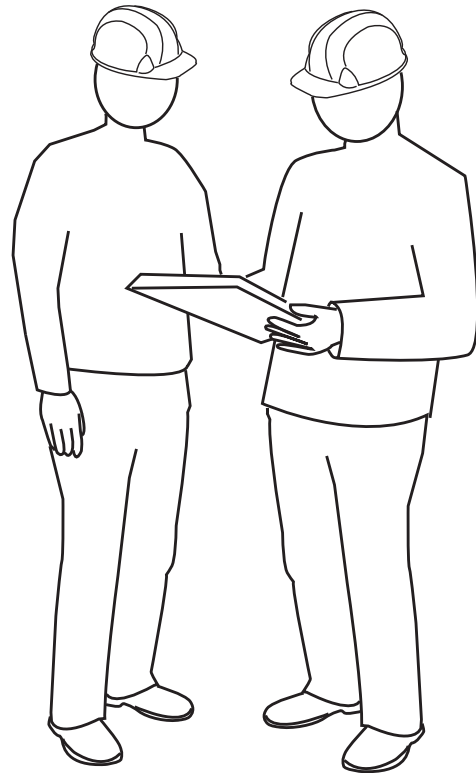


**K-STATE**  
Research and Extension

# Guide to Managing Safety

**For Employers and Supervisors**



# Guide to Managing Safety

## Contents

<b>Lesson 1</b>	
<b>Preventing Injuries.....</b>	<b>3</b>
<b>Lesson 2</b>	
<b>Develop an Effective Safety Program.....</b>	<b>8</b>
<b>Lesson 3</b>	
<b>Safety Issues for a Diverse Workforce.....</b>	<b>15</b>
<b>Lesson 4</b>	
<b>Follow Safety Regulations .....</b>	<b>20</b>
<b>Conclusion .....</b>	<b>33</b>
<b>Quiz Yourself Answers.....</b>	<b>35</b>

### Written by:

Mitch Ricketts, Coordinator, Health, Safety and Environmental Quality, K-State Research and Extension

Sarah Lind, Information specialist

Kristy Wieland, Information specialist

### Disclaimer

This material was produced under grant number 46G3-HT04 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.

This booklet was produced by K-State Research and Extension, Kansas State University, Manhattan, Kansas.

The information in this publication has been compiled from a variety of sources believed to be reliable and to represent the best current opinion on the subject. However, neither K-State Research and Extension nor its authors guarantee accuracy or completeness of any information contained in this publication, and neither K-State Research and Extension or its authors shall be responsible for any errors, omissions, or damages arising out of the use of this information. Additional safety measures may be required under particular circumstances.

# Preventing Injuries in the Workplace

## Safety: A Fundamental Business Responsibility

Federal and state laws require your business to provide a workplace that is free from safety and health hazards. Besides a general duty to provide a safe workplace, you must also observe a number of more specific regulations.

Consequences of not following government regulations can include:

- ▶ OSHA fines of up to \$70,000 per occurrence.
- ▶ Criminal charges.
- ▶ Jail time.
- ▶ Penalty of not less than \$5,000 for willfull violations.
- ▶ Civil action lawsuits brought on by injured employees.

Successful employers recognize that companies are more profitable when they avoid costly injuries and interruptions as a result of workplace accidents.

## Success Story

### Company Reduces Injuries and Saves \$800,000

The Good Shepherd Nursing Home of Wheeling, West Virginia, analyzed their injury reports and found that many of their workers were being injured while lifting patients. To solve this problem, the nursing home bought a mechanical lifting device to help staff move residents from their beds to their chairs.

The facility also developed a comprehensive safety program that involved management and employees in a partnership to reduce injuries. According to administrator Donald Kirsch, "...our work related injuries dropped so much that our workers compensation rate declined." In fact, the facility saved over \$800,000 in workers compensation premiums between 2000 to 2005.

Source: [http://www.osha.gov/dcsp/success\\_stories/sharp/ss\\_good\\_shepherd.html](http://www.osha.gov/dcsp/success_stories/sharp/ss_good_shepherd.html)

# Lesson 1

## Objectives

---

1. Recognize basic workplace safety principles.
2. Identify common causes of serious injury and death.
3. List the benefits of a safe working environment.

## OSHA's Voluntary Protection Programs

Through the Voluntary Protection Programs (VPP), OSHA recognizes worksites with excellent safety and health management systems. To qualify for VPP, applicants must have in place an effective safety and health management system that meets all relevant OSHA standards. OSHA verifies qualifications with a rigorous performance-based evaluation and a comprehensive onsite review process. OSHA awards sites to one of the three programs: star, merit and star demonstration.

Organizations that achieve VPP status are recognized among the best in worker safety and health. Throughout this manual, you will read success stories – many from organizations that have achieved status as a VPP.

VPP is a voluntary partnership with OSHA that can increase productivity, improve work environment, reduce injury and save lives. Involvement in VPP shows employees, industry, and the community you are a leader in safety and health and dedicated to improving the lives of your employees.

## Basic Principles of Safety Management

1. No employee should risk injury or death to do a job.
2. Safety can and should be managed. Accident prevention leads to more efficient and profitable operations and improves the quality of life for employees.
3. Each employee has a right and responsibility to help in the ongoing safety improvement process. Encourage your employees to help identify and resolve safety concerns as they arise.

### Accident Report **Workers Die While Checking Gas Lines in Underground Vault**

Summary of OSHA Inspection Number 100562032

Three workers entered an underground vault to check a gas line. The vault had been closed for some time and there was about three feet of water in the bottom. The workers didn't know it, but the air in the vault was low in oxygen—probably because of bacteria in the foul water. Shortly after entering, all three workers collapsed from lack of oxygen, fell into the water, and drowned.



***Train workers so they can recognize and avoid risky situations. In this case, the employer should have had a confined space entry program.***

## Common Causes of Serious Injury and Death

Work closely with your employees to develop safe work practices for each project.

Serious on-the-job injuries often result from:

- ▶ Traffic accidents
- ▶ Falls
- ▶ Construction, repair, and cleaning
- ▶ Assaults and violence
- ▶ Work involving tractors, forklifts, and machinery

Less deadly (but still costly) workers compensation claims are often due to:

- ▶ Back injuries from lifting, awkward movements, and overexertion
- ▶ Cuts and punctures experienced while working with materials, machinery, and tools

## Management Practices Affect Workplace Injury Rates

Companies with effective safety programs have fewer work-related injuries and illnesses. Shannon, Mayr, and Haines (1997) reviewed research that linked management practices with injuries at thousands of workplaces. The following table summarizes the results. Companies committed to the management practices in the table's middle column tend to have low injury rates. In contrast, companies that follow the management practices in the right-hand column tend to have high injury rates.

### Selected Management Practices Consistently Related to Worker Injury and Illness Rates

Management Issue	Effects of Management Practice	
	Low Injury/Illness Rates Observed	High Injury/Illness Rates Observed
Workforce empowerment	Workers encouraged to take initiative	Workers not encouraged to take initiative
Delegation of safety issues	Much delegation to workers	Little or no delegation to workers
Role of top management in safety program	Actively involved	Not actively involved
Commitment of workforce	Workers encouraged to make long-term commitment	Workers not encouraged to make long-term commitment
Relations between management and workers	Good relationships	Poor relationships
Safety program components	Regular safety audits	Few or no safety audits
	Workplace hazards systematically evaluated	Workplace hazards not evaluated
	Unsafe behavior monitored and corrected	Unsafe behavior not monitored
	Highly trained workers and safety committees	Inadequately trained workers and safety committees
	Good housekeeping	Poor housekeeping
	Machine hazards controlled	Machine hazards not controlled
Source: Shannon, H.S., Mayr, J., & Haines, T. (1997). Overview of the relationship between organizational and workplace factors and injury rates. <i>Safety Science</i> , 26, 201-217.		

## Success Story

### Company Sees Tangible Benefits From Safety Program

Laser Technologies, Inc. is an Illinois company that uses lasers for precision metal cutting. In 1993, the company was losing 60 to 70 workdays a year due to injuries – even though they employed fewer than 15 workers. Company management asked for help from OSHA's Onsite Consultation Program. Through this program, OSHA sends safety and health professionals to help small businesses identify and fix hazards. The Consultation Program is separate from the inspection/enforcement arm of OSHA, so there are no citations or fines.

In the initial visit, the OSHA consultant pointed out a mechanical power shear that didn't have guards to protect workers from dangerous moving parts. Instead of refurbishing the old shear (which was used for rough cutting), Laser Tech found a way to become more productive by buying pre-cut metal. This freed up workers to concentrate on what they did best – making intricate cuts using lasers. Next, the company developed a safety program, provided training, involved workers in facility walkthroughs, and formed a safety committee with representatives from each department. According to Keri Alwin, company safety manager, "Workers really started to feel involved in what we were doing. They felt responsible."

Even though the company has grown to 70 employees, workers' compensation costs have dropped by 20 percent per year. In fact, the company went for seven years without a single lost workday and staff turnover has plummeted. "Now we get dividends! Employees feel that the company cares about them, not just about the company, so they want to stay," Alwin says.

Source: <http://www.osha.gov/Publications/JSHQ/summer2002/smallbis.htm>

## Average Cost of Workers' Compensation Claims for Selected Injuries, 2004-2005:

(Costs include medical and indemnity payments)

◆Broken bone or dislocation:	\$29,250
◆Infection or inflammation:	\$17,930
◆Sprain or strain:	\$17,839
◆Burn:	\$20,971
◆Cut, puncture or scrape:	\$16,081

According to the National Safety Council, the average cost of a workers' compensation claim in 2004-2005 was \$20,953.

## Business Benefits of Managing Safety

An effective safety program will reduce accidents and costly injuries. Companies that demonstrate interest in employees through highly-visible safety programs find it easier to attract and retain loyal workers.

### Financial Costs of Workplace Injuries Include:

- ▶ Medical bills.
- ▶ Ambulance service fees.
- ▶ Insurance premium increases.
- ▶ Lawsuits.
- ▶ Care for workers after they've been injured.
- ▶ Wages for time lost by employees who:
  - ▶ provide first aid.
  - ▶ stop to watch or talk about the incident.
  - ▶ clean up afterwards.
  - ▶ process insurance paperwork.
- ▶ Medical supplies.

#### Accident Report: Worker Off for 23 Days After Mistakenly Drinking Unlabeled Chemical

Summary of OSHA Accident Investigation Report ID 0950623

An employee opened the door of an office refrigerator and grabbed an unlabeled jug of what he thought was drinking water. The jug actually contained methyl ethyl ketone (MEK) peroxide, and the employee received burns to his mouth, throat, esophagus, and stomach when he drank it. He was hospitalized for 6 days and required an additional 17 days of recovery at home before he was released to return to work.



*Develop an injury prevention program to avoid costly injuries. In this case, the employer needed a hazard communication program to ensure proper labeling and storage of chemicals.*

### Intangible Costs of Workplace Injuries Include:

- ▶ Pain and suffering of the injured worker.
- ▶ Damaged public relations.
- ▶ Lowered employee morale.

**Choose!**  **safety**

# Quiz Yourself

Circle the correct answer.

Answers can be found on page 35.

1. Consequences of not following government regulations can include:
  - a. criminal charges
  - b. jail time
  - c. OSHA fines up to \$70,000 per occurrence
  - d. All of the above

Select the correct answer for the following sentences from the list below.

- a. top management
  - b. VPP
  - c. insurance premiums
  - d. initiative
2. Companies with low injury rates encourage workers to take \_\_\_\_\_.
  3. Workplace injuries may result in higher \_\_\_\_\_.
  4. Companies with low injury rates involve \_\_\_\_\_ in the safety program.
  5. To qualify for \_\_\_\_\_ applicants must have in place an effective safety and health management system that meets all relevant OSHA standards.

## Success Story

### Company Slashes Lost Workdays, Creates Better Place to Work

In just four years, Point-Five Windows (Fort Collins, CO) slashed its annual injury and illness rate from 51.1 lost workdays per 100 employees to just 1.69 lost workdays per 100 employees.

In 1996, Point-Five Windows was paying a steep price for injuries. Besides lost productivity and high workers compensation premiums, the company was suffering from low morale and the threat of OSHA intervention. The owners asked OSHA's Onsite Consultation Program for help.

With the aid of OSHA's safety and health consultants, Point-Five Windows started a comprehensive safety program. This included inspecting the workplace and correcting problems, buying hydraulic lifts to prevent injuries when workers move heavy windows, and designing new spray booths to protect workers who apply finishes to window frames. Workers began taking turns on a safety committee that meets every month and the company's eight departments began meeting every two weeks to discuss the unique safety issues they face. The company also began holding a plant-wide safety award meeting each month.

At the monthly company meeting, Five-Point's owners hand out silver coins (five troy ounces each) to safety award winners. One of the most popular recognitions is the "CEO Wave-Off Award," which began when a worker saw the CEO using equipment without the proper personal protective equipment (PPE). The worker offered the CEO his own PPE, and the CEO was so impressed that he initiated the award in the worker's honor.

"Our people take a lot of pride in the turnaround we've had at Point-Five Windows, and in the fact that they work for a company that cares about safety," says co-owner Gordon Hannaford. "If you want to be the best company out there, then it's not enough to have good wages, benefits, and profitability. You have to have a good safety program in place and make sure that you have a safe company."

Source: <http://www.osha.gov/Publications/JSHQ/winter2003html/smallbis.htm>



# Lesson 2

## Objectives

---

1. Recognize the benefits of involving employees in developing a safety program.
2. Identify ways to create, implement and measure safety objectives.

# Develop an Effective Safety Program

Preventing accidents is essential to building a profitable business. A strong safety program shows concern for the employees' well-being. It creates a positive company image and can help an organization attract and retain workers. Safety is not a matter of luck; it is a management issue that requires time and effort.

To be effective, a safety program must involve employees in the decision-making process to help identify hazards and assist in solving problems.

## Why Involve Employees in the Safety Process?

People must change their behavior to make a workplace safer. A safety program will work only if it has the cooperation and support of everyone who works there. Employees are more committed to a process when they know what is going on, are asked for their input and are given a voice in matters that affect them.

## Get Employees Involved in the Safety Process

Each employee will contribute to a safety program in different ways. Make sure there are many opportunities for each individual to participate. Here are some examples:

### Safety Committee

The safety committee strongly influences the safety program. Include people who are respected, viewed as leaders by their peers and who are known for getting things done. Include people from all levels: managers, supervisors and workers. When selecting committee

### Success Story

#### Safety Program Cuts Costs and Improves Worker Performance

Mt. Olive Pickle Company (Mount Olive, North Carolina) involves employees in workplace safety at every opportunity. According to safety manager Gordon Bennett, each worker contributes to the safety program in different ways, such as reviewing unsafe condition reports, serving on safety committees, and participating in safety contests.

The safety program's impact has improved the company's bottom line by reducing injuries and lowering workers compensation premiums. According to Bennett, however, the greatest benefit of the safety program is that "it protects and improves the performance of our greatest asset, our employees."

Source: *K-State Research and Extension publication MF2763*



members, consider asking for volunteers. Periodically rotate people on and off the safety committee so different points of view can be expressed.

### **Safety Suggestions**

Encourage employees to contact members of the safety committee any time they have suggestions about how to make the workplace safer. Ensure employees know who the committee members are and how to contact them.

### **Incident Reports**

Encourage employees to file reports if there is an injury, close-call or a problem that needs to be corrected. Make sure they know how to accurately submit reports to make the process easy and blame-free.

### **Incident Investigation Teams**

Investigating incidents can provide valuable information, but requires tact and good judgment. Teams must be trained to gather information that will prevent future incidents without allowing the process to turn into fault-finding.

### **Problem Solving Teams**

When a concern arises, temporarily assemble a group of employees, with various points of view, to find ways to solve the problem.

### **Safety Equipment Selection**

Be sure to get the input of employees who will be using the equipment and allow them to try it out, if possible, before buying.

### **Contests**

Encourage friendly competition among work groups. Keep in mind that if the contest rewards work groups for being accident-free, employees may be discouraged from reporting injuries. To avoid this problem, make sure your contests provide rewards for positive safety initiatives without discouraging accident reporting.

### **Safety Reviews**

Include people with a variety of backgrounds to evaluate new programs, activities, equipment and facilities during the planning stage, when problems can be solved with the least expense.

### **Safety Meetings**

Frequent safety meetings give employees a chance to express their views and bring attention to important concerns.

### **Surveys/Questionnaires**

These are more formal methods for receiving input. All responses should be anonymous.

## **Success Story**

### **Safety Incentives Reward Workers for Good Idea**

Ideal Jacobs, a full service printing company in Maplewood, NJ, rewards its workers with a \$50 Good Idea award for any innovation the company adopts to bring safety, health or environmental benefits to the company. Ideal Jacobs has built a strong culture of safety by involving workers and management in a partnership to reduce injuries.

Source: [http://www.osha.gov/dcsp/success\\_stories/sharp/ss\\_jacobs.html](http://www.osha.gov/dcsp/success_stories/sharp/ss_jacobs.html)

## **Contest Ideas**

### **See which crew can:**

- ◆ Get the most people trained.
- ◆ Correct the most hazards.
- ◆ Submit the best safety suggestions.
- ◆ Report the most near-misses.

## Face-to-Face Communication

Safety leaders should visit with employees frequently to discuss concerns.

## Respond When Employees Get Involved

1. Listen to what employees have to say.
2. Let everyone express their opinions, even if you do not agree.
3. Make timely, appropriate responses to every suggestion. When it is not possible to make changes, explain the situation, let employees know you appreciate their input and explain any plans for addressing the issue in the future.
4. Never discourage anyone from making suggestions or from reporting injuries and unsafe conditions. Let them know you appreciate each suggestion.

## Establish Worthwhile Safety Objectives

Objectives are the “plan of action” your workplace will use to create a successful safety program. Each objective should describe an action you will take or a hazard you will correct. For example: Provide personal protective equipment and training for employees who work around hazardous substances.

- ▶ **Consider many sources of information.** Base objectives on employee suggestions, accident history, regulations, known hazards, industry standards, self-inspections and other relevant sources.
- ▶ **Eliminate the most serious hazards first.** Prioritize your efforts by ranking concerns according to both the likelihood and severity of an injury.
- ▶ **Establish clear objectives and divide the process.** Break the process into small steps so your objectives are easier to achieve.
- ▶ **Create a realistic and responsible schedule.** Take on enough projects to make a meaningful difference, but don't take on so much that you fail to meet your objectives.
- ▶ **Don't limit your objectives to existing hazards.** Review proposed new activities, programs, procedures, equipment and facilities to identify new hazards before they occur.

## Accomplish Your Safety Objectives

A combination of approaches is necessary to accomplish your objectives to make the workplace safer.

### Elimination or Control of Hazards

You may need to alter or replace equipment, use less hazardous materials, mechanize hazardous tasks, enclose hazards behind barriers, etc.

### Success Story

#### Cutting Torch Injury Leads to New Inspection Program, Resulting in Dramatic Reduction in Gas Leaks

In 2004, a worker's left hand was badly burned at Chaparral Steel in Midlothian, Texas. The worker had been cutting steel with a torch that had a leaking oxygen hose. Unknown to him, oxygen from the torch collected in his glove. When he reached past the lighted torch, the glove exploded, burning his hand.

After the accident, the company changed its procedures to require that operators inspect their torches before use. As a part of the inspection, operators use a spray bottle of soapy water to check for bubbling gas at torch fittings, connectors, weld piping and gauge end fittings. The result has been dramatic: leaks are down 90 percent since the inspection program began.

Source: [http://www.osha.gov/dcsp/success\\_stories/compliance\\_assistance/steelcompany\\_2005.html](http://www.osha.gov/dcsp/success_stories/compliance_assistance/steelcompany_2005.html)

### Training

Inform employees of hazards and teach them how to avoid injury on the job.

### Workplace Procedures

Change the way work is performed to reduce the risk to employees. Limit the number of people who are allowed to perform hazardous tasks, use chemicals at times when fewer people are in the area or limit the amount of time a worker can be exposed to heat, chemicals, vibration and other hazards.

#### Accident Report

##### Worker's Eyes Burned by Cleaning Chemical

Summary of OSHA Accident Investigation Report ID 0352410

A worker was pouring a cleaning chemical from a one-gallon container to a one-quart container. She was not wearing protective eyewear and the cleaner splashed into her eyes. She was hospitalized for chemical burns to her corneas.



**Provide personal protective equipment (such as splash resistant goggles) to employees who need it.**

### Success Story

#### Forklift Rodeo Gives Workers Sense of Ownership and Pride in Safety

Flame Engineering Inc. in LaCrosse, Kansas, finds many innovative ways to keep workers engaged in the safety program. One of their most successful initiatives is the company's Forklift Rodeo, designed by the safety committee to help forklift operators develop pride in their work and to promote safe and skillful driving. According to Office and Human Resources Manager, Linda Miller, "drivers get the training they need and have fun at the same time."

After participating in forklift safety training, operators compete on a challenging course that includes tasks such as backing down a ramp without spilling water from a five-gallon bucket, carrying a container of eggs across bumpy terrain, and negotiating an obstacle course without disturbing tennis balls balanced at corners. Workers compete for team awards and the Best Individual Driver award.

Top management shows its commitment to safety by setting aside time for the rodeo and by competing in the events alongside workers. According to Miller, "The Forklift Rodeo helps workers feel a sense of ownership in the safety program. Now everyone wants to win the Best Individual Driver award at the next event."

Source: *Linda Miller SPHR, Office/HR Manager, Flame Engineering Inc., LaCrosse, Kan.*

## When Helping Others Change Behaviors, Ask Yourself:

- Have they been trained?
- Have they been told what specific actions to take?
- Have they been recognized for doing things right?
- Have they been corrected if their behaviors are unsafe?

## Personal Protective Equipment

Use safety glasses, hard hats, safety shoes, ear plugs, chemical-resistant gloves, respirators, etc. to protect employees.

## Measure Your Accomplishments

It will take time to reduce injury rates. A good safety program will reduce the number of severe injuries, even if there is an increase in the number of minor incidents reported.

## Focus on Success

Measure accomplishments such as the number and/or quality of:

- ▶ Hazards corrected
- ▶ Safety inspections and reviews
- ▶ Safety meetings and training
- ▶ Safety improvements to procedures and equipment
- ▶ Safety suggestions received
- ▶ Reports of near-misses
- ▶ Housekeeping improvements
- ▶ Safe behaviors exhibited by employees
- ▶ Risk assessments completed
- ▶ Incidents investigated
- ▶ Problems solved

## Keep the Ball Rolling

At least once a year, evaluate your program and set new goals. Identify what has worked and keep it up. Decide what didn't work, find out why and make the necessary adjustments.

## Document Accomplishments

Safety is achieved in successive steps and a written record will be a valuable reminder of how far you've come.

- ▶ Document and publicize each accomplishment.
- ▶ Ensure everyone knows what has been achieved.
- ▶ Keep an ongoing record of hazards identified, actions taken and progress made.

## Lead by Example

Effective leaders influence others by providing information, showing others that change is in their best interest, challenging them to do better and providing a dependable example.

Make sure employees understand why they need to change and exactly what is expected.

The influence you have on others will depend not only on what you say, but also what you do. People will follow your lead only if your daily decisions and actions are consistent with your message.

Take time to listen to others' perspectives and make sure you understand the entire situation before you give advice. People will be more open with you if they know you won't jump to the wrong conclusions.

Don't drop the ball. If you promise to do something, do it and always take responsibility when you make a mistake.

Don't blame employees for accidents. If an accident occurs, wait until the dust settles then give the employee a chance to show what was learned by asking a question such as, "What can we do to keep this from happening again?" You will probably find that the employee learned from the incident and will be more likely to approach you about important issues in the future.

For more information about OSHA's VPP or how to apply, you can contact your nearest VPP Manager through OSHA's regional and area offices. For agency regional and area office locations, state contacts, and more about VPP, log onto OSHA's Web site, <http://www.osha.gov/dcsp/vpp/index.html>.

### Success Story

#### Management Leads by Example and Rewards Workers for Safety Efforts

Top managers at Tropicana (Santa Monica, Calif.) understand the importance of leading by example. For instance, Delia Dias, health, safety and environmental technician, reports that Tropicana managers always wear their personal protective equipment on the plant floor and often speak to workers about progress toward safety goals. Tropicana managers also build support for the safety program by recognizing workers for their contributions. For instance, Tropicana's Safety Hall of Fame includes a prominent plaque with the names of workers who have made notable contributions to the safety program.

In addition, Tropicana's Safety Training and Recognition Systems (S.T.A.R.S.) program recognizes workers "who are involved in reviewing processes or attending meetings and training," Dias says. "Together we celebrate the employees' achievements annually in a luncheon and we invite a CAL OSHA representative to speak." Dias credits their improved safety program with making their plant "the preferred company when it comes to on-boarding new employees."

Source: *K-State Research and Extension Publication MF2763*

# Quiz Yourself

Answers can be found on page 35.

Select the correct answer for the following sentences from the list below.

- a. severe
- b. do
- c. record
- d. hazardous
- e. once
- f. discourage

1. The influence you have on others will depend not only on what you say, but also what you \_\_\_\_\_.
2. A good safety program will decrease the number of \_\_\_\_\_ injuries, even if there is an increase in the number of minor incidents reported.
3. At least \_\_\_\_\_ a year, evaluate your program and set new goals.
4. Never \_\_\_\_\_ anyone from making suggestions or reporting injuries and unsafe conditions.
5. Keep a \_\_\_\_\_ of hazards identified, actions taken and progress made.
6. Make your workplace safer by limiting the number of employees allowed to perform \_\_\_\_\_ tasks.

# Safety Issues for a Diverse Workforce

As an employer or supervisor, you must adapt your management strategies to fit the needs of a diverse workforce.

Never tolerate harassment or discrimination in the workplace. Besides the legal consequences, harassment and discrimination can lead to emotional stress, distraction, lowered productivity and an increase in job-related injuries and illnesses.

Also keep in mind that different cultural backgrounds can affect an employee's understanding of and sensitivity to safety issues.

## Language Barriers

You must ensure that each employee understands how to work safely. Employees who do not understand instructions that are given in English may nod in agreement, or say yes, even when they do not fully understand what is being said. As a result, they may begin a job without knowing the safest way to perform the work.

When training employees, always demonstrate a task — don't just talk about it. Next, ask the workers to show you how to perform the same task.

Bilingual employees can be especially helpful for providing work instructions and training. In large workforces, bilingual mentors should be easy to identify. An example is to have mentors wear a different colored hard hat so they are easily spotted among other employees.

Be aware that some workers may not have the reading skills to comprehend training materials, even if they are written in their native language. It can be helpful to partner new employees with more experienced workers who speak their language. This type of hands-on training is one of the most effective methods for teaching job skills to low-literacy workers.

# Lesson 3

## Objectives

---

1. Identify cultural differences in the workplace.
2. Recognize government requirements for young workers.



## Questions to Ask Workers:

- Was safety considered important where you worked before?
- What safety rules did you have before?
- Can you tell me some reasons why people don't always work safely?

## Cultural Diversity

Attitudes about safety vary from culture to culture. Open the lines of communication so employees fully understand that safety is important in your company.

- ▶ Ask them how they view the importance of safety at work.
- ▶ Make sure they understand your expectations.
- ▶ Have open discussions to resolve any misunderstandings of company safety policies.

Many workers may do whatever it takes to get the job done — even if that means taking risks.

In many cultures, it is considered disrespectful to question persons in positions of authority. Therefore, some workers may carry out instructions even when obvious dangers are present. Visit with your workers often about their responsibility to speak up when they encounter a problem.

Remember: The best way to establish trust with workers is to develop strong personal relationships and treat everyone fairly.

## Gender Differences

Employers and supervisors must realize how gender affects the safety needs and expectations of the workforce. Some important considerations include:

- ▶ Provide equipment and tools of various sizes. Make sure the tool fits the worker, don't try to make the worker fit the tool.
- ▶ During the initial training period, provide an opportunity for new employees to partner with experienced employees of the same gender, if possible. Encourage all experienced employees to share their knowledge with everyone on the job — including those of the opposite gender.
- ▶ Some pesticides and other hazardous chemicals can be harmful to fetuses and reproductive organs. Make sure all workers (male and female) are informed of any reproductive hazards they face and allow them to take appropriate precautions.
- ▶ Ensure private, clean restroom facilities with hand washing supplies nearby. For unisex restrooms, ensure the door has a lock.

## The Aging Workforce

Research shows that older workers, on average, are NOT more likely than others to be involved in accidents. Older workers do, however, have a higher rate of injuries from falls than younger workers.

Older employees often have advanced knowledge, skills and judgment abilities that make them especially valuable in the workplace. Encourage them to participate in company decision processes and to contribute any ideas they might have. Challenge them to share their wisdom with younger workers who are just starting out.

## Young Workers

The following actions should be taken by supervisors to protect young workers.

- ▶ Evaluate every job in advance to determine if young workers can perform it safely.
- ▶ Less experienced employees may not transfer a concept from one situation to another. It is especially important for young workers to successfully complete job-specific safety training before performing any new duties. This training should be repeated periodically and when there are changes in work procedures and equipment.
- ▶ Take time to point out hazards whenever they are encountered. Inexperienced workers may not realize that a hazard exists even when it is obvious to a longterm employee.
- ▶ Always model the appropriate behavior. Everyone learns by observing — if long-term employees take dangerous shortcuts, so will young workers.

## Hazardous and Prohibited Occupations

The U.S. Department of Labor has established restrictions on the type of work that may be performed by youth under 18 years of age. The rules may vary somewhat depending on the nature of your business and the state in which you operate. Employers should contact their state department of labor or visit the U.S. Department of Labor Web site: <http://www.youthrules.dol.gov/employers/default.htm>.

Youth under age 18 are prohibited from the following (exceptions are allowed in some circumstances; visit the U.S. Department of Labor Web site for more details):

- ▶ manufacturing and storing of explosives,
- ▶ driving a motor vehicle and being an outside helper on a motor vehicle;
- ▶ coal mining,
- ▶ logging and sawmilling,
- ▶ power-driven woodworking machines,
- ▶ exposure to radioactive substances,
- ▶ power-driven hoisting apparatus,
- ▶ power-driven metal-forming, punching, and shearing machines,
- ▶ mining, other than coal mining,
- ▶ meat packing or processing (including the use of power-driven meat slicing machines),
- ▶ power-driven bakery machines,
- ▶ power-driven paper-product machines,
- ▶ manufacturing brick, tile, and related products,
- ▶ power-driven circular saws, band saws, and guillotine shears,
- ▶ wrecking, demolition, and shipbreaking operations,
- ▶ roofing operations and all work on or about a roof, or
- ▶ excavation operations.

Youth ages 14-15 are prohibited from the operations listed above, plus the following:

- ▶ communications or public utilities jobs,
- ▶ construction or repair jobs,
- ▶ driving a motor vehicle or helping a driver,
- ▶ manufacturing and mining occupations,
- ▶ power-driven machinery or hoisting apparatus other than typical office machines,
- ▶ processing occupations,
- ▶ public messenger jobs,
- ▶ transporting of persons or property,
- ▶ workrooms where products are manufactured, mined or processed, or
- ▶ warehousing and storage.

There are many exemptions for farming and certain other industries, so contact the Department of Labor if you have questions.

# Quiz Yourself

Answers can be found on page 36.

Select the correct answer for the following sentences from the list below.

- a. demonstrate
  - b. harassment
  - c. trust
  - d. shortcuts
  - e. youth
1. Everyone learns by observing; if long-term employees take dangerous \_\_\_\_\_, so will young workers.
  2. The Department of Labor has established restrictions on the type of work that may be performed by \_\_\_\_\_ under 18 years of age.
  3. When training employees, always \_\_\_\_\_ the task.
  4. Never tolerate \_\_\_\_\_ in the workplace.
  5. The best way to establish \_\_\_\_\_ with workers is to develop strong personal relationships and treat everyone fairly.

# Lesson 4

## Objective

1. Identify government regulations related to the 10 most common OSHA citations.

# Follow Safety Regulations

OSHA and other agencies have established standards to promote safety and health in the workplace. Employers must observe these regulations in order to minimize the risk of injury to workers. Failure to protect worker safety can result in devastating business losses due to the cost of accidents as well as fines imposed by government agencies.

## Occupational Safety and Health Administration (OSHA)

You can get help complying with OSHA regulations by contacting your regional OSHA office or by visiting the OSHA Web site at <http://www.osha.gov>

## Transportation Safety Resources

State and local traffic laws and drivers licensing requirements must be observed. If your company operates commercial motor vehicles, the operators may be required to have commercial driver's licenses and undergo drug and alcohol testing. Information is available from the Federal Motor Carriers Safety Administration's Web site at <http://www.fmcsa.dot.gov>.

## Other Resources

Depending on your work activities and geographical location, you may also need to comply with regulations administered by other agencies. The local Chamber of Commerce, state Cooperative Extension Service and state or local economic development agencies can be good sources of information regarding business laws and regulations in your area. For a listing of Extension offices, visit the Web site of Cooperative State Research, Education and Extension Service at <http://www.csrees.usda.gov>.

## 10 Most Common OSHA Violations

During OSHA inspections of worksites, in fiscal year 2007, the 10 most commonly-cited safety regulations were as follows:

### 1. Scaffolding (29 CFR 1926.451)

#### Accident Report: One Worker Injured, Another Killed When Scaffold Tips Over

Summary of NIOSH Accident Investigation FACE94CA01301

Two workers were making renovations to the side of a building 20 feet above the ground. Their scaffold was not attached to the building, and the workers were not wearing safety harnesses. The unsecured scaffold tipped when one of the workers tried to pull a nail from the wall of the building. As the scaffold tipped, one worker fell 8 feet and broke both wrists when he landed on a second story roof. The other worker fell 20 feet to the ground, striking his head on the way down. He died two days later from injuries sustained in the fall.



**Train workers to erect and use scaffolds safely.**

Every year, 4,500 workers are injured and 50 die in accidents involving scaffolds. Scaffolds are temporary raised platforms used to support workers and materials during construction work, repair, painting, and decorating. OSHA's scaffold standard requires employers to ensure that scaffolds are properly constructed and used appropriately by trained employees. Some of the main requirements of the standard are as follows:

- ▶ Each scaffold must be designed a qualified person, and a competent person must supervise its construction and inspect it at designated intervals.
- ▶ The scaffold must be structurally sound. In most situations, it must be capable of carrying its own weight plus four times the maximum intended load.
- ▶ Scaffold platforms must be tightly planked or decked.
- ▶ Scaffolds that are more than four times taller than their base width must be restrained to prevent tipping.
- ▶ Ladders, stairs, ramps, or walkways are required for scaffolds that are more than two feet above or below a point of access.
- ▶ Scaffolds are not moved horizontally while workers are on them unless they are designed to be mobile and workers have been trained in the proper procedures.
- ▶ Scaffolds must normally be at least 10 feet from electric power lines.
- ▶ Employees are not permitted to work on scaffolds when covered with snow, ice, or other slippery materials.
- ▶ Employees are not permitted to work on scaffolds in bad weather or high winds unless a competent person has determined that it is safe to do so.
- ▶ Scaffolds more than 10 feet high must normally be equipped with fall protection safeguards such as some combination of guardrails, midrails, and/or harness/lanyard.
- ▶ Toeboards are required on scaffolds more than 10 feet high to prevent materials from falling and striking workers below.
- ▶ All workers who use scaffolds must be properly trained.

### **Compliance Guidelines**

Practical guidelines for complying with the scaffolding standard can be found on the Web:

#### **OSHA Publication 3150 2002 (Revised)**

*A Guide to Scaffold Use in the Construction Industry*  
<http://www.osha.gov/Publications/osha3150.pdf>

#### **OSHA Scaffolding Construction Web page**

<http://www.osha.gov/SLTC/scaffolding/construction.html>

#### **OSHA Scaffolding Construction e-Tool**

<http://www.osha.gov/SLTC/etools/scaffolding/index.html>

## 2. Fall Protection (29 CFR 1926.501)

### Accident Report: Carpenter Killed in Fall From Roof

Summary of NIOSH Accident Investigation FACE9509

A five-man work crew was laying roofing felt on the gable roof of a new church. One of the workers was a 48-year-old experienced carpenter. He was walking backwards while unrolling the felt. As he stepped close to the end of the roof, another worker yelled for him to watch out – but it was too late. The carpenter lost his balance and fell off the roof, striking his head on the concrete porch 16 feet below. His co-workers ran to help, but his injuries were too severe. He was pronounced dead at the scene.



**Develop a fall protection program to safeguard employees who work from heights.**

Workplace falls are responsible for about 800 deaths and over 200,000 injuries each year. OSHA's fall protection standard requires employers to provide fall protection systems for workers involved in construction and repair work, including painting and decorating. Among other obligations, employers must provide fall protection such as guardrails, safety nets, or harnesses/lanyards when workers are at risk of falling six feet or more to a lower level. While there are some exceptions, the requirement for fall protection generally apply while working on roofs, elevated surfaces in residential construction, and near unprotected edges, hoist areas, holes in floors/walls/roofs, excavations, and other areas.

### Compliance Guidelines

Practical guidelines for complying with the fall protection standard can be found on the Web:

#### **OSHA Publication 3146 1998 (Revised)**

*Fall Protection in Construction*

<http://www.osha.gov/Publications/osha3146.pdf>

#### **OSHA Fall Protection Web page**

<http://www.osha.gov/SLTC/fallprotection/recognition.html>

#### **OSHA Construction e-Tool—Falls**

<http://www.osha.gov/SLTC/etools/construction/falls/mainpage.html>



### 3. Hazard Communication (29 CFR 1910.1200)

The hazard communication standard requires employers to inform workers about the hazards of chemicals in the workplace. Chemicals commonly used in many industries include fuels, lubricants, cleaning solvents, refrigerants, and many other hazardous substances. Employer obligations include the following:

- ▶ Develop a written hazard communication program.
- ▶ Discuss chemicals with other employers on the worksite.
- ▶ Make sure chemical containers are labeled.
- ▶ Make employees aware of chemical hazards that could result from any non-routine tasks or activities involving unlabeled pipes.

#### Accident Report

#### Employee Burned by Boiling Water and Caustic Soda

Summary of OSHA Accident Investigation 111878476

An employee was cleaning the inside of a pressure cooker. He turned on the water and steam to fill the cooker. Then he added caustic soda as a cleaning agent. The caustic soda reacted violently with the hot water and steam causing the mixture to spew out on the employee, burning him severely.



**Provide your employees with necessary training and personal protective equipment when working around hazardous substances.**

- ▶ Compile a list of all hazardous chemicals in the workplace and ensure that each can be matched to the appropriate Material Safety Data Sheet (MSDS)
- ▶ Ensure that MSDSs are readily accessible in the workplace for each hazardous chemical in use.
- ▶ Provide workers with information and training on hazardous chemicals.

#### Compliance Guidelines

Practical guidance for complying with the hazard communication standard can be found on the Web:

##### **OSHA Publication 3111 2000 (Reprinted)**

*Hazard Communication Guidelines for Compliance*

<http://www.osha.gov/Publications/osha3111.pdf>

##### **OSHA Publication 3084 1998 (Revised)**

*Chemical Hazard Communication*

<http://www.osha.gov/Publications/osha3084.pdf>

##### **OSHA Hazard Communication Web page**

<http://www.osha.gov/SLTC/hazardcommunications/index.html>

## 4. The Control of Hazardous Energy, Lockout/Tagout (29 CFR 1910.147)



### Accident Report

#### Worker Killed While Cleaning Mechanical Power Press

Summary of OSHA Accident Investigation 303826564

A worker was cleaning a press machine, but he had not locked out the machine's power source. A co-worker started the machine – unaware that it was being cleaned. The press started up while the cleaning worker was leaning into the machine. He was killed when his head was crushed inside the press.



**Develop a lockout-tagout program and train employees to disable equipment before servicing.**

The lockout/tagout standard contains many requirements to protect workers when they repair, service or perform maintenance on equipment with moving parts or hazardous power sources such as hydraulics or electricity. When servicing machines and equipment, power must be shut off. Precautions should be taken to prevent the equipment from starting up and additional measures may be required to protect workers from moving parts and hazardous power sources. The lockout/tagout standard requires employers to:

- ▶ Develop a written energy control program.
- ▶ Use locks to keep equipment from being started accidentally during service and maintenance. Note: tags are allowed instead of locks in some cases.
- ▶ Use energy control procedures to ensure the safety of employees who service and repair equipment.
- ▶ Periodically inspect the workplace to make sure lockout/tagout procedures are being used and correct any problems noted.
- ▶ Provide training and information to employees who are involved in, affected by or located in areas where equipment is serviced or maintained.

### Compliance Guidelines

Practical guidance for complying with the lockout/tagout standard can be found on the Web:

#### OSHA Publication 3120 2002 (Revised)

*Control of Hazardous Energy: Lockout/Tagout*

<http://www.osha.gov/Publications/osh3120.pdf>

#### OSHA Lockout/Tagout Web page

<http://www.osha.gov/SLTC/controlhazardousenergy/index.html>

#### OSHA Lockout/Tagout e-Tool

<http://www.osha.gov/dts/osta/lototraining/index.html>

## 5. Respiratory Protection (29 CFR 1910.134)

### Accident Report : Worker Suffers Acute Lead Poisoning While Torch-Cutting Painted Steel

Summary of OSHA Accident Investigation 304110109

A worker became severely ill and was hospitalized after cutting steel with a torch for two days. Blood tests showed he was suffering from acute lead poisoning. Upon investigation, it was found that the steel he was cutting had been painted with several layers of lead-based paint. While torch-cutting, he had been wearing a dust mask – rather than a respirator approved for lead exposure.



**Develop a respiratory protection program to protect workers who are exposed to airborne contaminants.**

Employers may be required to provide respiratory protection if workers are exposed to hazardous airborne dusts, vapors, gases, mists or fumes. When engineering controls cannot protect employees from these respiratory hazards and respirators must be worn, the respiratory protection standard must be followed. The employer must provide respirators appropriate for the job. The employer is also responsible for developing and implementing a written respiratory protection program.

The program must be updated as necessary and include the following:

- ▶ annual medical exam for employees who wear negative pressure respirators.
- ▶ annual fit test for all employees who wear negative pressure respirators.
- ▶ procedures for selecting respirators that are appropriate for the hazard.
- ▶ procedures for care and maintenance of respirators.
- ▶ procedures for proper use of respirators in routine and potential emergency situations.

### Compliance Guidelines

Requirements are extensive, but practical guidelines for complying with the respiratory protection standard can be found on the Web:

#### **Small Entity Compliance Guide for Respiratory Protection Standard**

<http://www.osha.gov/Publications/secgrev-current.pdf>

#### **OSHA Respiratory Protection Program Web page**

<http://www.osha.gov/SLTC/respiratoryprotection/index.html>

#### **OSHA Respiratory Protection e-Tool**

<http://www.osha.gov/SLTC/etools/respiratory/index.html>

## 6. Powered Industrial Trucks (29 CFR 1910.178)

### Accident Report

#### Worker Killed When Forklift Rolls Over

Summary of NIOSH Accident Investigation FACE2004-03

A worker was driving a forklift in a warehouse. He turned sharply with the forks raised and the forklift rolled over. He was thrown to the ground and the forklift landed on top of him. Other workers came running and found him pinned under the forklift's cage. Eventually, they were able to raise the forklift with a front-end loader, and a buddy pulled him clear. He was conscious but was having trouble breathing. Emergency workers tried to save him, but his injuries were too severe.



***Train workers to operate forklifts safely.***

Every year, 20,000 American workers are injured and 100 die in forklift accidents. In about one-third of all cases, the injured employee is off work for over a month. The powered industrial truck standard contains requirements for the design, maintenance, and use of forklifts, motorized pallet jacks, and other specialized industrial trucks. The standard includes specific rules related to:

- ▶ training and periodic re-evaluation of powered industrial truck operators
- ▶ fire protection
- ▶ overhead guards
- ▶ fuel handling and storage
- ▶ battery changing and charging
- ▶ lighting
- ▶ carbon monoxide
- ▶ dockboards
- ▶ loading trucks and railroad cars
- ▶ safe operation
- ▶ design and maintenance

In addition to these OSHA requirements, Department of Labor regulations state that employers may not allow youth under the age of 18 to operate forklifts.

### Compliance Guidelines

Practical guidelines for complying with the powered industrial truck standard can be found on the Web:

#### **OSHA Powered Industrial Truck Web page**

*<http://www.osha.gov/SLTC/poweredinustrialtrucks/index.html>*

## 7. Electrical Wiring Methods, Components and Equipment for General Use (29 CFR 1910.305)

### Accident Report: **Worker Electrocuted due to Spliced, Ungrounded Electrical Cord**

Summary of OSHA Accident Inspection 111137733

A worker was on a roof, using an electric drill. The drill was plugged into two 100-foot extension cords. The grounding pins had been removed from both cords. One of the cords had also been spliced improperly, so that the “hot” wire was touching the other wires in the cord. The day was warm and the worker was perspiring. Suddenly, the worker was electrocuted as he held the drill in both hands. An inspection found that the splice in the cord allowed the drill’s metal housing to become electrified.



***Set up a periodic inspection program to make sure electrical cords and tools are undamaged.***

Each year, electricity kills over 100 workers and injures about 1,600. OSHA requires employers to make sure that electrical wiring, cabinets, and switches are safe for the workers who use them. OSHA has specific requirements that apply to:

- ▶ wiring methods
- ▶ electrical cabinets and fittings
- ▶ switches
- ▶ electrical panels and switchboards
- ▶ damp and wet locations
- ▶ general wiring conductors
- ▶ flexible cords and cables
- ▶ fixture wires
- ▶ lighting fixtures and receptacles

### **Compliance Guidelines**

Practical guidance for complying with the electrical, wiring methods, components and equipment standard can be found on the Web:

**OSHA Electrical Safety Web page**

<http://www.osha.gov/SLTC/electrical/index.html>

**OSHA Publication 3075 2002,**

*Controlling Electrical Hazards.*

<http://www.osha.gov/Publications/osha3075.pdf>

**NIOSH Electrical Safety Web Page**

<http://www.cdc.gov/niosh/topics/electrical/>

## 8. Ladders (29 CFR 1926.1053)

### Accident Report:

#### Worker Suffers Serious Injuries in Fall From Ladder

Summary of OSHA Accident Inspection 126059724

A worker was painting an outdoor wall while standing on a ladder about 12 feet above the ground. He needed to paint an area about 3½ feet to his left. Instead of moving the ladder, he leaned and reached as far to the left as he could. While reaching, he slipped from the ladder and fell to the concrete driveway below. He suffered serious injuries, including brain damage and broken bones in his face, skull, and arms.



***Train employees to use ladders safely.***

OSHA estimates that about 36 workers die and 25,000 are injured each year in falls from ladders and stairways during construction work, repair, painting, and decorating. OSHA's standard for ladder safety requires employers to make sure ladders are designed and used properly. Some of the requirements are as follows:

- ▶ Employers must make sure ladders are designed safely. This means:
  - ▶ Ladders must be strong enough to support the intended load plus a safety factor that depends on the design of the ladder.
  - ▶ Rungs/steps and side rails must meet certain requirements for spacing and design.
  - ▶ Ladders are not normally permitted to be spliced together.
  - ▶ Stepladders must have locking spreaders.
  - ▶ Fixed ladders (e.g., ladders permanently bolted to buildings) must meet certain design standards.
- ▶ Employers must make sure workers use ladders safely. This means:
  - ▶ Portable ladders must be set up properly; e.g., placed on a stable nonslip surface, set at the proper angle, normally extended at least 3 feet above landings, and separated from traffic.
  - ▶ Ladders must be periodically inspected, kept clean, and properly repaired or replaced if damaged.
  - ▶ Ladders must not be overloaded or used for purposes other than normal climbing.
  - ▶ Ladders must not be moved while occupied.
  - ▶ If used around electricity, ladders must be made of fiberglass or other nonconductive material.
  - ▶ When climbing/descending, workers must face the ladder, grasp the ladder with at least one hand, and not carry materials that could cause a fall.
  - ▶ Climbing is not allowed on the top step or cross-bracing of a stepladder.

## Compliance Guidelines

Practical guidelines for complying with OSHA's ladder standard can be found on the Web:

### OSHA Publication 3124-12R 2003

*Stairways and Ladders: A Guide to OSHA Rules*  
<http://www.osha.gov/Publications/osha3124.pdf>

### OSHA Fall Protection Web page

<http://www.osha.gov/SLTC/fallprotection/recognition.html>

### OSHA Construction e-Tool –

#### Falls: Misuse of Portable Ladders

<http://www.osha.gov/SLTC/etools/construction/falls/ladders.html>

## 9. Machines, General Requirements (29 CFR 1910.212)

### Accident Report

#### Worker's Arm Broken in Conveyor

Summary of OSHA Accident Investigation 119797710

A worker was cleaning the pulley of a conveyor while it was running. The conveyor's guard was loose, and the worker was able to reach behind it. As she reached behind the guard, her hand became caught in the moving parts. Her arm was pulled in between the conveyor and pulley. She suffered a compound fracture to her upper arm, and had to be hospitalized.



**Develop a program to maintain machine guards and train employees not to defeat them.**

The standard for machine guarding requires employers protect workers from hazardous machine parts and hazards such as those created by point of operation, nip points, rotating parts, and flying chips.

### Point of Operation

- ▶ is where the work of the machine is being performed.

### Nip Points/Rotating Parts

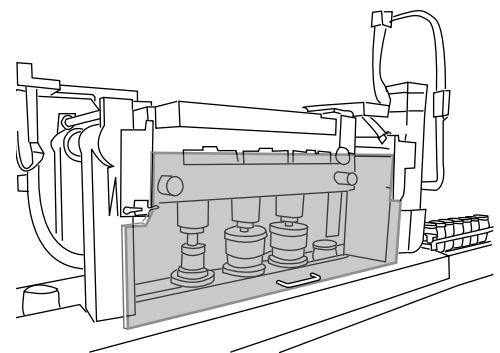
- ▶ occur when parts rotate toward each other. Machines with rollers, belts, pulleys, chains, sprockets and rack and pinions all have nip points.

### Flying Chips

- ▶ result when material is being processed.

### Examples of guarding methods:

- ▶ Barrier guards block danger zones.
- ▶ Two-hand tripping devices ensure the operator has both hands on the controls to start the machine and away from the point of operation.
- ▶ Electronic sensors shut down the machine or block it from starting when the operator is near a danger zone.



**A shield covers this point of operation.**



## Compliance Guidelines

Practical guidelines for complying with the OSHA standard can be found on the Web:

### OSHA Publication 3067 1992

*Concepts and Techniques of Machine Safeguarding.*

<http://www.osha.gov/Publications/osha3067.pdf>

### OSHA Publication 3170-02R 2007

*Safeguarding Equipment and Protecting Workers from Amputations.*

<http://www.osha.gov/Publications/osha3170.pdf>

### OSHA Machine Guarding Web page

<http://www.osha.gov/SLTC/machineguarding/index.html>

### OSHA Machine Guarding e-Tool

<http://www.osha.gov/SLTC/etools/machineguarding/index.html>

## 10. Electrical Systems Design, General Requirements (29 CFR 1910.303)

### Accident Report

#### Worker Electrocuted While Shutting Off Machine

Summary of NIOSH Accident Investigation FACE92MO02801

A worker was using a grinding machine. She had finished her work and was preparing to shut down the machine. The on/off buttons were located in a switch box on the front of the machine. The switch box was missing its cover plate, and live electrical parts were exposed. As she reached to push the off button, she touched a live part and was electrocuted.



**Develop a program to make sure workers are safe from electrical hazards.**

This OSHA regulation contains electrical requirements similar to the wiring standard mentioned earlier. Briefly, the “general requirements” electrical standard (29 CFR 1910.303) requires employers to ensure that:

- ▶ All electrical equipment is approved by a recognized testing laboratory.
- ▶ All electrical equipment is installed, inspected, and used properly.
- ▶ Arcing parts are separated from combustible material.
- ▶ Breakers, fuse panels, etc. are marked to identify their purpose.
- ▶ Uncluttered working space is maintained around panel boxes and other electrical equipment.
- ▶ Employees are not exposed to live electrical parts.

## **Compliance Guidelines**

Practical guidance for complying with OSHA's general electrical standard can be found on the Web:

### **OSHA Electrical Safety Web page**

*<http://www.osha.gov/SLTC/electrical/index.html>*

### **OSHA Publication 3075 2002,**

*Controlling Electrical Hazards.*

*<http://www.osha.gov/Publications/osha3075.pdf>*

### **NIOSH Electrical Safety Web Page**

*<http://www.cdc.gov/niosh/topics/electrical/>*

# Quiz Yourself

Answers can be found on page 36.

Circle the correct answer.

1. Some of the most common OSHA citations are:
  - a. powered industrial trucks
  - b. hazard communication
  - c. scaffolding
  - d. all of the above

Select the correct answer for the following sentences from the list below.

- a. starting up
  - b. chemical containers
  - c. three
  - d. spreaders
2. An evaluation of each powered industrial truck operator's performance must be conducted at least once every \_\_\_\_\_ years.
  3. The hazard communication standard requires employers to make sure \_\_\_\_\_ are labeled.
  4. When servicing machines and equipment, power must be shut off and equipment must be prevented from \_\_\_\_\_.
  5. Stepladders must have locking \_\_\_\_\_,

# Conclusion

Managing safety is your responsibility. Creating a successful safety program and properly training employees will lead to a safer, more profitable business.

You have been presented with safety tips, guidelines, information resources and exercises designed to help you manage your company's safety program. Use this information to keep you and your employees safe.

## Success Story

### Company Gives Workers Ownership in Safety Program and Reaps Rewards

Tropicana in Fort Pierce, Florida, encourages its workforce to become active partners with management in the safety process. According to health, safety and environmental technician Dian Meade, this approach has cut Tropicana's injury rate dramatically.

Based on Tropicana's experience, Mead advises companies to "empower and encourage employees to recommend and make safety changes. Don't let the safety department run the employee safety committee but give a budget, set goals and allow the employees to take ownership."

Source: *K-State Research and Extension Publication MF2763*

# Quiz Yourself

Answers can be found on page 37.

Circle the correct answer.

1. Financial costs of workplace injuries include:
  - a. medical bills
  - b. lawsuits
  - c. insurance premium increases
  - d. all of the above

Select the correct answer for the following sentences from the list below.

- a. leaders
  - b. lockout/tagout
  - c. voluntary
  - d. once
2. VPP is a \_\_\_\_\_ partnership with OSHA that can increase productivity, improve the work environment, reduce injuries and save lives.
3. At least \_\_\_\_\_ a year, evaluate your safety program and set new goals.
4. The \_\_\_\_\_ standard contains many requirements to protect workers when they repair, service or perform maintenance on equipment with moving parts or hazardous power sources
5. The safety committee strongly influences the safety program. Include people who are respected, viewed as \_\_\_\_\_ by their peers and who are known for getting things done.

# Quiz Yourself Answers

## Lesson 1, Page 7

1. Consequences of not following government regulations can include:
  - a. criminal charges
  - b. jail time
  - c. OSHA fines up to \$70,000 per occurrence
  - d. All of the above**

Select the correct answer for the following sentences from the list below.

- a. top management
  - b. VPP
  - c. insurance premiums
  - d. initiative
2. Companies with low injury rates encourage workers to take **d**.
  3. Workplace injuries may result in higher **c**.
  4. Companies with low injury rates involve **a** in the safety program.
  5. To qualify for **b** applicants must have in place an effective safety and health management system that meets all relevant OSHA standards.

## Lesson 2, Page 14

Select the correct answer for the following sentences from the list below.

- a. severe
  - b. do
  - c. record
  - d. hazardous
  - e. once
  - f. discourage
1. The influence you have on others will depend not only on what you say, but also what you **b**.
  2. A good safety program will decrease the number of **a** injuries, even if there is an increase in the number of minor incidents reported.
  3. At least **e** a year, evaluate your program and set new goals.
  4. Never **f** anyone from making suggestions or reporting injuries and unsafe conditions.
  5. Keep a **c** of hazards identified, actions taken and progress made.
  6. Make your workplace safer by limiting the number of employees allowed to perform **d** tasks.

## Lesson 3, Page 19

Select the correct answer for the following sentences from the list below.

- a. demonstrate
- b. harassment
- c. trust
- d. shortcuts
- e. youth

1. Everyone learns by observing; if long-term employees take dangerous **d**, so will young workers.
2. The Department of Labor has established restrictions on the type of work that may be performed by **e** under 18 years of age.
3. When training employees, always **a** the task.
4. Never tolerate **b** in the workplace.
5. The best way to establish **c** with workers is to develop strong personal relationships and treat everyone fairly.

## Lesson 4, Page 32

Circle the correct answer.

1. Some of the most common OSHA citations are:
  - a. powered industrial trucks
  - b. hazard communication
  - c. mechanical power-transmission apparatus
  - d. all of the above

Select the correct answer for the following sentences from the list below.

- a. starting up
  - b. chemical containers
  - c. three
  - d. spreaders
2. An evaluation of each powered industrial truck operator's performance must be conducted at least once every **c** years.
  3. The hazard communication standard requires employers to make sure **b** are labeled.
  4. When servicing machines and equipment, power must be shut off and equipment must be prevented from **a**.
  5. Stepladders must have locking **d**.

## Conclusion, Page 34

Circle the correct answer.

1. Financial costs of workplace injuries include:

- a. medical bills
- b. lawsuits
- c. insurance premium increases
- d. all of the above

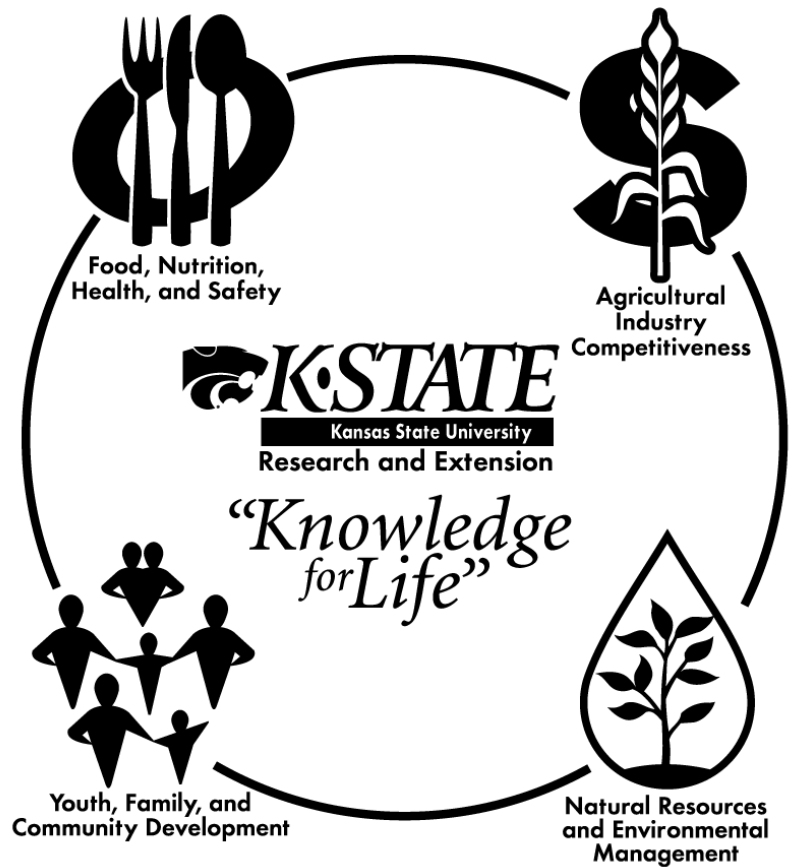
Select the correct answer for the following sentences from the list below.

- a. leaders
  - b. lockout/tagout
  - c. voluntary
  - d. once
2. VPP is a  partnership with OSHA that can increase productivity, improve the work environment, reduce injuries and save lives.
3. At least  a year, evaluate your program and set new goals.
4. The  standard contains many requirements to protect workers when they repair, service or perform maintenance on equipment with moving parts or hazardous power sources.
5. The safety committee strongly influences the safety program. Include people who are respected, viewed as  by their peers and who are known for getting things done.









Brand names appearing in this publication are for product identification purposes only.  
 No endorsement is intended,  
 nor is criticism implied of similar products not mentioned.

Publications from Kansas State University are available at: [www.bookstore.ksre.ksu.edu](http://www.bookstore.ksre.ksu.edu)

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Mitch Ricketts, et al.,  
 Guide to Managing Safety for Employers and Supervisors, Kansas State University,  
 September 2008.

**Kansas State University Agricultural Experiment Station  
 and Cooperative Extension Service**

MF2851

September 2008

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, John D. Floros, Director.