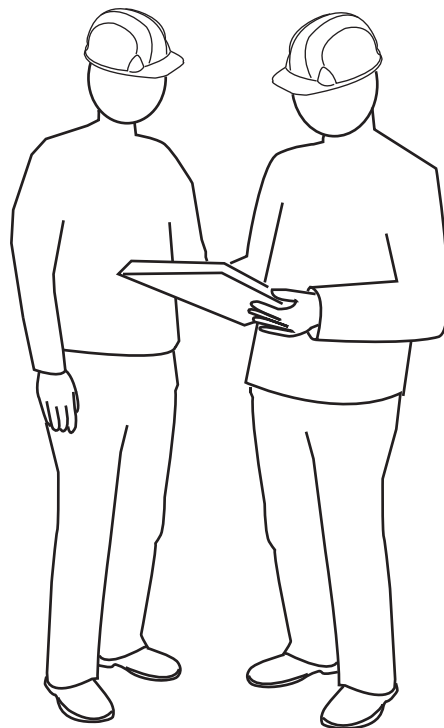


Guide to Managing Health, Safety, and Environmental (HSE) Risks

**For Employers and Supervisors
In the Landscaping
and Horticultural Services Industry**



Guide to Managing HSE Risks

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Disclaimer

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Preventing Injuries and Incidents 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 \$124,709 per occurrence.
- ▶ Criminal charges.
- ▶ Jail time.
- ▶ Penalty of not less than \$12,471 for willful 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.

Basic Principles of Safety Management

1. No employee should risk injury or death to do a job.
2. HSE 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.

**Choose HSE Risk
Management**



Lesson 1

Objectives

1. Recognize basic workplace HSE principles.
2. Identify common causes of serious injury and death in the landscaping and horticultural services industry.
3. List the benefits of a safe working environment.

Common Causes of Serious Injury and Death

Motor vehicles, machinery and tree trimming hazards are major causes of injury in landscaping and horticultural services.

Common incidents include:

- ▶ Employees caught in moving parts of machinery.
- ▶ Workers struck by or run over by equipment.
- ▶ Workers killed when equipment overturned or collapsed.
- ▶ Employees electrocuted by power lines.
- ▶ Employees falling out of trees or equipment.
- ▶ Workers struck by falling trees and limbs.
- ▶ Employees killed in traffic accidents.

You must work closely with your employees to establish safe and environmentally sound work practices and plan for each project to minimize the risk of tragic incidents.

Accident Report

Operator Killed When Run Over by Brush Hog

Summary of OSHA Accident Inspection 112399985

An employee was operating a tractor with an attached brush hog at a speed of 6 to 8 mph. When he tried to pass between two trees, the right rear tire of the tractor struck one of the trees. The impact threw the employee off the tractor. He was run over by the brush hog and killed.



Train employees to operate machinery safely.

Accident Report

Employee Killed in Chipper

Summary of OSHA Accident Inspection 300492832

An employee was chipping branches when the chipper became jammed. He tried to unjam the machine and was caught in the infeed roller and chopped to death by the blades.



Establish and enforce safe work practices.

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 HSE issues	Much delegation to workers	Little or no delegation to workers
Role of top management in HSE 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
HSE program components	Regular HSE audits	Few or no HSE audits
	Workplace hazards systematically evaluated	Workplace hazards not evaluated
	Unsafe behavior monitored and corrected	Unsafe behavior not monitored
	Highly trained workers and HSE committees	Inadequately trained workers and HSE 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

Tree Service Company Sees Tangible Benefits from Safety Program

Kappen Tree Service is a more profitable company because of its commitment to safety, according to co-owner Crystal Kappen. In 2007, the Michigan-based tree service company received awards for operating a remarkable 16 years without a lost-time accident, due in large part to management's strong commitment to safety, an active safety and health committee, adherence to work practices that minimize risks, frequent safety training, and regular job briefings for workers.

Kappen Tree Service has established a competitive edge by building a culture of safety throughout the company. According to Kappen, "The number one benefit is the saving of lives and elimination of suffering. In addition, we benefit from increased production as a result of no lost time and reduced workers' compensation rates. We have an advantage when we bid on proposals because contractors know we are committed to safety. Our sales have doubled every year for the past 5 years, and our profits have increased because we have had zero accidents. Furthermore, we have a low rate of employee turnover and a high rate of general health and safety awareness because employees are proud of our record and eager to maintain it. Our safety values reflect our record, and our continued goal is to maintain safety excellence as a vital focus of our operations."

Source: http://www.osha.gov/dcsp/success_stories/compliance_assistance/tcia_kappen_success.html

National Safety Council (NSC) Injury Facts, 2015 Edition:

According to the NSC, the average cost of a worker's compensation case in 2015 was \$36,894 per claim. The American Society of Safety Engineers (ASSE) estimates that the indirect costs of those claims are often 20 times the direct costs of the claim.

Business Benefits of Managing HSE Risks

An effective HSE program will reduce accidents and costly injuries. Companies that demonstrate interest in employees through highly visible HSE 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.

Intangible Costs of Workplace Injuries Include:

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

Accident Report Employee and Boom Fall

Summary of OSHA Accident Inspection 111961413

An employee was operating an aerial lift when the boom fell from the truck, causing the employee to fall with it. Nine of the bolts that secured the boom to the truck were rusty, indicating old breaks, and had sheared off. The employee suffered head, leg and internal injuries.



Require employees to report damaged equipment and remove it from use until serviced.

Quiz Yourself

Answers can be found on page 32.

Circle the correct answer.

1. Consequences of not following government regulations can include:

- a. Criminal charges
- b. Jail time
- c. OSHA fines up to \$124,709 per occurrence
- d. All of the above

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

- a. Machinery
- b. Responsibility
- c. Accidents
- d. Managed

2. HSE can and should be _____.

3. Each employee has the right and _____ to help in the ongoing HSE improvement process.

4. An effective HSE program will reduce _____ and costly injuries.

5. Motor vehicles, _____ accidents and tree-trimming hazards are major causes of injury in landscaping and horticultural services.

Lesson 2

Objectives

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

Develop an Effective HSE Program

Preventing accidents is essential to building a profitable business. A strong HSE program shows concern for the employee's well-being. It creates a positive company image and can help an organization attract and retain workers. HSE does not occur by chance; it is a risk management issue that requires a commitment of time and effort.

To be effective, an HSE program needs to involve employees in the decision-making process to help identify hazards and assist in reducing risk to individuals and the environment.

Why Involve Employees in the HSE Process?

- ▶ People must change their behavior to reduce the likelihood of accidents and incidents in the workplace.
- ▶ An HSE 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.

Accident Report Employee Electrocuted

Summary of NIOSH FACE Report IN 87-65

An employee was trimming a tree when his neck contacted an overhead power line and he was electrocuted. The company had no formal safety program.



Implement a safety program to prevent accidents and injuries.

Get Employees Involved in the HSE 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:

HSE Committee

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

HSE Suggestions

Encourage employees to contact members of the HSE committee any time they have suggestions on how to reduce the risk to individuals and the environment. Communicate to the employees who the committee members are and how to contact them.

Incident Reports

Encourage employees to file reports if there is an injury, a near miss, 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.

Asking “why” questions in succession can help differentiate between the contributing factors of a problem and its root causes(s).

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.

HSE 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 purchasing.

HSE Reviews

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

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.

Contests

Encourage friendly competition among work groups. Keep in mind that if the contest rewards work groups for being accident- and incident-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 Meetings

Frequent HSE 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.

Face-to-Face Communication

HSE leaders should visit with employees frequently to discuss concerns.

Respond When Employees Get Involved

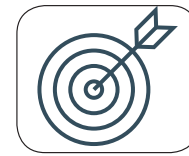
1. Listen to what employees have to say.
2. Let everyone express an opinion, even if you do not agree.
3. Make timely, appropriate responses to every suggestion. When it is not possible to make changes, explain the situation, let employees know you appreciate their input and explain plans for addressing 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 fall protection equipment and training for employees who trim trees.

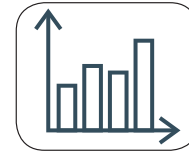
- ▶ **Consider many sources of information.** Base objectives on employee suggestions, accident history, regulations, known hazards, industry standards, self-inspections and other relevant sources.
- ▶ **Eliminate the most serious hazards first.** Prioritize your efforts by ranking concerns according 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.

Goal-Setting Guideline



Specific

S



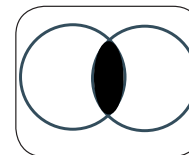
Measurable

M



Achievable

A



Relevant

R



Time-Bound

T

Accomplish Your HSE 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.

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.

Personal Protective Equipment

As needed to protect employees, provide safety glasses, hard hats, safety shoes, ear plugs/muffs, chainsaw leggings, chemical-resistant gloves, respirators, etc.

Accident Report Employee Electrocuted

Summary of OSHA Accident Inspection 3228319

A tree trimmer, who was not wearing a hard hat, was operating an aerial lift. As he raised the boom upward, his head contacted an overhead power line. The employee was electrocuted.



Train employees to use proper protective equipment and keep a safe distance from power lines.

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.
- ▶ HSE inspections and reviews.
- ▶ HSE meetings and training.
- ▶ HSE improvements to procedures and equipment.
- ▶ HSE suggestions received.
- ▶ Reports of near-misses.
- ▶ Housekeeping improvements.
- ▶ HSE behaviors exhibited by employees.
- ▶ Risk assessments completed.
- ▶ Incidents investigated.
- ▶ Reduction in the number of accidents/incidents.

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

HSE outcomes are 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.

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?

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 or incident 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.

Quiz Yourself

Answers can be found on page 33.

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

- a. Discourage
- b. Employees
- c. Behavior
- d. Responses
- e. Consistent

1. To be effective, an HSE program must involve _____ in the decision-making process.
2. People must change their _____ to make a workplace safer.
3. Make timely, appropriate _____ to every suggestion made by employees.
4. Never _____ anyone from making suggestions or from reporting injuries and unsafe conditions.
5. People will follow your lead only if your daily decisions and actions are _____ with your message.

Lesson 3

Objectives

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

HSE Issues for a Diverse Workforce

As employers and supervisors, 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.

You must also keep in mind that diversity can affect an employee's understanding of safety issues.

Language Barriers

When language barriers arise, 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, it can be helpful to make bilingual mentors 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.

Cultural Diversity

Attitudes about HSE 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. Visit with your employees often to make sure they understand that they should never risk their safety to finish a job.

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 HSE 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.

Questions to Ask Workers:

- ▶ Was safety considered important where you worked before?
- ▶ What safety rules are you used to observing?
- ▶ Can you tell me some reasons why people don't always work safely?

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 long-term employee.
- ▶ Always model the appropriate behavior. Everyone learns by observing — if long-term employees take dangerous shortcuts, so will young workers.

Accident Report Youth Crushed Beneath Tractor

Summary of NIOSH FACE Report IA 95-009

A 12-year-old boy was driving a tractor too close to a ditch when it overturned, crushing him to death. The tractor had no safety belt or ROPS structure.



Observe U.S. Department of Labor regulations for employing youth.

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 following websites:

U.S. Department of Labor's Youth Rules webpage:

<http://www.youthrules.dol.gov/>

OSHA's Teen Worker webpage:

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

Youth under age 18 are prohibited from the following (exceptions are allowed in some circumstances, visit the U.S. Department of Labor website 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
- ▶ excavation operations

Youth ages 14 to 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
- ▶ warehousing and storage.

These lists are revised periodically, and there are many exceptions for certain industries. Refer to the websites above for the most current information.

Quiz Yourself

Answers can be found on page 34.

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

- a. HSE training
- b. Fairly
- c. Older
- d. Sizes
- e. Demonstrate

1. To help overcome language barriers, always _____ a task.
2. The best way to establish trust with workers is to develop strong personal relationships and treat everyone _____.
3. Provide tools and equipment of various _____ so the tool fits the worker.
4. Challenge _____ employees to share their wisdom with younger workers who are just starting out.
5. Require young workers to successfully complete job-specific _____ before performing any new duties.

Follow Government Regulations

OSHA and other agencies have established standards to promote health, safety, and environmental protection 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 website at <http://www.osha.gov>.

Environmental Protection Agency (EPA)

If your company applies pesticides, you will also need to comply with safety regulations established by the EPA. For help with pesticide regulations, contact your local or state Cooperative Extension Service, your regional EPA office or visit the EPA website at <http://www.epa.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 website 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 national eXtension website: <https://www.extension.org> or the National Institute of Food and Agriculture, or NIFA: <https://nifa.usda.gov/extension>.

Lesson 4

Objective

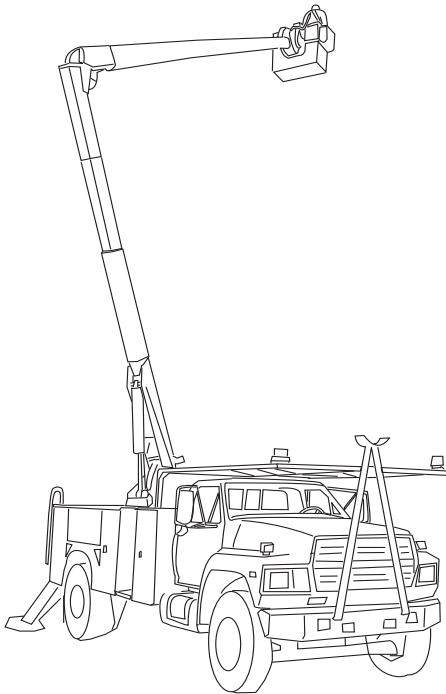
1. Identify government regulations specific to the 10 most common OSHA citations.

Accident Report One Worker Killed, Another Injured as Bucket Truck Overturns

Summary of OSHA Accident Inspection 101439917
Two workers failed to set the outriggers before raising themselves in a bucket truck. The truck overturned as they worked high above the ground. One worker fell to his death. The other sustained a broken leg.



Train workers to use bucket trucks and other aerial lifts safely. This includes stabilizing the vehicle in a level position and setting the outriggers before raising the lift.



10 Most Common OSHA Violations in Landscaping and Horticultural Services

During OSHA inspections of landscaping and horticultural services worksites in fiscal year 2009, the 10 most commonly cited safety regulations were as follows:

1. Vehicle-Mounted Elevating and Rotating Work Platforms (29 CFR 1910.67)

This standard identifies requirements for aerial lifts, also known as bucket trucks and cherry pickers. Requirements include:

- ▶ Aerial lifts must be designed and manufactured according to industry standards and any field modifications must be approved by the manufacturer.
- ▶ Workers must be properly trained, observe safe operating procedures and use fall protection equipment (e.g. harness and lanyard attached to the bucket or boom).
- ▶ Aerial lifts must be set up safely before use and controls must be tested at the beginning of each day.
- ▶ Capacities and limitations of aerial lifts must not be exceeded.
- ▶ Precautions must be taken when working near power lines.
- ▶ Aerial lifts must be properly secured before travel. Never remove a truck while workers are in the bucket unless the equipment is specifically designed for that purpose.
- ▶ Operation of upper and lower controls must be properly coordinated.
- ▶ Test of electrical insulation must be performed periodically.

Compliance Guidelines

A complete copy of standard 29 CFR 1910.67 can be found on the Internet: <http://www.osha.gov/comp-links.html>

2. Personal Protective Equipment (29 CFR 1910.132)

This standard requires employers to provide Personal Protective Equipment (PPE). Employers must conduct an assessment to determine what PPE is necessary. They must also make sure PPE is appropriate, that it fits properly and that it is adequately maintained. Finally, employers must provide training to workers. For landscaping and horticultural services, PPE commonly includes items such as:

Safety Glasses or Goggles

Eye protection may be required when workers are exposed to flying particles, impact by objects, chemicals, and other eye hazards.

Face Shields

Face protection may be required when workers are exposed to flying particles, impact by objects, chemicals, welding and other hazards.

Hearing Protection

Ear plug or muffs must *be available* if workers are exposed to noise

levels that average 85 decibels (dBA) or more for an 8-hour workday. Ear plugs or muffs must *be worn* if workers are exposed to noise levels that average 90 dBA or more during the workday (employees who have not had a baseline audiogram *must wear* hearing protection if the 8-hour average is 85 dBA or more).

Hard Hats

Head protection may be required when workers encounter falling objects or electrical current.

Cut-Resistant Leg Protection

Cut-resistant leg protection is required when workers operate chainsaws. An exception can be made if leg protection increases the risk of falling while climbing. An exception can also be made if the employee is working in an aerial lift (bucket truck) meeting certain requirements.

Gloves

Appropriate gloves may be required when workers are at risk of exposure to sharp edges, chemicals, burning surfaces, electrical current and other hazards.

Footwear

Protective footwear may be required when workers are at risk of injury due to chainsaws, falling or rolling objects, crushing or penetrating materials or electrical hazards.

Electrical Insulating Materials

Electrical insulating blankets, matting, covers, line hoses, gloves and sleeves may be required if workers are exposed to power lines and other electrical conductors.

Respirators

Respiratory protection may be required if workers are exposed to hazardous airborne dusts, vapors, gases, mists or fumes.

Compliance Guidelines

Practical guidelines for complying with the personal protective equipment standard can be found on the Internet:

OSHA Publication 3151-12R 2003, Personal Protective Equipment

Personal Protective Equipment

<http://www.osha.gov/Publications/osha3151.pdf>

OSHA PPE webpage

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



Accident Report

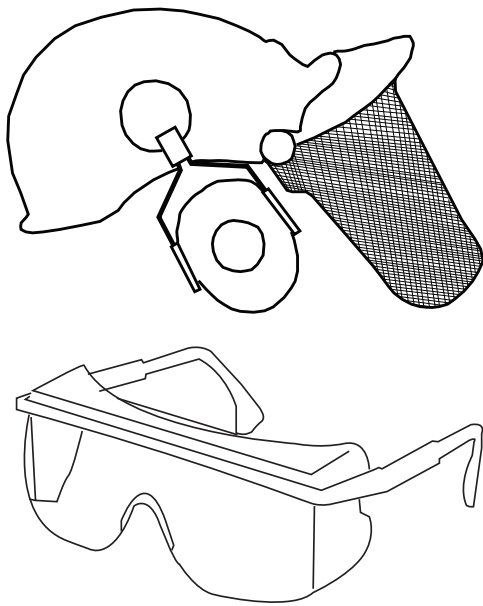
Worker Bleeds to Death When Leg is Slashed by Chainsaw

Summary of Worksafe New Brunswick Hazard Alert.

A worker felled a large tree and was using a chainsaw to cut the tree into smaller sections. As he cut through the trunk, the chainsaw suddenly struck his thigh. Co-workers heard him yell and came running, but there was little they could do. He bled to death on the way to the hospital.



Provide cut-resistant leggings (chaps), and train your workers to wear them while operating chainsaws.



3. Eye and Face Protection (29 CFR 1910.133)

Employers must provide workers appropriate eye or face protection when exposed to hazards such as flying particles, impact by objects, liquid chemicals and radiant energy from welding. Eye and face protection must comply with industry standards and must not interfere with a worker's prescription lenses.

In landscaping and horticultural services, employees commonly need eye protection when operating chainsaws, wood chippers and string trimmers. Eye or face protection may also be needed when pouring gasoline and other hazardous chemicals and when mixing or applying pesticides. Finally, protection is typically needed while welding, cutting, brazing and when using lasers.

To protect against particles and impact, safety glasses should be equipped with side shields. To protect from chemical splashes, goggles are usually a better choice. For welding, cutting, brazing and lasers, goggles and face shields must be rated for intensity (and in some cases wavelength) of radiation emitted.

Compliance Guidelines

Practical guidelines for complying with the eye and face protection standard can be found on the Internet:

OSHA Eye and Face Protection e-Tool

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

OSHA Publication 3151-12R 2003

Personal Protective Equipment

<http://www.osha.gov/Publications/osha3151.pdf>

OSHA Eye and Face Protection webpage

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

Accident Report

Employee's Eye Cut by Flying Debris

Summary of OSHA Accident Inspection 119806867

An employee was mowing grass with a tractor, but was not wearing safety glasses. He looked back and a piece of metal was thrown from the mower and punctured his right eye. He lost all vision in that eye.



Require employees to wear eye protection when operating mowing equipment.

4. Hazard Communication (29 CFR 1910.1200)

The hazard communication standard requires employers to inform workers about the hazards of chemicals in the workplace. Chemicals that are commonly used in the landscaping and horticultural services industry include fuels, lubricants, pesticides, cleaning solvents and 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.
- ▶ Compile a list of the hazardous chemicals in the workplace that is keyed to the appropriate hazard warnings. (Note: Pesticide labeling is covered by separate regulations enforced by the EPA.)
- ▶ Ensure that Material Safety Data Sheets (MSDS) 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 Internet:

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 webpage

<http://www.osha.gov/dsg/haz.com/index.html>

5. Head Protection (29 CFR 1910.135)

Employers must ensure that workers wear hard hats when there is a potential for head injury due to falling objects. In addition, employers must require workers to wear hard hats that protect from electrical shock near power lines and other electrical conductors that could contact the head.

- ▶ Hard hats must conform to industry standards. Hard hats are rated according to the type of impact protection and class of electrical protection they offer.
- ▶ Type I hard hats protect against impact from falling objects (top impact).
- ▶ Type II hard hats protect against top, side, front and rear impact.
- ▶ Class E hard hats also protect against high voltage.

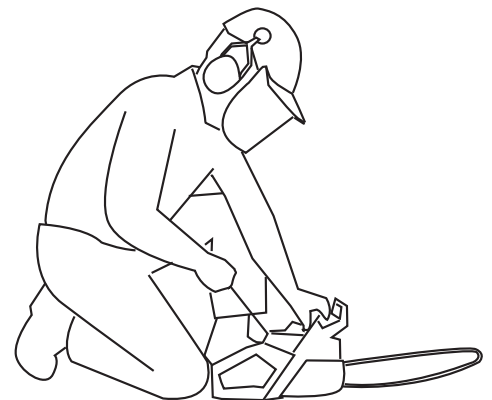
Accident Report Worker Burned to Death When Gasoline Vapors Ignite

OSHA Accident Inspection 17680331

A worker was cutting grass with a riding mower. He stopped the mower and shut off the engine. Without first letting the mower cool, he opened the gas cap to check the fuel level. As he opened the cap, gasoline vapors were ignited by heat from the engine. Flames engulfed the worker, and he died of his burns.



Train your employees to work safely with chemicals. For instance, they should always shut down equipment and let engines cool for five minutes before refueling.



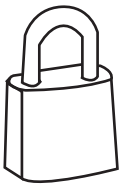
Accident Report Worker Struck in Head by Chainsaw

OSHA Inspection 108433095

On a May afternoon, a worker was using a chainsaw to cut branches overhead. Suddenly, the chainsaw kicked back and struck him in the head. The chainsaw slashed his face severely, from his forehead to his upper lip. He was hospitalized for his injuries.



Provide chainsaw helmets or other appropriate head protection for workers who trim trees.




Accident Report Worker Electrocuted While Cutting Limbs Near Power Line

OSHA Inspection 108433095

NIOSH Fatality Assessment and Control Evaluation
Report 86-30-II.

A worker was using an aluminum pole saw to cut limbs from a dead tree near a 7,200-volt power line. He was sawing overhead, and a section of limb fell towards him. As he tried to avoid being struck by the limb, his pole saw touched the power line. He was electrocuted and died.

 **Train your workers to keep themselves and all equipment away from power lines. Only "qualified line-clearance tree trimmers" are allowed to work near energized power lines.**

- ▶ ▶ A Type I Class E hard hat protects against both top impact and high voltage, and is commonly worn in this industry.

Compliance Guidelines

Practical guidelines for complying with the occupational head protection standard can be found on the Internet:

OSHA Publication 3151-12R 2003

Personal Protective Equipment

<http://www.osha.gov/Publications/osha3151.pdf>

OSHA's PPE webpage

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

6. General Duty Clause (Section 5 (a) (1) of the OSH Act)

The general duty clause requires employers to protect workers from recognized hazards that are capable of causing serious injury or death. Employers are typically cited under the General Duty Clause when a serious hazard is obvious, but there is no specific OSHA standard to cover it.

7. Selection and Use of Electrical Work Practices (29 CFR 1910.333)

Each year, many tree services workers are electrocuted by overhead power lines. OSHA requires special training and equipment for anyone who works within 10 feet of a power line up to 50,000 volts. Greater distances must be maintained for higher voltages. These distances apply to employees and to all equipment, including ladders, saws, and aerial lifts. Other requirements of the standard include:

- ▶ Lockout/tagout procedures must be followed when working on all electrical equipment.
- ▶ Ladders used near power lines or exposed electrical parts must have nonconductive side rails.
- ▶ Metal jewelry and other conductive apparel may not be worn near power lines or exposed electrical parts.
- ▶ When working on equipment with exposed electrical parts, employees must have special training, equipment, and proper lighting.

Compliance Guidelines

Practical guidance for complying with the standard for selection and use of electrical work practices can be found on the Internet:

OSHA Electrical Safety webpage

<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 webpage

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

8. Machines, General Requirements (29CFR 1910.212)

The standard for machine guarding requires employers protect workers from hazardous machine parts such as mower blades, wood chipper knives, and moving hydraulically-driven machine parts.

Examples of guarding methods:

- ▶ Shields and guards on lawn mower discharge chutes, wood chipper feed chutes, and PTO drivelines.
- ▶ Kill-switch bar on the handle of a walk-behind mower.
- ▶ Lap bar on a skid steer loader.

Compliance Guidelines

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

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 webpage

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

OSHA Machine Guarding e-Tool

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

9. Respiratory Protection (29CFR 1910.134)

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 include the following:

- ▶ Annual medical exam for employees who wear respirators.
- ▶ Annual fit test for all employees who wear 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 Internet:

Accident Report Worker Injured by Debris Thrown from Unguarded Mower

OSHA Inspection 108433095

OSHA Accident Inspection 111968764

A worker was cutting grass with a 60-inch riding mower at a baseball field. His partner was working nearby. The mower struck some rusty metal parts that were hidden in the grass. Since the mower was missing a side discharge shield, it threw the metal about 30 feet, hitting the co-worker with such force that it ruptured his spleen. He suffered massive internal bleeding, and half his spleen was removed in surgery.



Inspect your equipment regularly, and train workers to maintain guards on all mechanical equipment.

Accident Report Worker Dies of CO Poisoning

Summary of OSHA Accident Inspection 123812240

An employee was working on a lawn tractor with the engine running inside a garage. Unknown to the worker, exhaust from the mower was building up to dangerous levels within the garage. Soon, the worker was overcome by carbon monoxide and he died.



Take steps to protect workers from dangerous gases and other airborne hazards. For instance, make sure there is adequate ventilation when workers operate fuel-powered equipment indoors.

OSHA Respiratory Protection Program webpage

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

OSHA Respiratory Protection e-Tool

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

10. Crawler locomotive and truck cranes (29 CFR 1910.180)

This standard establishes requirements for lifting loads with truck cranes, crawler cranes and locomotive cranes. There are requirements for:

- ▶ Designated personnel
- ▶ Load ratings
- ▶ Inspections and testing
- ▶ Maintenance
- ▶ Handling loads
- ▶ Ballast/counterweights
- ▶ Housekeeping inside the cab
- ▶ Refueling
- ▶ Fire extinguishers
- ▶ Numerous other issues

Compliance Guidelines

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

OSHA Crane, Derrick, and Hoist Safety webpage

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

Quiz Yourself

Answers can be found on page 35.

Circle the correct answer.

1. Some of the most common OSHA citations in landscaping and horticultural services include:

- a. Personal protective equipment
- b. Hazard communication
- c. General duty clause
- d. All of the above

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

- a. Hard hats
- b. Assessment
- c. Chemicals

2. Employers must conduct an _____ to determine what personal protective equipment is necessary.

3. The hazard communication standard requires employers to inform workers about the hazards of _____ in the workplace.

4. Employers must ensure that workers wear _____ when there is a potential for head injury due to falling objects.

Conclusion

Managing HSE is your responsibility. Creating a successful HSE 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 HSE program. Use this information to keep you and your employees safe.

Quiz Yourself

Answers can be found on page 36.

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

2. Some of the most common OSHA citations in the landscaping and horticultural services include:

- a. Vehicle-mounted elevating and rotating work platforms
- b. Respiratory protection
- c. Eye and face protection
- d. All of the above

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

- a. Evaluate
- b. Meetings
- c. Behavior
- d. Mentors

3. Frequent HSE _____ give employees a chance to express their views and bring attention to important concerns.

4. At least once a year, _____ your program and set new goals.

5. In large workforces, it can be helpful to make bilingual _____ easy to identify.

6. When training employees, especially young workers, always model the appropriate _____.

Quiz Yourself Solutions

Lesson 1

Circle the correct answer.

1. Consequences of not following government regulations can include:

- a. Criminal charges
- b. Jail time
- c. OSHA fines up to \$124,709 per occurrence.

d. All of the above

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

- a. Machinery
- b. Responsibility
- c. Accidents
- d. Managed

2. HSE can and should be **d** .

3. Each employee has the right and **b** to help in the ongoing HSE improvement process.

4. An effective HSE program will reduce **c** and costly injuries.

5. Motor vehicles, **a** accidents and tree trimming hazards are major causes of injury in landscaping and horticultural services.

Lesson 2

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

- a. Discourage
- b. Employees
- c. Behavior
- d. Responses
- e. Consistent

1. To be effective, an HSE program must involve _____ **b** _____ in the decision-making process.
2. People must change their _____ **c** _____ to make a workplace safer.
3. Make timely, appropriate _____ **d** _____ to every suggestion made by employees.
4. Never _____ **a** _____ anyone from making suggestions or from reporting injuries and unsafe conditions.
5. People will follow your lead only if your daily decisions and actions are _____ **e** _____ with your message.

Lesson 3

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

- a. HSE training
- b. Fairly
- c. Older
- d. Sizes
- e. Demonstrate

1. To help overcome language barriers, always _____ **e** _____ a task.
2. The best way to establish trust with workers is to develop strong personal relationships and treat everyone _____ **b** _____.
3. Provide tools and equipment of various _____ **d** _____ so the tool fits the worker.
4. Challenge _____ **c** _____ employees to share their wisdom with younger workers who are just starting out.
5. Require young workers to successfully complete job-specific _____ **a** _____ before performing any new duties.

Lesson 4

Circle the correct answer.

1. Some of the most common OSHA citations in landscaping and horticultural services include:

- a. Personal protective equipment
- b. Hazard communication
- c. General duty clause

d. All of the above

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

- a. Hard hats
- b. Assessment
- c. Chemicals

2. Employers must conduct an **b** to determine what personal protective equipment is necessary.

3. The hazard communication standard requires employers to inform workers about the hazards of **c** in the workplace.

4. Employers must ensure that workers wear **a** when there is a potential for head injury due to falling objects.

Conclusion

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

2. Some of the most common OSHA citations in the landscaping and horticultural services include:

- a. Vehicle-mounted elevating and rotating work platforms
- b. Respiratory protection
- c. Eye and face protection

d. All of the above

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

- a. Evaluate
- b. Meetings
- c. Behavior
- d. Mentors

3. Frequent HSE **b** give employees a chance to express their views and bring attention to important concerns.

4. At least once a year, **a** your program and set new goals.

5. In large workforces, it can be helpful to make bilingual **d** easy to identify.

6. When training employees, especially young workers, always model the appropriate **c** .

Notes

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Research and Extension

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