

OSHA ELECTRICAL TRANSMISSION & DISTRIBUTION PARTNERSHIP

CONSTRUCTION OUTREACH TRAINING COURSE, 10-HOUR







CONSTRUCTION OUTREACH TRAINING COURSE, 10-HOUR

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CONSTRUCTION OUTREACH TRAINING COURSE, 10-HOUR

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INTRODUCTION TO OSHA

Introduction to OSHA

This is a one-hour training component emphasizing employee rights. It is required content in 10– and 30– hour OSHA Construction, General Industry, and Maritime Outreach courses. OSHA developed this content to support the Secretary of Labor's goal of strengthening the voice of employees on the job. This content incorporates recent changes to the Hazard Communication Standard (HCS) to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

TRAINING OBJECTIVES

Upon completion of this module you should be able to:

- Summarize OSHA's mission
- Summarize the concept of OSHA standards
- State employer duties in OSHA's general duty clause
- State employee duties in OSHA's general duty clause
- Describe how OSHA enforces its standards
- Summarize the process of reporting safety hazards
- Give an example of a whistleblower protection
- List employee resources

OSHA Poster



Job Safety and Health IT'S THE LAW!

All workers have the right to:

- A safe workplace.
- Raise a safety or health concern with your employer or OSHA, or report a workrelated injury or illness, without being retaliated against.
- Receive information and training on job hazards, including all hazardous substances in your workplace.
- Request an OSHA inspection of your workplace if you believe there are unsafe or unhealthy conditions. OSHA will keep your name confidential. You have the right to have a representative contact OSHA on your behalf.
- Participate (or have your representative participate) in an OSHA inspection and speak in private to the inspector.
- File a complaint with OSHA within 30 days (by phone, online or by mail) if you have been retaliated against for using your rights.
- See any OSHA citations issued to your employer.
- Request copies of your medical records, tests that measure hazards in the workplace, and the workplace injury and illness log.

This poster is available free from OSHA.

Contact OSHA. We can help.

Employers must:

- Provide employees a workplace free from recognized hazards. It is illegal to retaliate against an employee for using any of their rights under the law, including raising a health and safety concern with you or with OSHA, or reporting a work-related injury or illness.
- Comply with all applicable OSHA standards.
- Report to OSHA all work-related fatalities within 8 hours, and all inpatient hospitalizations, amputations and losses of an eye within 24 hours.
- Provide required training to all workers in a language and vocabulary they can understand.
- Prominently display this poster in the workplace.
- Post OSHA citations at or near the place of the alleged violations.

FREE ASSISTANCE to identify and correct hazards is available to small and mediumsized employers, without citation or penalty, through OSHA-supported consultation programs in every state.



1-800-321-OSHA (6742) • TTY 1-877-889-5627 • www.osha.gov

Employer Must Pay for and Provide PPE



HANDOUT #2 Employers Must Provide and Pay for PPE



Personal Protective Equipment (PPE)

The Occupational Safety and Health Administration (OSHA) requires that employers protect you from workplace hazards that can cause injury or illness. Controlling a hazard at its source is the best way to protect workers. However, when engineering, work practice and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment (PPE) to you and ensure its use.

PPE is equipment worn to minimize exposure to a variety of hazards. Examples include items such as gloves, foot and eye protection, protective hearing protection (earplugs, muffs), hard hats and respirators.

Employer Obligations

- Performing a "hazard assessment" of the workplace to identify and control physical and health hazards.
- ✓ Identifying and providing appropriate PPE for employees.
- Training employees in the use and care of the PPE.
- ✓ Maintaining PPE, including replacing worn or damaged PPE.
 ✓ Periodically reviewing undating and
 - Periodically reviewing, updating and evaluating the effectiveness of the PPE program.

Workers should:

- ✓ Properly wear PPE
- ✓ Attend training sessions on PPE
- ✓ Care for, clean and maintain PPE, and
- ✓ Inform a supervisor of the need to repair or replace PPE.

Employers Must Pay for Personal Protective Equipment (PPE)

On May 15, 2008, a new OSHA rule about employer payment for PPE went into effect. With few exceptions, OSHA now requires employers to pay for personal protective equipment used to comply with OSHA standards. The final rule does not create new requirements regarding what PPE employers must provide.

The standard makes clear that employers cannot require workers to provide their own PPE and the worker's use of PPE they already own must be completely voluntary. Even when a worker provides his or her own PPE, the employer must ensure that the equipment is adequate to protect the worker from hazards at the workplace.

Examples of PPE that Employers Must Pay for Include:

- Metatarsal foot protection
- Rubber boots with steel toes
- Non-prescription eye protection
- Prescription eyewear inserts/lenses for full face respirators
- Goggles and face shields
- Fire fighting PPE (helmet, gloves, boots, proximity suits, full gear)
- Hard hats
- Hearing protection
- Welding PPE

April 2017

Employer Must Pay for and Provide PPE



HANDOUT #2 Employers Must Provide and Pay for PPE



Payment Exceptions under the OSHA Rule

Employers are not required to pay for some PPE in certain circumstances:

- Non-specialty safety-toe protective footwear (including steel-toe shoes or boots) and non-specialty prescription safety eyewear provided that the employer permits such items to be worn off the job site. (OSHA based this decision on the fact that this type of equipment is very personal, is often used outside the workplace, and that it is taken by workers from jobsite to jobsite and employer to employer.)
- Everyday clothing, such as long-sleeve shirts, long pants, street shoes, and normal work boots.
- Ordinary clothing, skin creams, or other items, used solely for protection from weather, such as winter coats, jackets, gloves, parkas, rubber boots, hats, raincoats, ordinary sunglasses, and sunscreen
- Items such as hair nets and gloves worn by food workers for consumer safety.
- Lifting belts because their value in protecting the back is questionable.
- When the employee has lost or intentionally damaged the PPE and it must be replaced.

OSHA Standards that Apply

OSHA General Industry PPE Standards

- 1910.132: General requirements and payment
- 1910.133: Eye and face protection
- 1910.134: Respiratory protection
- 1910.135: Head protection
- 1910.136: Foot protection
- 1910.137: Electrical protective devices
- 1910.138: Hand protection

OSHA Construction PPE Standards

- 1926.28: Personal protective equipment
- 1926.95: Criteria for personal protective equipment
- 1926.96: Occupational foot protection
- 1926.100: Head protection
- 1926.101: Hearing protection
- 1926.102: Eye and face protection
- 1926.103: Respiratory protection

There are also PPE requirements in shipyards and marine terminals and many standards on specific hazards, such as 1910.1030: Bloodborne pathogens and 1910.146: Permit-required confined spaces.

OSHA standards are online at www.osha.gov.

Sources:

- Employers Must Provide and Pay for PPE, New Jersey Work Environment Council (WEC)
 Fact Sheet
- OSHA Standards, 1910.132(h) and 1926.95(d)
- Employer Payment for Personal Protective Equipment Final Rule, Federal Register: November 15, 2007 (Volume 72, Number 220

April 2017

Your Rights as a Whistleblower



Your Rights as a Whistleblower

You may file a complaint with OSHA if your employer retaliates against you by taking unfavorable personnel action because you engaged in protected activity relating to workplace safety or health, asbestos in schools, cargo containers, airline, commercial motor carrier, consumer product, environmental, financial reform, food safety, health insurance reform, motor vehicle safety, nuclear, pipeline, public transportation agency, railroad, maritime, and securities laws.

Whistleblower Laws Enforced by OSHA

Each law requires that complaints be filed within a certain number of days after the alleged retaliation.

- Asbestos Hazard Emergency Response Act (90 days)
- · Clean Air Act (30 days)
- Comprehensive Environmental Response, Compensation and Liability Act (30 days)
- Consumer Financial Protection Act of 2010 (180 days)
- Consumer Product Safety Improvement Act (180 days)
- Energy Reorganization Act (180 days)
- Federal Railroad Safety Act (180 days)
- Federal Water Pollution Control Act (30 days)
- International Safe Container Act (60 days)
 Moving Ahead for Progress in the 21st Container
- Moving Ahead for Progress in the 21st Century Act (motor vehicle safety) (180 days)
- National Transit Systems Security Act (180 days)
- Occupational Safety and Health Act (30 days)
- Pipeline Safety Improvement Act (180 days)
- Safe Drinking Water Act (30 days)
- Sarbanes-Oxley Act (180 days)
- Seaman's Protection Act (180 days)
- Section 402 of the FDA Food Safety Modernization Act (180 days)
- Section 1558 of the Affordable Care Act (180 days)
- Solid Waste Disposal Act (30 days)
- Surface Transportation Assistance Act (180 days)
- Toxic Substances Control Act (30 days)
- Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (90 days)

Unfavorable Personnel Actions

Your employer may be found to have retaliated against you if your protected activity was a

contributing or motivating factor in its decision to take unfavorable personnel action against you. Such actions may include:

- Applying or issuing a policy which provides for an unfavorable personnel action due to activity protected by a whistleblower law enforced by OSHA
- Blacklisting
- · Demoting
- · Denying overtime or promotion
- Disciplining
- · Denying benefits
- · Failing to hire or rehire
- Firing or laying offIntimidation
- · Making threats
- Reassignment to a less desirable position, including one adversely affecting prospects for promotion
- Reducing pay or hours
- Suspension

Filing a Complaint

If you believe that your employer retaliated against you because you exercised your legal rights as an employee, contact OSHA as soon as possible because you must file your complaint within the legal time limits.

An employee can file a complaint with OSHA by visiting or calling the local OSHA office or sending a written complaint to the closest OSHA regional or area office. Written complaints may be filed by facsimile, electronic communication, hand delivery during business hours, U.S. mail (confirmation services recommended), or other third-party commercial carrier. The date of the postmark, facsimile, electronic communication, telephone call, hand delivery, delivery to a third-party commercial carrier, or in-person filing at an OSHA

Your Rights as a Whistleblower

office is considered the date filed. No particular form is required and complaints may be submitted in any language.

For OSHA area office contact information, please call 1-800-321-OSHA (6742) or visit www.osha.gov/html/RAmap.html.

Upon receipt of a complaint, OSHA will first review it to determine whether it is valid on its face. All complaints are investigated in accord with the statutory requirements.

With the exception of employees of the U.S. Postal Service, public sector employees (those employed as municipal, county, state, territorial or federal workers) are not covered by the *Occupational Safety and Health Act* (OSH Act). Non-federal public sector employees and, except in Connecticut, New York, New Jersey, the Virgin Islands, and Illinois, private sector employees are covered in states which operate their own occupational safety and health programs approved by Federal OSHA. For information on the 27 State Plan states, call 1-800-321-OSHA (6742), or visit www.osha.gov/dcsp/osp/index.html.

A federal employee who wishes to file a complaint alleging retaliation due to disclosure of a substantial and specific danger to public health or safety or involving occupational safety or health should contact the Office of Special Counsel (www.osc.gov) and OSHA's Office of Federal Agency Programs (www.osha.gov/dep/enforcement/dep_offices.html).

Coverage of public sector employees under the other statutes administered by OSHA varies by statute. If you are a public sector employee and you are unsure whether you are covered under a whistleblower protection statute, call 1-800-321-OSHA (6742) for assistance, or visit www.whistleblowers.gov.

How OSHA Determines Whether Retaliation Took Place

The investigation must reveal that:

- · The employee engaged in protected activity;
- The employer knew about or suspected the protected activity;
- · The employer took an adverse action; and
- The protected activity motivated or contributed to the adverse action.

If the evidence supports the employee's allegation and a settlement cannot be reached, OSHA will generally issue an order, which the employer may contest, requiring the employer to reinstate the employee, pay back wages, restore benefits, and other possible remedies to make the employee whole. Under some of the statutes the employer

must comply with the reinstatement order immediately. In cases under the Occupational Safety and Health Act, Asbestos Hazard Emergency Response Act, and the International Safe Container Act, the Secretary of Labor will file suit in federal district court to obtain relief.

Partial List of Whistleblower Protections

Whistleblower Protections under the OSH Act

The OSH Act protects workers who complain to their employer, OSHA or other government agencies about unsafe or unhealthful working conditions in the workplace or environmental problems. You cannot be transferred, denied a raise, have your hours reduced, be fired, or punished in any other way because you used any right given to you under the OSH Act. Help is available from OSHA for whistleblowers.

If you have been punished or discriminated against for using your rights, you must file a complaint with OSHA within 30 days of the alleged reprisal for most complaints. No form is required, but you must send a letter or call the OSHA Area Office nearest you to report the discrimination (within 30 days of the alleged discrimination).

You have a limited right under the OSH Act to refuse to do a job because conditions are hazardous. You may do so under the OSH Act only when (1) you believe that you face death or serious injury (and the situation is so clearly hazardous that any reasonable person would believe the same thing); (2) you have tried, where possible, to get your employer to correct the condition, and been unable to obtain a correction and there is no other way to do the job safely; and (3) the situation is so urgent that you do not have time to eliminate the hazard through regulatory channels such as calling OSHA. For details, see www.osha.gov/as/opa/ worker/refuse.html. OSHA cannot enforce union contracts or state laws that give employees the right to refuse to work.

Whistleblower Protections in the Transportation Industry

Employees whose jobs directly affect commercial motor vehicle safety or security are protected from retaliation by their employers for, among other things, reporting violations of federal or state commercial motor carrier safety or security regulations, or refusing to operate a vehicle because of violations of federal commercial motor vehicle safety or security regulations or because they have a reasonable apprehension of death or serious injury to themselves or the public and they have sought from the employer and been unable to obtain correction of the hazardous condition.

Your Rights as a Whistleblower

Similarly, employees of air carriers, their contractors or subcontractors who raise safety concerns or report violations of FAA rules and regulations are protected from retaliation, as are employees of owners and operators of pipelines. their contractors and subcontractors who report violations of pipeline safety rules and regulations. Employees involved in international shipping who report unsafe shipping containers are also protected. In addition, employees of railroad carriers or public transportation agencies, their contractors or subcontractors who report safety or security conditions or violations of federal rules and regulations relating to railroad or public transportation safety or security are protected from retaliation.

Whistleblower Protections for Voicing Environmental Concerns

A number of laws protect employees from retaliation because they report violations of environmental laws related to drinking water and water pollution, toxic substances, solid waste disposal, air quality and air pollution, asbestos in schools, and hazardous waste disposal sites. The *Energy Reorganization Act* protects employees

from retaliation for raising safety concerns in the nuclear power industry and in nuclear medicine.

Whistleblower Protections When Reporting Corporate Fraud

Employees who work for publicly traded companies or companies required to file certain reports with the Securities and Exchange Commission are protected from retaliation for reporting alleged mail, wire, bank or securities fraud; violations of SEC rules or regulations of the SEC; or violations of federal laws relating to fraud against shareholders.

Whistleblower Protections for Voicing Consumer Product Concerns

Employees of consumer product manufacturers, importers, distributors, retailers, and private labelers are protected from retaliation for reporting reasonably perceived violations of any statute or regulation within the jurisdiction of the Consumer Product Safety Commission.

More Information

To obtain more information on whistleblower laws, go to www.whistleblowers.gov.

This is one of a series of informational fact sheets highlighting OSHA programs, policies, or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards and regulations, refer to Title 29 of the Code of Federal Regulations. Because some of these whistleblower laws have only recently been enacted, the final regulations implementing them may not yet be available in the Code of Federal Regulations but the laws are still being enforced by OSHA. This information will be made available to sensory-impaired individuals upon request. Voice phone number: (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For assistance, contact us. We can help. It's confidential.



U.S. Department of Labor www.osha.gov (800) 321-OSHA (6742)

DWP FS-3638 04/2013

We are OSHA, We Can Help

We Are OSHA







Workers' rights under the OSH Act

Workers are entitled to working conditions that do not pose a risk of serious harm. To help assure a safe and healthful workplace, OSHA also provides workers with the right to:

- Ask OSHA to inspect their workplace;
- Use their rights under the law without retaliation;
- Receive information and training about hazards, methods to prevent harm, and the OSHA standards that apply to their workplace. The training must be in a language you can understand;
- Get copies of test results done to find hazards in the workplace;
- Review records of work-related injuries and illnesses; and
- Get copies of their medical records.



Who OSHA covers

Private sector workers

Most employees in the nation come under OSHA's jurisdiction. OSHA covers private sector employers and employees in all 50 states, the District of Columbia, and other



U.S. jurisdictions either directly through Federal OSHA or through an OSHA-approved state program. State-run health and safety programs must be at least as effective as the Federal OSHA program. To find the contact information for the OSHA Federal or State Program office nearest you, call 1-800-321-OSHA (6742) or go to www.osha.gov.

State and local government workers

Employees who work for state and local governments are not covered by Federal OSHA, but have OSH Act protections if they work in those states that have an OSHA-approved state program. The following 22 states or territories have OSHA-approved programs:

Alaska Arizona California Hawaii Indiana lowa Maryland Michigan Kentucky Nevada **New Mexico** Minnesota North Carolina Oregon South Carolina Tennessee Utah Vermont Virginia Washington Wyoming

Puerto Rico

Five additional states and one U.S. territory have OSHA-approved plans that cover public sector workers only:

Connecticut Illinois Maine

New Jersey New York Virgin Islands

Private sector workers in these five states and the Virgin Islands are covered by Federal OSHA.

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Federal government workers

Federal agencies must have a safety and health program that meets the same standards as private



employers. Although OSHA does not fine federal agencies, it does monitor federal agencies and responds to workers' complaints. The United States Postal Service (USPS) is covered by OSHA.

Not covered under the OSH Act:

- · Self-employed;
- Immediate family members of farm employers who do not employ outside employees;
- Workplace hazards regulated by another federal agency (for example, the Mine Safety and Health Administration, the Department of Energy, or Coast Guard).

OSHA standards: Protection on the job



OSHA standards are rules that describe the methods that employers must use to protect their employees from hazards. There are OSHA standards for Construction work, Agriculture, Maritime operations, and General

Industry, which are the standards that apply to most worksites. These standards limit the amount of hazardous chemicals workers can be exposed to, require the use of certain safe practices and equipment, and require employers to monitor hazards and keep records of workplace injuries and illnesses.

Examples of OSHA standards include requirements to provide fall protection, prevent trenching cave-ins, prevent some infectious diseases, assure that workers



safely enter confined spaces, prevent exposure to harmful substances like asbestos, put guards on machines, provide respirators or other safety equipment, and provide training for certain dangerous jobs.

Employers must also comply with the General Duty Clause of the OSH Act, which requires employers to keep their workplace free of serious recognized hazards. This clause is generally cited when no OSHA standard applies to the hazard.

Workers can ask OSHA to inspect their workplace

Workers, or their representatives, may file a complaint and ask OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA standards. A worker can tell OSHA not to let their employer know who filed the complaint. It is a violation of the OSH Act for an employer to fire, demote, transfer or retaliate in any way against a worker for filing a complaint or using other OSHA rights.

Written complaints that are signed by a worker or their representative and submitted to the closest OSHA office are more likely to result in an on-site OSHA inspection. You can call 1-800-321-OSHA (6742) to request a complaint form from your local OSHA office or visit www.osha. gov/pls/osha7/eComplaintForm.html to submit

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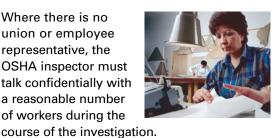
We are OSHA, We Can Help

the form online. Completed forms can also be faxed or mailed to the local OSHA office. Most complaints sent in online may be resolved informally over the phone with your employer.

When the OSHA inspector arrives, workers and their representatives have the right to:

- · Go along on the inspection;
- Talk privately with the OSHA inspector; and
- Take part in meetings with the inspector and the employer before and after the inspection is conducted.

Where there is no union or employee representative, the OSHA inspector must talk confidentially with a reasonable number of workers during the



When an inspector finds violations of OSHA standards or serious hazards, OSHA may issue citations and fines. A citation includes the methods an employer may use to fix a problem and the date by when the corrective actions must be completed. Workers only have the right to challenge the deadline for when a problem must be resolved. Employers, on the other hand, have the right to contest whether there is a violation or any other part of the citation. Workers or their representatives must notify OSHA that they want to be involved in the appeals process if the

If you send in a complaint requesting an OSHA inspection, you have the right to find out the results of the OSHA inspection and request a review if OSHA does not issue citations.

employer challenges a citation.

Employer responsibilities

Employers have the responsibility to provide a safe workplace. Employers MUST provide their employees with a workplace that does not have serious hazards and must follow all OSHA safety and health standards. Employers must find and correct safety and health problems. OSHA further requires employers to try to eliminate or reduce hazards first by making changes in working conditions rather than just relying on masks, gloves, earplugs or other types of personal protective equipment. Switching to safer chemicals, implementing processes to trap harmful fumes, or using ventilation systems to clean the air are examples of effective ways to get rid of or minimize risks.

Employers MUST also:

- Prominently display the official OSHA Job Safety and Health – It's the Law poster that describes rights and responsibilities under the OSH Act. This poster is free and can be downloaded from www.osha.gov.
- Inform workers about chemical hazards through training, labels, alarms, color-coded systems, chemical information sheets and other methods.
- Provide safety training to workers in a language and vocabulary they can understand.
- Keep accurate records of work-related injuries and illnesses.
- · Perform tests in the workplace, such as air sampling, required by some OSHA standards.
- Provide required personal protective equipment at no cost to workers.*
- Provide hearing exams or other medical tests required by OSHA standards.

We are OSHA, We Can Help







- Post OSHA citations and injury and illness data where workers can see them.
- Notify OSHA within 8 hours of a workplace fatality or within 24 hours of any workrelated inpatient hospitalization, amputation or loss of an eye (1-800-321-OSHA [6742]).
- Not retaliate against workers for using their rights under the law, including their right to report a work-related injury or illness.
- * Employers must pay for most types of required personal protective equipment.

The law protects workers from retaliation when using their OSHA rights

The OSH Act protects workers who complain to their employer, OSHA or other government agencies about unsafe or unhealthful working conditions in the workplace or environmental problems. You cannot be transferred, denied a raise, have your hours reduced, be fired, or punished in any other way because you used any right given to you under the OSH Act. Help is available from OSHA for whistleblowers.

If you have been punished or retaliated against for using your rights, you must file a complaint with OSHA within 30 days from the date the retaliatory decision was both made and communicated to you. No form is needed, but you must call OSHA within 30 days of the alleged retaliation at 1-800-321-OSHA (6742) and ask to speak to the OSHA area office nearest you to report the retaliation.

You have the right to a safe workplace

The Occupational Safety and Health Act of 1970 (OSH Act) was passed to prevent workers from being killed or seriously harmed at work. The law requires that employers provide their employees with working conditions that are free of known dangers. The **Act created the Occupational Safety** and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA also provides information, training and assistance to workers and employers. Workers may file a complaint to have OSHA inspect their workplace if they believe that their employer is not following OSHA standards or there are serious hazards.

Contact us if you have questions or want to file a complaint. We will keep your information confidential. We are here to help you. Call our toll-free number at 1-800-321-OSHA (6742) or go to www.osha.gov.



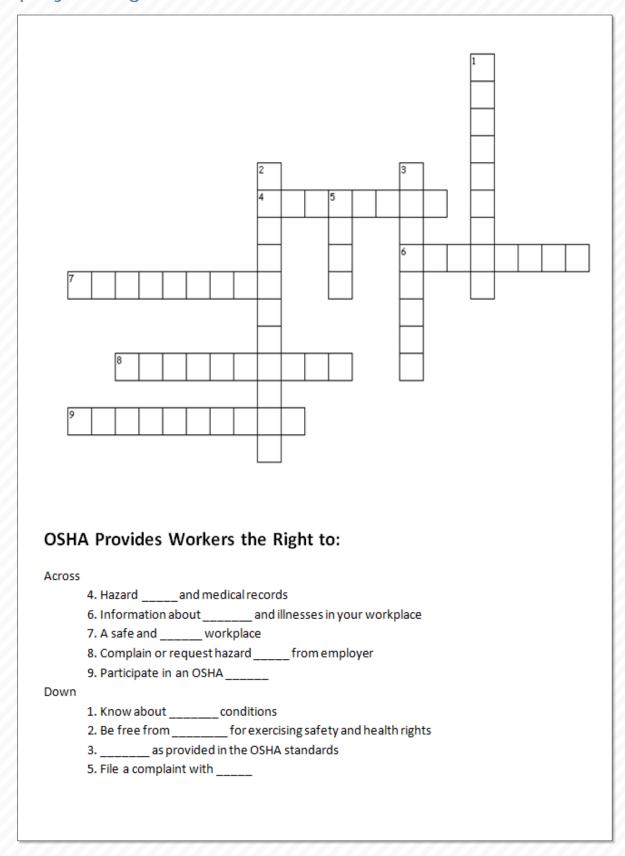


Occupational Safety and Health Administration

-800-321-OSHA (6742) TTY 1-877-889-5627 www.osha.gov

OSHA 3334-09R 2015

Employee Rights Crossword Puzzle







PERSONAL PROTECTIVE EQUIPMENT

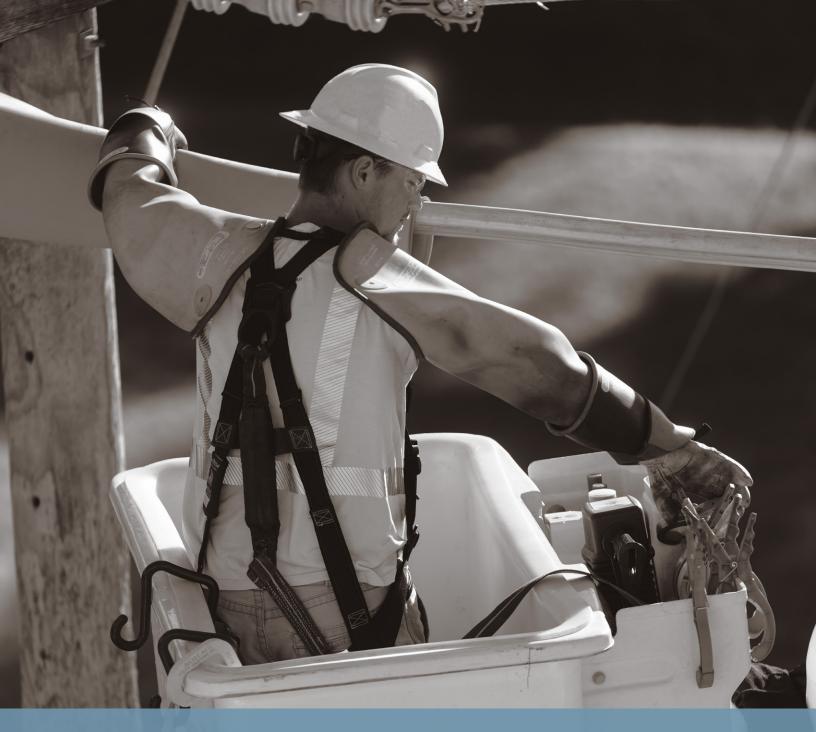
Personal Protective Equipment

The OSHA Strategic Partnership's (OSP) intent in this training module is that all employees understand OSHA regulations and safe work practices that apply to PPE, as well as learning care, maintenance, and how to use PPE to complete tasks.

TRAINING OBJECTIVES

Upon completion of this module you should be able to:

- Summarize the hierarchy of controls
- Explain employer PPE responsibilities
- Explain employee PPE responsibilities
- · Give examples of workplace hazards that may require PPE
- State the procedure for field testing rubber insulating gloves
- Summarize how protective clothing protects wearers from arc flash injuries



ELECTRICAL SAFETY

Electrical Safety

The OSHA Strategic Partnership's (OSP) intent in this training module is that all employees understand OSHA regulations and safe work practices that apply to electrical safety for employees that work on or near energized parts.

TRAINING OBJECTIVES

Upon completion of this module, you should be able to:

- Summarize the four types of electrical injury
- · Classify qualified and non-qualified employees
- Define minimum approach distance (MAD)
- · Summarize methods of care for insulating equipment
- State the inspection procedure for insulating equipment
- Indicate where to find electrical safety information on the job site

OUICK CARD

Electrical Safety



Electrical Safety

Electrical hazards can cause burns, shocks and electrocution (death).

Safety Tips

- Assume that all overhead wires are energized at lethal voltages. Never assume that a wire is safe to touch even if it is down or appears to be insulated.
- Never touch a fallen overhead power line. Call the electric utility company to report fallen electrical lines.
- Stay at least 10 feet (3 meters) away from overhead wires during cleanup and other activities. If working at heights or handling long objects, survey the area before starting work for the presence of overhead wires.
- If an overhead wire falls across your vehicle while you are driving, stay inside the vehicle and continue to drive away from the line. If the engine stalls, do not leave your vehicle. Warn people not to touch the vehicle or the wire. Call or ask someone to call the local electric utility company and emergency services.
- Never operate electrical equipment while you are standing in water.
- Never repair electrical cords or equipment unless qualified and authorized.
- Have a qualified electrician inspect electrical equipment that has gotten wet before energizing it.
- If working in damp locations, inspect electric cords and equipment to ensure that they are in good condition and free of defects, and use a ground-fault circuit interrupter (GFCI).
- Always use caution when working near electricity.

For more complete information:



OSHA 3298-09N-05

High-voltage (>1,000 V) Electrical Safety and Injuries





Health and Safety Fact Sheet: High Voltage (>1000 Volts) Electrical Safety and Injuries October 2009

Overview

The purpose of this Fact Sheet is to raise awareness of the risks of high voltage electrical shock, review how workers can protect themselves during high voltage electrical work, and summarize how proper medical treatment can be provided in an expedient and effective way for any worker injured by this type of hazard. While this Fact Sheet has been provided for members of the Energy Recovery Council (ERC), all industries and personnel who might encounter the effects of a high voltage electrical shock can benefit from the details of this Fact Sheet.







Into renewable electricity

Why is there a concern about high voltage electrical shock?

The Bureau of Labor Statistics data from 2001 through 2007 reports an average of approximately 250 deaths per year occurring from electric injury in the United States. Deaths related to exposure to electric current consistently make up around 4% of all occupational fatalities (2). In addition to fatalities, major high-voltage electrical trauma can produce devastating physical injuries. Repeated removal of tissue, amputations, and extensive rehabilitation are common in high voltage electrical injuries. It is not unusual for treatment to require tissue removal over several days, and frequently the damage becomes significant enough to warrant amputation. Limb amputation rates for victims who experience direct electrical contact can be as high as 75%, and most victims who survive high-voltage electrical shock are left permanently disabled (12).

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Electrical Injuries - How does your body get damaged?

In non-technical terms, damage from high voltage electrical fields is caused primarily by heating and to a lesser extent the breakdown of cell membranes. In most cases, heat damage occurs instantly at the point of contact, but injury to deeper tissues requires several seconds. The tissues in our body, with the exception of the skin, are reasonably good conductors. If a person comes into contact with a high-voltage power source, the outer layer of the skin is usually destroyed by heat within milliseconds. Once the outer layer of the skin is destroyed, large currents are able to pass through and produce tissue damage, especially to skeletal muscle and nerve. In addition to tissue damage, an arc blast can cause other types of injuries from the physical force of impacts including falls, broken bones, and concussions. In addition, other non-physical issues may affect employees with electrical injuries. Examples of these include problems with the speed of mental processing, attention, concentration, memory, and post traumatic stress disorders. These conditions have the potential to be as life-changing as a major physical injury (3).

What Are Burn Treatment Concerns for High Voltage Electrical Shock?

For voltages above 1000V, electrical burn wounds possess special clinical characteristics. Below that level, cardiac fibrillation is the major risk while skin lesions are typically minor. Above 1000 V, there is a risk of wounds which can lead to amputation.

The most challenging aspect of initial treatment is that the tissue in the electric current path, unless there has been significant heating, may appear very normal. Typically, it is at least 1 to 3 days before the true extent of damage can be recognized. Furthermore, healthy skin and fat often conceal injured muscles, nerves, and bone. Thus, it is very difficult to accurately diagnose and localize tissue damage scattered throughout the current path before irreversible cell damage has occurred. Therefore, even when the injury doesn't involve any visible tissue damage, electrical shock survivors may be left with significant consequences.

Electrical burns represent only 4 % of all burns. So, research and specific expertise for their treatment has been slow in developing. Presently, there is no method of estimating the damage done to the tissue by heat which has already dissipated, sometimes leaving the tissue with a misleading appearance of health.

It is very important that employees and employers understand that even with no visible burn, survivors may be faced with long-term muscular pain and discomfort, fatigue, inadequate balance and coordination or even limb amputation.

Though we often refer to exit and entry wounds, with alternating current there is no such thing as current entering or leaving. Instead, one contact point is better (lower

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impedance) than the other. Sometimes, the skin damage visible at the hospital may be very small while internal damage extends farther. For this reason, it is very important for workers to get to a specialized burn center or to tell the 911 operator that this is a 1000 V shock exposure that requires the attention of a burn center specialist.

Treatment is complicated by progressive tissue death (necrosis) (10, 11) and the need for multiple surgical interventions. Surgeons have difficulty identifying the living versus dead tissue. The complicated pattern of electrical burns inside the body is difficult to map. (6, 9)

What do workers need to know?

- Ask what controls are in place and what is required.
- Engage in high voltage electrical work only if you are trained and authorized to do so.
- Follow plant procedures when working on any electrical equipment, particularly breakers, motor control centers (MCC rooms) and transformers.
- Take the necessary precautions appropriate for the hazard class you are working with.
- Wear the personal protective equipment associated with the voltage you are handling.
- Maintain current first aid and cardiopulmonary resuscitation training (CPR), including the use of an automated external defibrillator (AED) where an AED program is in place. Every effort should be made to work on DEENERGIZED circuits and equipment, only, or have CPR- and AED-trained persons available. Such a requirement means that two workers need to be present when circuits and equipment are not deenergized.
- As with any hazard in the workplace, the hierarchy of control for electrical exposure proceeds from engineering, work practice controls, and then to the least preferred method of PPE.
- Work practice controls such as worker placement, training programs and work
 procedures will continue to be a huge effort in the industry. As we learn more
 and more about electrical risks, we will adjust these programs to meet the
 needs of a changing industry.

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- If a worker has an exposure to 1000 volts or greater, initiate an emergency response action. Be specific to the 911 operator that the injury is from contact with over 1000 V and that immediate evaluation by a burn center is needed.
- Accidents can occur while changing fuses under power, bridging electrical terminals with a metal watch band, testing 600 V voltages with an instrument in the wrong setting or in the creation of arc burns in welding.
- If the worker is exposed to contact with parts energized at more than 600 volts, a second person should be present while the work is being performed. This additional person is available to assist in the event that the worker receives an electric shock.
- Lastly, selecting PPE is always a challenge. While rubber glove requirements and use have been around a long time, the evolution of electrical flame retardant clothing is relatively new and still evolving. While NFPA 70E gives great guidance, it too is evolving as more information becomes available. One only needs to look at the changes in the guidance document over the years and most recently the 2004 vs. 2009 revisions. In the past, NFPA 70E had a hazard/risk category for tasks performed on energized equipment rated 1000V and up (that category is now limited through 38kV). While most employees in the industry are not exposed to these higher levels for day to day operations, there is the occasional exposure in our switchyards that will now need to be re-evaluated to determine adequacy of PPE for switching, inspection, grounds keeping and other activities that take place here. The PPE itself continues to evolve with manufacturers providing lighter and more flexible clothing as the need has grown, and so what we used last year may be different from next year because of technological change.

The key to protecting workers is assuring knowledge of equipment and procedures, worker awareness, and striving toward continuous improvement. As the industry continues to fully recognize the hazards associated with electricity, we will focus on continuous improvement to provide the best protection we can for our work forces.

What are the Regulations and How Are Waste-to-Energy Workers Protected?

NFPA 70 E – Standard for Electrical Safety in the Workplace 29 CFR 1910.137 – Electrical Protective Devices 29 CFR 1910 Subpart S – Electrical 29 CFR 1910.147 – The Control of Hazardous Energy (Lockout/Tagout) 29 CFR 1910.269 - Electric Power Generation, Transmission, and Distribution ANSI C2, the National Electrical Safety Code

High-voltage (>1,000 V) Electrical Safety and Injuries





What are other resources on high voltage burns?

- 1. American Burn Association, Burn Incidence Fact Sheet, 2008
- United States Department of Labor. Bureau of Labor Statistics. Census of Fatal Occupational Injuries, 2006-2007.
- 3. The University of Chicago, Electrical Trauma Program Mission Statement, retrieved December 15, 2008 from http://etrp.bsd.uchicago.edu/index3.html?content=mission.html
- 4. Daniel, R, Ballard, P, Heroux, P, Zelt R, Howard, C, High Voltage Electrical Injury: Acute Pathophysiology, J Hand Surg, 13A:44-9, 1988.
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- 8. Zelt,R, Ballard, P, Heroux, P, Daniel R, Experimental High Voltage Electrical Burns: The Role of Progressive Necrosis, Plastic Surgery Forum 9: 220, 1988
- 9. Zelt, R, Daniel, R, Ballard, P, Brissette, Y, Heroux, P, High Voltage Electrical Injury: Chronic Wound Evaluation, Plastic Reconstructive Surgery, 1988.
- Zelt, R, Ballard, P, Common, A, Heroux, P, and Daniel R, Experimental High-Voltage Electrical Burns: Role of Progressive Necrosis, Surg. Forum 37: 624, 1986
- 11. Zelt, R, Ballard, Heroux, P, and Daniel, R, Experimental High Voltage Electrical Burns: The Role of Progressive Necrosis. Plast. Surg. Forum 9: 220, 1986
- 12. Rouse, R, Dimick, A, The treatment of electrical injury compared to burn injury: a review of pathophysiology and comparison of patient management protocols. J Trauma 1978; 18; 43-47.



GROUNDING AND BONDING

Grounding and Bonding

The OSHA Strategic Partnership's (OSP) intent in this module is that all employees understand OSHA regulations and safe work practices that apply to temporary grounding and bonding.

TRAINING OBJECTIVES

Upon completion of this module, you should be able to:

- · State the three basic concepts of electrical theory
- List the reasons for installing temporary grounds
- List the ways a circuit can become unintentionally re-energized
- Define step potential
- Define touch potential
- Discuss terms associated with grounding and bonding
- Discuss grounding and bonding equipment selection and performance
- State the procedure to de-energize a circuit
- List the methods for establishing an equal potential work zone

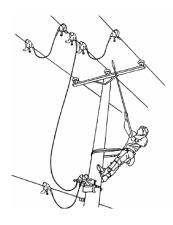
FACT SHEET

Grounding and Bonding

Grounding & Bonding Fact Sheet

IF IT'S NOT GROUNDED, IT'S NOT DEAD!

How many times have we heard that said? Well the fact is, just because a circuit or piece of equipment is grounded, even properly, that's no guarantee that there is no hazardous potential present. To begin to understand temporary protective grounding, we need to understand the purpose for grounding. All circuits are protected by current sensitive devices like fuses, reclosing devices, and breakers. Those devices are designed to de-energize a circuit, or remove the source of potential in the event of a system over-load or an unexpected fault.



For electrical workers, we install grounds for two reasons. By installing grounding jumpers in a grounded and short-circuited configuration we ensure that the circuit is de-energized (removed from the source) and if the circuit was to accidentally become re-energized, the current sensitive devices we mentioned earlier will be activated. The design intent of those devices is to remove the circuit or equipment from the source of potential by providing an open point.

Key Points to Consider

Plan the Job, Plan for Safety! Prior to installing grounding equipment, conduct a tailboard or pre-job briefing. Take this time to explain the procedure or task, discuss the hazards associated with the task, and discuss how workers are going to protect themselves from those hazards.



Take the time to perform a good, in-depth tailboard or pre-job briefing. When you consider the economic and <u>human</u> costs of accidents, talk is cheap!

Accidents are not!

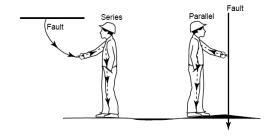


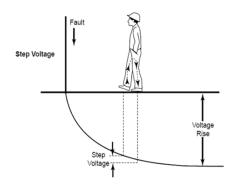
- Always inspect all temporary grounding devices prior to use. Remove from service and do not use any damaged or defective equipment.
- Always, Always, Always, test the circuit or equipment for the absence of potential (voltage) before installing grounds!
- Use only an approved device like a voltage indicator or noisy tester to test for potential. Fuzzing is not an approved method and can, in some cases, give you a false reading!

FACT SHEET

Grounding and Bonding

- When installing grounding jumpers, the first clamp installed is to the ground source.
- When removing grounding jumpers, the last clamp removed is to the ground source.
- The installation and removal of temporary grounding equipment is NOT a bare-hand or rubber glove procedure. What does this mean? Grounding devices, with the exception of running type grounds at wire set-ups must be installed and removed using a <u>live-line tool</u>.
- Temporary grounding devices are designed to cause circuit interrupting devices to operate. In the event of an unintentional re-energizing of a circuit, the interrupting device; the fuse, breaker or reclosing device requires time to operate. Until the interrupting device operates, the entire circuit is energized at system voltage!
- Avoid hazardous differences in potential! Current flow through the body can be harmful and even fatal.
- If your body completes the circuit by creating a series path or a parallel path between two different potentials, harmful levels of current could flow through your body.

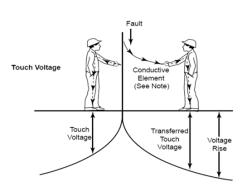




Be aware of the hazards of Step and Touch Potential. No matter what temporary grounding method is used, workers on the ground could be exposed to hazardous potential differences.

FACT SHEET

Grounding and Bonding



- Workers on the ground must be protected by the use of rubber insulating footwear, insulating mats or grounding mats
- Avoid touching any equipment such as bucket trucks, digger derricks, wire stringing equipment, etc, that could become unintentionally energized
- Temporary protective grounding devices must be able to conduct the maximum available fault current that could flow at the point of grounding.

Cable Size	Clearing Time	Amperes
2/0	15 Cycles	33,000
	30 Cycles	26,000
4/0	15 Cycles	53,000
	30 Cycles	41,000

This table from ASTM F-855 shows the current carrying capacity of 2/0 and 4/0 copper grounding cable.

These ratings could change if the cable is damaged, if clamps are damaged, or if the proper clamp is not used.

- Always ensure that the clamp matches the part.
- Do not attach round jaw clamps to a flat surface.
- Do not attach flat jaw clamps to a round surface.



Your only true protection is when you protect yourself from dangerous difference in electrical potential. This statement holds true no matter what type of work you are performing, whether it be live-line bare-hand work, using the rubber glove method on distribution circuits, or performing de-energized work.

The key to working safely is to recognize and understand where hazardous potential differences are, and knowing how to protect yourself and your co-workers from them.





FALL PROTECTION

Fall Protection

The OSHA Strategic Partnership's (OSP) intent is this module is that all employees understand OSHA regulations and safe work practices related to fall protection and prevention as well as using positioning systems when completing job tasks.

TRAINING OBJECTIVES

Upon completion of this module, you should be able to:

- Give an example of fall protection
- Give an example of a fall arrest system
- State two fall protection system requirements
- State two fall arrest system requirements
- State requirements for fall protection equipment to pass inspection
- Summarize anchorage requirements
- List the four variables for calculating fall distance

ABCs of Fall Protection

ABC's Of FALL PROTECTION

ANCHORAGE

(The Most Important Component)

Make sure the anchor point is strong enough to withstand the forces generated by a fall. For the tie off to be legal, it must support 3600 lbs with certification, 5,000 pounds in the absence of certification.

Anchorage's shall be inspected every 6 months by a competent person.

Always attempt to tie off above your head.

(A six foot man who ties off at his feet could fall as much as 12 feet).

Always attempt to tie off directly above your head to avoid the pendulum effect.

The shorter the tie-off, the shorter the fall. Always use the shortest lanyard possible.

Look out for sharp beams. Wrapping lanyards around beams could cut them during the tremendous forces generated during a fall. Use a cross-arm strap or a carabiner.



Two types- Cross Over and Vest style

The chest strap should be in your mid-chest area.

> Elastic harnesses will not absorb shock. They are simply more comfortable

Side and Front "D" rings are for positioning only!

Do not punch holes in a harness to increase the size.

Full Body harness; It should be snug but it shouldn't bind.

1800 pounds to the body.

Full body harnesses are manda-

tory for fall arrest and attached to

a shock absorbing lanyard or self

retracting lifeline with a maxiumum arresting force of less than

Harness should fit so that the center grommets are used most often.

Make sure all leg snaps or buckles are attached.

CONNECTION MEANS (The Critical Link)

Never tie a knot in lanyard. This will reduce the strength

Attach lanyards to back "D"-Ring only.

Rope lanyard may be attached to side "D" Ring for positioning only.

Use only Lanyards with double locking snaps.

Mandatory when used for fall protection and designed for a maximum free fall of 6 feet or less.



When using shock absorbing lanyards attach shock pack end to back "D"- Ring.

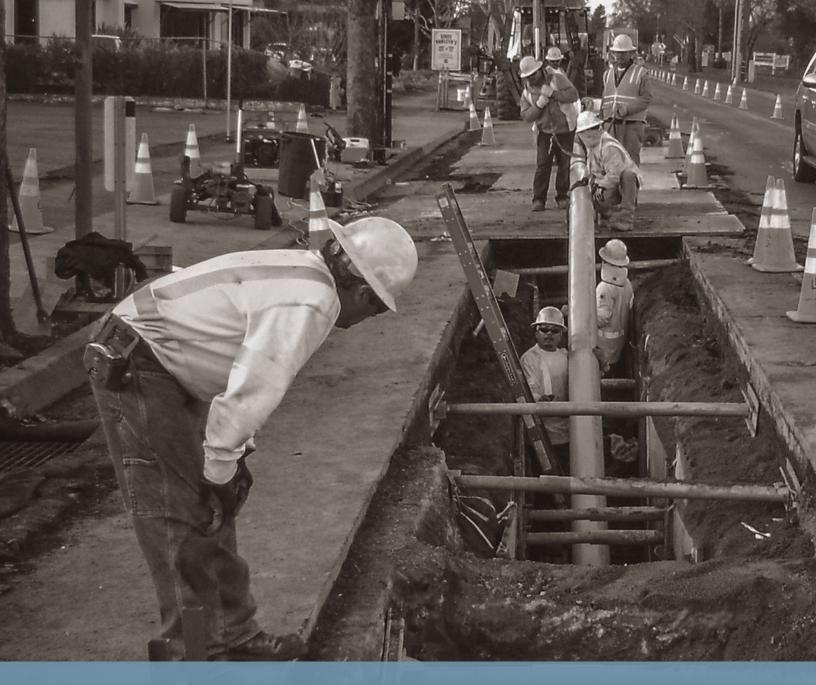
> Retractable life lines are faster reacting, allow a larger working area and reduces shock. Do not use at more than a 30° angle.

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TRENCHING AND EXCAVATIONS

Trenching and Excavations

The OSHA Strategic Partnership's (OSP) intent in this module is that all employees understand OSHA regulations for trenching & excavation work, including hazards and safeguards.

TRAINING OBJECTIVES

Upon completion of this module, you should be able to:

- Summarize what it means to be a trenching and excavation competent person
- Explain the hazards of working in an excavation
- Describe the various types of protective systems
- Define ingress
- Define egress

QUICK CARD

Working Safely in Trenches



Working Safely in Trenches

Two workers are killed every month in trench collapses. Each worker in a trench shall be protected from a cave-in by an adequate protective system. Some of the protective systems for trenches are:

· Sloped for stability; or



 Cut to create stepped benched grades (Type A or B soil only); or



 Supported by a system made with materials such as posts, beams, shores or planking and hydraulic jacks; or





 Shielded by a trench box to protect workers in a trench.



Excavated or other materials and equipment must be at least 2 feet back from the edge of a trench; and

A safe way to exit must be provided within 25 feet of workers in a trench.





A competent person must inspect trenches daily and when conditions change. An unprotected trench is an early grave. Do not enter an unprotected trench.

For more information:



U.S. Department of Labor www.osha.gov (800) 321-OSHA (6742) TTY (887) 889-5627 OSHA 3243-09R-1

Soil Classification Fact Sheet

SOIL TYPES

a. Stable rock

Stable rock is natural solid mineral matter that crews can excavate to form vertical sides that remain intact while exposed, typically granite or sandstone. Determining this soil type may be difficult unless cracks exist that run into or away from the excavation.

b. Type A soils

Type A soils are cohesive with an unconfined compressive strength of 1.5 tons per square foot (tsf), or 144 kilopascal (kPa) or greater. Examples of Type A soils are clay, silty clay, sandy clay, clay loam, and in some cases silty clay loam and sandy clay loam.

Note: Type A soil does not feature fissures and is not subject to vibration. It will not show previous signs of disturbance and is not part of a sloping, layered system of 4 horizontal to 1 vertical (4H:1V) or greater. It will not feature seeping water.

c. Type B soils

Type B soils are cohesive with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa). Examples are angular gravel, silt, silt loam, previously disturbed soils unless otherwise classified as Type C.

Note: These soils meet unconfined compressive strength or cementation requirements of Type A but feature fissures and are subject to vibration. This soil occurs in layered systems sloping into the trench at a slope less than 4H:1V.

d. Type C soils

Type C soils are cohesive with an unconfined compressive strength of 0.5 tsf (48 kPa) or less. These soils include granular soils like gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping, and submerged unstable rock.

Note: This soil occurs in a sloped, layered system where the layers dip into the excavation or have a slope of four horizontal to one vertical (4H:1V) or greater.

e. Multi-type soil

This soil occurs in layers. Crew must classify this soil based on its weakest layer. Each layer can have its own class if a more stable layer lies below. For example, type C soil resting on a layer of stable rock.

TESTING SOIL

a. Pocket penetrometer

Penetrometers are direct-reading, spring-operated instruments that determine unconfined compressive strength of saturated cohesive soils. Their readings occur in tsf or kPa. However, they may have error rates in the range of \pm 20-40%.

b. Shear vane

To find a soil's unconfined compressive strength with a shear vane, press its blades into a section of level, undisturbed soil. Slowly turn the torsional knob until soil failure. Multiply the direct instrument reading by two to calculate results in tons per square foot or kilograms per square centimeter.

c. Thumb penetration

A person firmly presses one thumb into the soil they want to classify. If through great force their thumb makes a dent, the soil is probably Type A. If their thumb penetrates up to length of the thumbnail, it is probably Type B soil. If their thumb fully penetrates, it is Type C soil. This classification method is subjective and the least accurate.

d. Dry strength

Dry soil crumbles into individual grains with moderate pressure. Dry soil that clumps and breaks into smaller clumps that break with effort is probably clay in combination with gravel, sand, or silt. If soil breaks into clumps that do not break down further, consider the soil unfissured unless fissuring occurs.

e. Plasticity or wet thread

Mold a moist soil sample into a ball and roll it to approximately 1/8 inch thick by two inches long. Hold the sample by one end. If it does not break or tear, the soil is cohesive.

f. Visual

Survey the entire excavation site including soil near the site and the soil crews are excavating. If it remains in clumps, it is probably cohesive. If it appears to be coarse-grained sand or gravel, it is probably granular. Also check for signs of vibration and for cracks along the failure zone that indicate tension. Look for soil disturbance and check open sides of excavations for soil layering. Also look for bulging, boiling, or sluffing soil, as well as surface water seeping from the excavation. If standing water exists in the excavation, check for quick conditions. Also check areas around the excavation for intrusions into the failure zone, as well as surcharging and the spoil distance from the edge of the excavation.

SOIL MECHANICS

a. Tension cracks

Tension cracks usually form horizontally at 0.5 to 0.75 times the trench depth, measured from the top of the vertical face of the trench.

b. Sliding or sluffing

Sliding or sluffing may occur with tension cracks.

c. Toppling

Tension cracks can also cause the trench's vertical face to topple into the excavation if it shears along the tension crack line.

d. Subsidence or bulging

Unsupported excavations can create unbalanced soil stress, which causes subsidence at the surface and bulging of the vertical face of the trench. If uncorrected, this condition can cause face failure that traps or crushes employees in the trench.

e. Heaving or squeezing

Soil's downward pressure can cause bottom heaving or squeezing. This causes a bulge in the bottom of the excavation. Heaving and squeezing can occur despite shoring or shielding installation.

f. Boiling

Boiling occurs with upward water flow into the bottom of the excavation and produces a quick condition in the bottom of the cut. This can occur despite shoring or trench box use.

g. Unit weight of soils

This is the weight of one unit of a particular soil. Soil weight varies with type and moisture content. One cubic foot of soil can weigh from 110 to 140 pounds or more.

REVIEW CASE STUDIES

a. February 1, 2006

A 29-year-old male Hispanic laborer with five years of experience died when a two-foot-wide, 16-foot-long, and nine-foot-deep unprotected trench collapsed and covered him with soil during waterproofing work. He and four other laborers, all of whom mainly spoke Spanish and very little English, were hand digging the trench over two days at a private residence. The victim kneeled to inspect a broken drainpipe at the bottom of the trench. The victim's brother saw the soil strike him and knock his head against a basement wall. The trench wall collapsed, covering the victim with soil in seconds. Emergency response personnel pronounced him dead at the scene.

b. November 3, 2003

A 38-year-old male construction laborer died when a trench's unprotected eight-foot-high walls collapsed a few minutes after he entered. Five employees were excavating a gas line: a foreman who was a competent person, a lab technician who was a competent person, and three laborers including the victim. The foreman dug the trench with a track hoe to expose the gas line. After the crew extracted the line from its casing, the victim climbed into the trench with a saw to free the casing. The crew did not use sloping, benching, or shoring methods to support the trench. As the victim began sawing, the sides of the trench collapsed and buried him. He was declared dead at the scene.

EMPLOYEE RIGHTS AND RESPONSIBILITIES

- a. Employees have a right to:
 - i. A safe and healthful workplace
 - ii. Know about hazardous chemicals
 - iii. Information about injuries and illnesses in the workplace
 - iv. Complain or request hazard correction from the employer
 - v. File a confidential complaint with OSHA requesting workplace inspection
 - vi. Receive information and training about hazards, methods to prevent harm, and the OSHA standards that apply to their workplace
 - Training must occur in a language and vocabulary employees understand
 - vii. Get copies of their workplace medical records
 - viii. Participate in an OSHA inspection and speak with the inspector privately
 - ix. File a complaint with OSHA if the employer retaliates or discriminates against them for requesting an inspection or using other rights under the OSH Act
 - x. File a complaint if the employer punishes or discriminates against them for acting as a whistleblower

WHISTLEBLOWER PROTECTION

 OSHA's Whistleblower Protection Program enforces more than twenty statutes protecting employees who report violations of workplace safety

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JOB BRIEFINGS

Job Briefings

The OSHA Strategic Partnership's (OSP) intent in this module is that all employees understand OSHA regulations that apply to job briefings.

TRAINING OBJECTIVES

Upon completion of this module, you should be able to:

- Explain the need for job briefings
- Identify job briefing topics that crews should discuss prior to starting work
- Summarize employer responsibilities
- Summarize employee responsibilities



Job Briefing

BASIS

A job briefing is a human performance tool incorporating job safety analysis (JSA) that allows employees to think through a job and use their knowledge to ensure maximum safety and efficiency. Employees who will perform the work will prepare and lead job briefs. A supervisor or foreman must be present during verbal briefings for low hazard jobs and during documented job briefings for high hazard jobs to ensure employees meet briefing standards.

WHEN TO USE JOB BRIEFINGS

- · Low hazard jobs require a verbal job briefing.
- High hazard jobs require a documented job briefing using appropriate forms.

BEHAVIOR STANDARD

- Prepare a job briefing by reviewing procedures, work packages, job safety analysis, etc
- Supervisors, foremen, and employees jointly decide safe performance of tasks
- Emphasize using procedures including step text, job text, and spec sheets
- Supervisors and foremen will instruct employees working alone to consider job steps, hazards, and related precautions
- Conduct additional briefings if significant job changes occur
- Incorporate special precautions for tasks that involve resolving equipment issues

AT-RISK BEHAVIORS TO AVOID

- Lecturing
- · Separate briefings for different employees
- Covering irrelevant briefing items
- · Leaving all-stop out of the briefing
- Supervisor leading the briefing instead of employees who will do the job tasks
- · Briefing in a noisy or distracting environment
- Briefing duration being unreasonably long
- · Ignoring employee experience and familiarity with tasks



LIFTING AND RIGGING

Lifting and Rigging

The OSHA Strategic Partnership's (OSP) intent in this module is that all employees understand regulations and safe work practices for manual and mechanical material handling.

TRAINING OBJECTIVES

Upon completion of this module, you should be able to:

- List the main causes of crane accidents
- Explain the role of the competent person in pre-use inspection of rigging equipment
- Summarize the need for pre-planning a lift
- State the rigging-removal criteria
- State the procedure for a safe manual lift
- · Summarize the key points of lift truck safety

Material Handling



Material Handling Fact Sheet

Material handling using rigging hardware is a special skill which requires special tools, special methods, and a special mindset to safely lift, move and locate materials and equipment. The three most important points to remember when performing work using rigging hardware and techniques is:

- <u>ALWAYS</u> inspect your equipment before use. Do not use damaged or defective rigging hardware.
- NEVER exceed the rated capacity of the rigging hardware
- Stay clear of loads about to be lifted or moved and <u>NEVER</u> stand or place any part of your body under a suspended load.



Screw Pin Shackle or Clevis



Nylon Web Sling

- Look for wear at the bow section. Greater than 10% reduction in original width is requires removal from service
- Look for nicks, cuts, gouges or deformation of the body
- Look for wear or damage to the pin and pin threads and always ensure that the pin is fully screwed into the clevis body before lifting
- Only use rigging hardware for rigging jobs. Material shackles may be rated for the load but they are not designed to be used as rigging hardware
- Do not substitute a bolt or spud wrench for the original pin
- Slings with any cuts, nicks, tears, and/or other type damage must not be used
- All web slings must have legible tags that show the capacity in all hitch configurations, the manufacturer and the material of which it is made
- ✓ Sling angles reduce lifting capacity

Material Handling





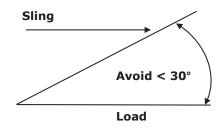
2-Way Chain Sling



Wire Rope Slings



Load Hook With Safety Latch



- ✓ Only lifting chains may be used for lifting
- Lifting chains must have a documented inspection performed at intervals no greater than every 12 months
- ✓ Lifting chains must be visually inspected before each use. The user must inspect all the links, hooks, rings, and any other attachment(s)
- Lifting chains must be tagged to show their capacity in each hitch configuration and the manufacturer
- Do not use cargo chains for lifting
- When inspecting wire rope check the sling body and the sling eyes for:
- Broken Wires, Kinks, Bird Caging, Crushed Strands, deformation of the sling body or eye
- ✓ Remember the D/d ratio to avoid sling damage
- ▼To calculate the D/d ratio, add together the diameter (D) of the object to be lifted and the diameter (d) of the sling, then divide the sum by the diameter of the sling. For lifting, Ratios of 18:1 or greater are desired
- ✓ Hooks designed to have safety latches must have properly working safety latches
- ✓ Never disable or tape open a hook latch
- ✓ When inspecting hooks, look for:
- Broken or missing latches
 - Bends, gouges, twists or deformation
- Stretched throat opening
- ✓ Deformation
- Sling angles and choker hitches reduce the rated capacity of ALL sling types
- ☑ Sling angles less than 30° should be avoided
- When sling angles are 30° the tension on each sling is equal to the total weight of the lifted load!

Luck Runs Out-Safety Doesn't!
Rig it Safe- Rig it Right

Manual Material Handling



Manual Material Handling

Safe lifting and carrying techniques are crucial to prevent painful and expensive injuries in the workplace. Unfortunately in practice, most workers do not consistently use safe practices. These unsafe practices place workers at great risk to their personal well-being.

Safe Lifting Prevents Major Injuries

Thousands of back injuries and other soft tissue injuries occur in the workplace each year, many leading to permanent pain and disability. These injuries are often caused by unsafe lifting and carrying of heavy or awkward objects, and are easily prevented. The most common types of job-related back injuries are:

- Strain—overused or overstretched muscles
- Sprain—torn ligaments from sudden movement
- Herniated disk—loss of cushioning ability from strain or age

Safe Lifting and Carrying Techniques

Safe lifting and carrying techniques are the key to dramatically reducing debilitating back and soft tissue injuries on the job. When lifting, workers should consider the following lifting safety tips:

- Consider using a machine if practical
- Warm up before lifting
- Use team lifting for heavy or awkward objects
- Avoid working in awkward positions
- Plan your route before you lift
- Bend at the knees, not the waist
- Lift with your legs, not your back
- Keep the load close to your body
- Avoid lifting above the shoulder level
- Avoid twisting
- Make sure you can see where you are going

Although improper lifting, carrying, and moving techniques are the primary cause of back and other soft tissue injuries, injuries are much more likely to occur when employees are in poor physical condition and overweight. So employees should be encouraged to maintain a healthy weight and good muscle tone. Just remember, you only have one body, if you don't take care of it, or abuse it, it will break down.



Wrong

Manual Material Handling





CONFINED AND ENCLOSED SPACES

Confined and Enclosed Spaces

The OSHA Strategic Partnership's (OSP) intent in this module is that all employees understand OSHA regulations and hazards that apply to operating in confined and enclosed spaces.

TRAINING OBJECTIVES

Upon completion of this module, you should be able to:

- Give an example of a confined space hazard
- Define the two types of confined space
- Define "enclosed space"
- List employer responsibilities for work in confined spaces
- Summarize training requirements for confined spaces
- · List pre-entry test requirements
- State the emergency procedure for work in confined spaces

OUICK CARD

Permit-Required Confined Spaces in General Industry



Permit-Required Confined Spaces in General Industry



A confined space has limited openings for entry or exit, is large enough for entering and working, and is not designed for continuous worker occupancy. Confined spaces include underground vaults, tanks, storage bins, manholes, pits, silos, underground utility vaults and pipelines. See 29 CFR 1910.146.

Permit-required confined spaces are confined spaces that:

- May contain a hazardous or potentially hazardous atmosphere.
- · May contain a material which can engulf an entrant.
- May contain walls that converge inward or floors that slope downward and taper into a smaller area which could trap or asphyxiate an entrant.
- May contain other serious physical hazards such as unguarded machines or exposed live wires.
- Must be identified by the employer who must inform exposed employees of the existence and location of such spaces and their hazards.

What to Do

- Do not enter permit-required confined spaces without being trained and without having a permit to enter.
- Review, understand and follow employer's procedures before entering permit-required confined spaces and know how and when to exit.
- · Before entry, identify any physical hazards.
- Before and during entry, test and monitor for oxygen content, flammability, toxicity or explosive hazards as necessary.
- Use employer's fall protection, rescue, air-monitoring, ventilation, lighting and communication equipment according to entry procedures.
- Maintain contact at all times with a trained attendant either visually, via phone, or by two-way radio. This monitoring system enables the attendant and entry supervisor to order you to evacuate and to alert appropriately trained rescue personnel to rescue entrants when needed.

You have a right to a safe workplace. If you have questions about workplace safety and health, call OSHA. It's confidential. We can help!

For more information:



www.osha.gov (800) 321-OSHA (6742)

OSHA 3214-09R-11



FOCUS 4 WORKSHEETS

QUICK CARD

Top Four Construction Hazards



Top Four Construction Hazards

The top four causes of construction fatalities are: Falls, Struck-By, Caught-In/Between and Electrocutions.

Prevent Falls

- Wear and use personal fall arrest equipment.
- Install and maintain perimeter protection.
- Cover and secure floor openings and label floor opening covers.
- Use ladders and scaffolds safely.

Prevent Struck-By

- Never position yourself between moving and fixed objects.
- Wear high-visibility clothes near equipment/vehicles.

Prevent Caught-In/Between

- Never enter an unprotected trench or excavation 5 feet or deeper without an adequate protective system in place; some trenches under 5 feet deep may also need such a system.
- Make sure the trench or excavation is protected either by sloping, shoring, benching or trench shield systems.

Prevent Electrocutions

- Locate and identify utilities before starting work.
- Look for overhead power lines when operating any equipment.
- Maintain a safe distance away from power lines; learn the safe distance requirements.
- Do not operate portable electric tools unless they are grounded or double insulated.
- · Use ground-fault circuit interrupters for protection.
- Be alert to electrical hazards when working with ladders, scaffolds or other platforms.

For more complete information:



Occupational
Safety and Health
Administration

U.S. Department of Labor www.osha.gov (800) 321-OSHA 0SHA 3216-6N-06







Electrical Hazard Recognition

Recognize Any Hazard(s)?

Example 1



Example 2



Example 3

Electrical Hazard Recognition



Example 4



Example 5

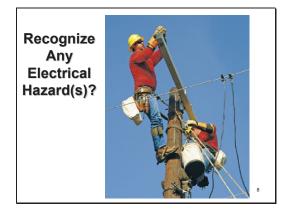


Example 6

Electrical Hazard Recognition



Example 7





Example 9

Caught In or Between Hazard Recognition

Recognize Any Hazard?

Example 1



Example 2



Example 3

Caught In or Between Hazard Recognition



Example 4



Example 5



Example 6

65

Caught In or Between Hazard Recognition



Example 7



Example 8



Example 9

Struck-By Hazard Recognition

Recognize Any Hazard(s)?

Example 1



Example 2



Example 3

Struck-By Hazard Recognition



Example 4



Example 5



Example 6

Struck-By Hazard Recognition

Recognize Any Hazard(s)?



Example 8



Example 9

Fall Hazard Recognition



Example 1



Example 2



Fall Hazard Recognition





Example 5



Example 6

Fall Hazard Recognition



Example 7



Example 8



Fall Hazard Recognition

Can You Identify the Fall Hazard?



ADDITIONAL INFORMATION

QUICK CARD

Protecting Workers from Heat Stress



Protecting Workers from Heat Stress

Heat Illness

Exposure to heat can cause illness and death. The most serious heat illness is heat stroke. Other heat illnesses, such as heat exhaustion, heat cramps and heat rash, should also be avoided.

There are precautions that can be taken any time temperatures are high and the job involves physical work.

Risk Factors for Heat Illness

- High temperature and humidity, direct sun exposure, no breeze or wind
- · Heavy physical labor
- · No recent exposure to hot workplaces
- · Low liquid intake
- · Waterproof clothing

Symptoms of Heat Exhaustion

- · Headache, dizziness, or fainting
- · Weakness and wet skin
- · Irritability or confusion
- · Thirst, nausea, or vomiting

Symptoms of Heat Stroke

- May be confused, unable to think clearly, pass out, collapse, or have seizures (fits)
- · May stop sweating

To Prevent Heat Illness:

- Establish a complete heat illness prevention program.
- Provide training about the hazards leading to heat stress and how to prevent them.
- Provide a lot of cool water to workers close to the work area. At least one pint of water per hour is needed.





For more information:
OSHA® Occupational
Safety and Health
Administration
www.osha.gov (800) 321-OSHA (6742)

OSHA 3154-06R 201

QUICK CARD

Protecting Workers from Heat Stress



- Modify work schedules and arrange frequent rest periods with water breaks in shaded or air-conditioned areas.
- Gradually increase workloads and allow more frequent breaks for workers new to the heat or those that have been away from work to adapt to working in the heat (acclimatization).
- Designate a responsible person to monitor conditions and protect workers who are at risk of heat stress.
- · Consider protective clothing that provides cooling.

How to Protect Workers

- Know signs/symptoms of heat illnesses; monitor yourself; use a buddy system.
- Block out direct sun and other heat sources.
- Drink plenty of fluids. Drink often and BEFORE you are thirsty. Drink water every 15 minutes.
- Avoid beverages containing alcohol or caffeine.
- Wear lightweight, light colored, loosefitting clothes.

Coffee



What to Do When a Worker is III from the Heat

- Call a supervisor for help. If the supervisor is not available, call 911.
- Have someone stay with the worker until help arrives.
- · Move the worker to a cooler/shaded area.
- · Remove outer clothing.
- Fan and mist the worker with water; apply ice (ice bags or ice towels).
- · Provide cool drinking water, if able to drink.

IF THE WORKER IS NOT ALERT or seems confused, this may be a heat stroke. CALL 911 IMMEDIATELY and apply ice as soon as possible.



For more information:

OSHA® Occupational
Safety and Health
Administration
www.osha.gov (800) 321-OSHA (6742)

OUICK CARD

Protect Yourself: Respirators



Protect Yourself Respirators

Respiratory protection must be worn whenever you are working in a hazardous atmosphere. The appropriate respirator will depend on the contaminant(s) to which you are exposed and the protection factor (PF) required. Required respirators must be NIOSH-approved and medical evaluation and training must be provided before use.

Single-strap dust masks are usually not NIOSH-approved. They must not be used to protect from hazardous atmospheres. However, they may be useful in providing comfort from pollen or other allergens.

Approved filtering facepieces (dust masks) can be used for dust, mists, welding fumes, etc. They do not provide protection from gases or vapors. DO NOT USE FOR ASBESTOS OR LEAD; instead, select from the respirators below.

Half-face respirators can be used for protection against most vapors, acid gases, dust or welding fumes. Cartridges/filters must match contaminant(s) and be changed periodically.

Full-face respirators are more protective than half-face respirators. They can also be used for protection against most vapors, acid gases, dust or welding fumes. The face-shield protects face and eyes from irritants and contaminants. Cartridges/filters must match contaminant(s) and be changed periodically.

Loose-fitting powered-air-purifying respirators (PAPR) offer breathing comfort from a battery-powered fan which pulls air through filters and circulates air throughout helmet/hood. They can be worn by most workers who have beards. Cartridges/filters must match contaminant(s) and be changed periodically.

A Self-Contained Breathing Apparatus (SCBA) is used for entry and escape from atmospheres that are considered immediately dangerous to life and health (IDLH) or oxygen deficient. They use their own air tank.





For more complete information:



Occupational Safety and Health Administration

U.S. Department of Labor www.osha.gov (800) 321-OSHA

0SHA 3280-10

QUICK CARD

Work Zone Traffic Safety



Work Zone Traffic Safety

Employees being struck by vehicles or mobile equipment lead to many work zone fatalities or injuries. Work zones need traffic controls identified by signs, cones, barrels and barriers.

Drivers, employees on foot, and pedestrians must be able to see and understand the proper routes. Construction project managers determine traffic control plans within construction/demolition worksites.

- Traffic control devices, signals, and message boards instruct drivers to follow paths away from where work is being done.
- Approved traffic control devices, including cones, barrels, barricades, and delineator posts are also used inside work zones.

Work Zone Protections: Various concrete, water, sand, collapsible barriers, crash cushions, and truck-mounted attenuators can help limit motorist intrusions into construction work zones.

Flagging: Flaggers should wear high visibility clothing with a fluorescent background and made of retroreflective material. This makes employees visible for at least 1,000 feet in any direction. Check the label or packaging to ensure that the garments are performance class 2 or 3. Drivers should be warned with signs that there will be flaggers ahead. Flaggers should use STOP/SLOW paddles, paddles with lights, or flags (only in emergencies).

Lighting: Flagger stations should be illuminated. Lighting for employees on foot and for equipment operators should be at least 5 foot-candles or greater. Where available lighting is not sufficient, flares or chemical lighting should be used. Glare should be controlled or eliminated.

Training: Flaggers must be trained/certified and use authorized signaling methods.

Driving: Seat belts and rollover protection should be used on equipment and vehicles as the manufacturer recommends.

For more complete information:



www.osha.gov (800) 321-OSHA

OSHA 3284-05R-07

QUICK CARD

Motor Vehicles: Safe Driving Practices for Employees



You are your employer's most valuable asset! The way that you drive says everything about you and your company. Make a positive statement by following these work-related safe driving practices.

Stay Safe

- Use a seat belt at all times driver and passenger(s).
- Be well-rested before driving.
- Avoid taking medications that make you drowsy.
- Set a realistic goal for the number of miles that you can drive safely each day.
- If you are impaired by alcohol or any drug, do not drive.

Stay Focused

- Driving requires your full attention. Avoid distractions, such as adjusting the radio or other controls, eating or drinking, and talking on the phone.
- Continually search the roadway to be alert to situations requiring quick action.
- Stop about every two hours for a break. Get out of the vehicle to stretch, take a walk, and get refreshed.

Avoid Aggressive Driving

- · Keep your cool in traffic!
- Be patient and courteous to other drivers.
- Do not take other drivers' actions personally.
- Reduce your stress by planning your route ahead of time (bring the maps and directions), allowing plenty of travel time, and avoiding crowded roadways and busy driving times.

For more information on safe driving for work, refer to "Guidelines for Employers to Reduce Motor Vehicle Crashes" at http://www.osha.gov/SLTC/motorvehicle safety/index.html.

For more complete information:



0SHA 3314-08N-06



