Ⓑ Ⓒ Ⓓ
5. Ⓐ Ⓑ Ⓒ Ⓓ	13. Ⓐ Ⓑ Ⓒ Ⓓ	21. Ⓐ Ⓑ	29. Ⓐ Ⓑ Ⓒ Ⓓ	37. Ⓐ Ⓑ
6. Ⓐ Ⓑ Ⓒ Ⓓ	14. Ⓐ Ⓑ	22. Ⓐ Ⓑ Ⓒ Ⓓ	30. Ⓐ Ⓑ Ⓒ Ⓓ	38. Ⓐ Ⓑ Ⓒ Ⓓ
7. Ⓐ Ⓑ Ⓒ Ⓓ	15. Ⓐ Ⓑ Ⓒ Ⓓ	23. Ⓐ Ⓑ Ⓒ Ⓓ	31. Ⓐ Ⓑ Ⓒ Ⓓ	39. Ⓐ Ⓑ Ⓒ Ⓓ
8. Ⓐ Ⓑ Ⓒ Ⓓ	16. Ⓐ Ⓑ Ⓒ Ⓓ	24. Ⓐ Ⓑ Ⓒ Ⓓ	32. Ⓐ Ⓑ	40. Ⓐ Ⓑ Ⓒ Ⓓ