OSHA 10-Hour Construction

Study Guide

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Supplements

Module 1:
Introduction to OSHA and the OSH Act

The purpose of this two-hour course is to provide workers with introductory information about OSHA. The module is comprised of the following six lessons:

- Why is OSHA important to you?
- What rights do you have under OSHA?
- What responsibilities does your employer have under OSHA?
- What do the OSHA standards say?
- How are OSHA inspections conducted?
- Where can you go for help?

This section provides basic knowledge of OSHA's history and mission, worker rights under OSHA, employer responsibilities under OSHA, OSHA standards, OSHA inspections, and safety and health resources, including how to file an OSHA complaint. This part will prove beneficial for those who are directly or indirectly involved with OSHA and the OSH Act.

Key Terms

Material Safety Data Sheet (MSDS): A document that contains hazard-related information about a specific chemical or formulation.

OSHA: Occupational Safety and Health Administration

Personal Protective Equipment (PPE): All types of protective equipment such as hard hats, gloves, boots, and eye protection, along with respiratory aids.

Lesson 1:
Why Is OSHA Important to You?

Key Points

- OSHA began because, until 1970, there were no national laws for safety and health hazards.

- Since then, workplace fatalities have been cut by more than 60 percent and occupational injury and illness rates have declined 40 percent.

- State plan programs respond to accidents and employee complaints and conduct unannounced inspections just like federal OSHA.

- Some states have OSHA-approved plans that cover only state and local government workers.

- OSHA approves and monitors all state plans. The state plans must be at least as effective as federal OSHA requirements.

- Twenty-two states and territories operate complete plans and four cover only the public sector.

- Some stats:

    - On average, 15 workers die every day from job injuries.
    - Over 5,600 Americans die from workplace injuries annually.
    - Each year, over 4 million non-fatal workplace injuries and illnesses are reported.

- The estimated cost of occupational injuries and illnesses ranges from $145 billion to $290 billion a year for direct and indirect costs. (See Handout 1)

Study Questions

1. The OSH Act is also known by what other name?

2. Which occupational groups do not come under OSHA coverage?

3. Name three actions OSHA uses to carry out its mission.

4. How many states have developed public sector state plans?

Lesson 2:
What Rights Do You Have under OSHA?

Key Points

- The right to review the injury and illness log includes former employees, their personal representatives, and authorized employee representatives. (See Handout 2)

- OSHA regulations protect workers who complain to their employer about unsafe or unhealthful conditions in the workplace. (See Handout 3)

- You cannot be transferred, denied a raise, have your hours reduced, be fired, or punished in any other way because you have exercised any right afforded to you under the OSH Act.

- Since you are often closest to potential safety and health hazards, you have a vested interest in reporting problems so that the employer gets them fixed. If the hazard is not corrected, you should then contact OSHA. (See Handout 4)

- The OSH Act prohibits employment retaliation against an employee who complains to an employer, files a complaint related to workplace safety or health conditions, initiates a proceeding, contests an abatement date, requests information from OSHA, or testifies under the Act. In certain circumstances, an employee may refuse to work under seriously threatening health or safety conditions. (See Handout 5)

- Other required training includes lockout-tagout, bloodborne pathogens, noise, confined spaces, fall hazards in construction, personal protective equipment, and a variety of other subjects.

- Under OSHA's standard 1910.1020, you have the right to examine and copy exposure and medical records, including records of workplace monitoring or measuring a toxic substance. This is important if you have been exposed to toxic substances or harmful physical agents in the workplace, as this regulation may help you detect, prevent, and treat occupational disease.

- If you file a complaint, you have the right to find out OSHA's action on the complaint and request a review if an inspection is not made. (See Handout 6)

- You have the right to talk to the inspector privately. You may point out hazards, describe injuries, illnesses or near misses that resulted from those hazards and describe any concern you have about a safety or health issue.

- You also have the right to find out about inspection results and abatement measures, and get involved in any meetings or hearings related to the inspection. You may also object to the date set for the violation to

be corrected and be notified if the employer files a contest.

- "Good faith" means that even if an imminent danger is not found to exist, the worker had reasonable grounds to believe that it did. Since the conditions necessary to justify a work refusal are very stringent, refusing work should be an action taken as a last resort. If time permits, the condition should be reported to OSHA or the appropriate government agency.

- If you believe you have been punished for exercising your safety and health rights, you must contact OSHA within 30 days. (See Handout 7)

Study Questions

1. OSHA requires that each employer post certain materials in a prominent location at the workplace. What materials are these?

2. If an employer disagrees with the results of the OSHA inspection, he or she may submit a written objection to OSHA, called what?

3. Workers' safety and health responsibilities include what six?

Lesson 3: What Responsibilities Does Your Employer Have under OSHA?

Key Points

- Employers are required to determine if PPE should be used to protect their workers.

- The first and best strategy is to control the hazard at its source.

- The basic concept behind engineering controls is that, to the extent feasible, the work environment and the job itself should be designed to eliminate hazards or reduce exposure to hazards.

- If PPE is to be used, a PPE program should be implemented. This program should address the hazards present; the selection, maintenance, and use of PPE; the training of employees; and monitoring of the program to ensure its ongoing effectiveness. (See Handout 8)

Study Questions

1. Employer recordkeeping responsibilities involves not only setting up a reporting system and providing copies of logs upon request, but also posting annual summaries and what else?

2. What types of workplaces are exempt from recordkeeping requirements?

3. Which general industry workers are among those most exposed to lead?

4. OSHA also requires that employers pay for most required PPE, except for what types that may be worn off the job?

Lesson 4:

What Do the OSHA Standards Say?

Key Points

OSHA Standards are organized in the following way:

- The CFR is divided into Titles. OSHA's standards are in Title 29.
- Under each Part, such as Part 1926, major blocks of information are broken into subparts. For example, Subpart C is named General Safety and Health Provisions. Subpart C contains sections 1926.20 through 1926.35.
- All OSHA standards are available on OSHA's Web site. You can look them up by the standard number or do a search by topic. (See Handout 9)

Study Questions

1. What four categories do OSHA standards fall into?

2. OSHA issues standards for a wide variety of workplace hazards, including what seven?

Lesson 5:
How are OSHA Inspections Conducted?

Key Points

- OSHA conducts inspections without advance notice, except in rare circumstances (for example, when there is a report of an Imminent Danger). In fact, anyone who tells an employer about an OSHA inspection in advance can receive fines and a jail term.

- Referrals usually are from a government agency, such as NIOSH or a local health department. They are handled the same way as complaints.

- A follow-up is made to see if violations cited on an earlier inspection were fixed.
- Monitoring inspections are made to make sure hazards are being corrected and workers are protected whenever a long period of time is needed for a hazard to be fixed.

- The CSHO may also interview workers, take photographs or video, and monitor worker exposure to noise, air contaminants, or other substances. The CSHO will conduct all worker interviews in private, although workers may request that a union representative be present.

- Citations are sent in the mail at a later date (no later than six months after the inspection).

- The CSHO takes the findings back to the office and writes up a report. The Area Director reviews it and makes the final decision about any citations and penalties.

- OSHA may adjust a penalty downward depending on the gravity of the violation, the employer's good faith (efforts to comply with the Act), history of previous violations, and size of the business.

- Although employers and workers each have rights to disagree with (or appeal) parts of an OSHA citation, the employer has more rights than workers related to citations.

- Employers may request an informal conference with OSHA to discuss a case. They can also reach a settlement agreement with OSHA that adjusts citations and penalties in order to avoid prolonged legal disputes.

- Workers may also contest the abatement time for any violation and an employer's petition for modification of

abatement (PMA), but they cannot contest citations or penalties. If you, as a worker, plan to contest an abatement time, you should provide information to support your position.

- Both workers and the employer have the right to participate in the hearing and request a further review of the judge's decision by the commission.

- If a violation or abatement date is contested by the employer, the situation does not have to be fixed until there is a final legal order; however, if only the penalty is contested, the violation must be fixed by the date in the citation.

Study Questions

1. What are the four priority categories of OSHA inspection?

2. What are four major stages of an OSHA inspection and what occurs during each?

3. In the opening conference, what does the CSHO do?

4. Citations inform the employer and employees of what four matters?

5. How are willful, serious, other-than-serious, and repeat violations defined?

Lesson 6:
Where Can You Go for Help?

Key Points

- OSHA standards such as those for hazard communication, egress, confined space and Bloodborne Pathogens require labels and signs. The employer must make sure that each sign or label posted can be understood by all workers, so the signs must be bilingual if workers do not understand or read English.

- Orientation manuals and training materials about your job should include information about how to work safely. (See Handout 10)

- If you have questions about a new job or task, or a job or task that has changed, be sure to ask for the written procedures and for additional training on them.

- If you are discussing a health concern with your health care provider, try to provide them with as much information about the chemical or substance as possible. For example, if you are getting headaches at work, try to get the names and MSDSs or labels of the chemicals to which you are exposed. (See Handout 11)

- Remember that discrimination for health and safety activity is illegal. If you are a union representative, you may wish to have your name on the complaint. (See Handout 12)

Study Questions

1. OSHA considers some jobs and tasks very hazardous, such as what?

2. What are QuickCards?

3. What can a worker request if he or she is currently an employee at a workplace of concern (meaning, where workers are getting sick from an unknown cause or are exposed to an agent or working condition that is not regulated by OSHA), if he or she has obtained the signatures of two other workers?

Module 2:

OSHA 1926 Subpart C–General Safety and Health Provisions

This module provides an overview of the OSHA 29 CFR 1926 Subpart C, General Safety and Health Provisions. Topics covered in this part include safety training and education, first aid, fire protection, and employee emergency action plans.

Key Terms

ANSI: American National Standards Institute

Authorized person: This is an individual assigned by an employer to perform a certain duty or to be present at a particular job site.

Competent person: This individual has authorization to take corrective action and is able to recognize existing and predictable hazards.

Employer: A contractor or subcontractor

Qualified: One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully

demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

Lesson 1: General Safety and Health Provisions

Key Points

- In order to decrease the risk of accidents and injuries in the workplace, employers should provide frequent and regular inspections of the job site, materials, and equipment used by employees.

- The use of any machinery, tool, material, or equipment that is not in compliance with OSHA standards is prohibited.

- Unsafe machines, tools, materials, or equipment should be identified by tagging or locking the controls to render them inoperable, or they should be physically removed from the place of operation.

- Employers have responsibilities under OSHA standards to educate and train employees to recognize and avoid unsafe conditions in the workplace and to control and eliminate any hazards or exposures to illness or injury.

- In job site areas where harmful plants or animals are present, employees who have the potential for exposure should be educated about the potential hazards, how to avoid injury, and the first aid procedures to be used in the event of injury.

- Employees required to enter confined or enclosed spaces should be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and the required use of protective and emergency equipment.

- First aid supplies shall be easily accessible when required. The contents of the first aid kit shall be placed in a weatherproof container with individual sealed packages for each type of item, and shall be checked by the employer before being sent out on each job and at least weekly on each job to ensure that the expended items are replaced.

- Another responsibility of the employer is to ensure the availability of fire protection and suppression equipment.

- During the course of construction, combustible scrap and debris shall be removed at regular intervals and safe means provided to facilitate such removal.

- Containers shall be provided for the collection and separation of waste, trash, and other refuse and should be disposed of at frequent and regular intervals.

Study Questions

1. Additional training to work in permit spaces is required when one of what three factors is true?

2. What major program elements comprise a safety program?

Lesson 2:
Employee Medical and Exposure Records, Means of Egress, and Employee Emergency Action Plans

Key Points

- Access to employee medical and exposure records must be provided in a reasonable manner and place. If access cannot be provided within 15 days after the employee's request, the employer must state the reason for the delay and the earliest date for when the records will be made available.

- Upon request, the employer must provide the employee, or employee's designated representative, access to employee exposure records. If no records exist, the employer must provide records of other employees with job duties similar to those of the employee.

- Access to these records does not require the written consent of other employees. In addition, these records must reasonably indicate the identity, amount, and nature of the toxic substances or harmful physical agents to which the employee has been exposed.

- When appropriate, a physician representing the employer can elect to disclose information on specific diagnoses of terminal illnesses or psychiatric conditions only to an employee's designated representative and not directly to the employee.

- At the time of initial employment and at least annually thereafter, employees must be told of the existence, location, and availability of their medical and exposure records. The employer also must inform each employee of her or his rights under the access standard and make copies of the standard available. Employees must be told who is responsible for maintaining and providing access to records.

- When an employer ceases to do business, that employer is required to provide the successor employer with all employee medical and exposure records. When there is no successor to receive the records for the prescribed period, the employer must inform the current affected employees of their access rights at least three months prior to the cessation of business and must notify the Director of the National Institute for Occupational Safety and Health (NIOSH) in writing at least three months prior to the disposal of records.

- The employer must establish in the emergency action plan the types of evacuation to be used in emergency circumstances.

- The employer should establish an employee alarm system. If the employee alarm system is used for alerting fire brigade members, or for other purposes, a distinctive signal for each purpose shall be used.

- Exits shall be marked by a readily visible sign, and means of egress shall be continually maintained.

  Exits for buildings or structures shall be arranged and maintained to provide free and unobstructed egress from all parts of the building or structure at all times when the building is occupied.

- The employer must review with each employee upon initial assignment those parts of the plan that the employee must know to protect him- or herself in the event of an emergency. The written plan must be kept at the workplace and made available for employee review.

Study Questions

1. Employers may withhold the specific chemical identity of a toxic substance if one of what three factors is claimed?

2. How often must an employer review an emergency action plan with each employee covered by it?

3. What basic elements should be included in an employee emergency action plan? Hint: There are seven specified.

Module 3A:
29 CFR 1910 Subpart Z–HEALTH HAZARDS IN CONSTRUCTION: Hazard Communication

The Hazard Communication Standard (HCS) provides information to workers and employers about various chemical hazards that exist in the workplace, and what protective measures they can take in order to prevent the adverse effects of such hazards.

This part gives you a basic understanding of how to deal with hazardous chemicals and how workers can prevent and protect themselves from chemical hazards.

Key Terms

Chemical: An element or a compound produced by chemical reactions on a large scale for direct industrial and consumer use or for reaction with other chemicals.

Combustible: A material having a flashpoint of 100 degrees Fahrenheit, or above.

Flammable: A material having a flashpoint below 100 degrees Fahrenheit.

HazCom: Hazard Communication Standard

Inhalation: Breathing in an airborne substance that may be in the form of gases, fumes, mists, vapors, dusts, or aerosols.

Training: A course of study in which employees are instructed to identify and work safely with hazardous materials.

Lesson 1: Introduction to the Hazard Communication Standard

Key Points

- Workers have both a need and a ***right to know*** about the hazards and identities of the chemicals they are exposed to when performing their tasks and duties.

- Exposure (or exposed) means that an employee is subjected, as a condition of employment to a chemical that is a physical or health hazard, including potential (accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (such as inhalation, ingestion, skin contact, absorption, or injection).

- Hazard warning means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which conveys the specific physical and health hazard(s), including target organ effects of the chemical(s) in the container(s).

- Immediate use means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

- Any hazardous material decanted (pumped from a primary to a secondary container) should have the labeling information transferred to the secondary container also.

- Organic peroxide is any carbon-containing compound with two oxygen atoms joined together.
- Pyrophoric means a chemical will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.
- Unstable (reactive) means a chemical that in its pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or become self-reactive under conditions of shocks, pressure, or temperature.
- Water-reactive means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

Study Questions

1. Why do flammable materials require more care than combustible materials?

2. Why are organic peroxides of concern?

3. What is an oxidizer?

Lesson 2: Labels, MSDSs, Symbols, Hazards, and Training

Key Points

- Because labels are considered the most immediate source of information about chemicals and their hazard potential, it is obligatory that all hazardous chemical containers be labeled.

- Many manufacturers of chemicals include safe handling procedures on labels. Even so, it is the employer's responsibility to translate the information contained on the MSDS, into any understandable format, and convey that information about the hazards associated with working with any of the hazardous materials in the facility, before an employee is ever exposed to the hazard.

- It is necessary that manufacturers or importers of hazardous chemicals update MSDSs within three months of discovering new important information about chemical hazards.

- Whenever you are working with materials that have a DOT hazard class-shipping label, you should be aware that this represents a specific hazard. Information regarding specific hazards denoted by DOT labels is contained on the material's MSDS.

- It is required, and critical, that employees be trained before working with materials that represent a hazard.

- Water reactive materials react with water and can explode. Furthermore, unstable reactive materials can react or become self-reactive subject to pressure, temperature, or shock.

- Monitor yourself and coworkers for symptoms (such as dizziness, eye or throat irritation, skin rashes) that would indicate that you or your coworkers have been exposed to a hazardous material or chemical. If these or other symptoms appear, report them to your supervisor immediately.

- Always use gloves, aprons, masks, or other PPE whenever called for on a label or MSDS.

Study Questions

1. What information must be included on labels?

2. What hazards do the individual colors of the label created by the Paint and Coatings Association indicate?

3. What two terms are generally used to understand the nature of the health hazards?

Module 3B: OSHA 1926 Subpart D–HEALTH HAZARDS IN CONSTRUCTION: Hazardous Materials

This module is designed for people working in the Construction Industry who are exposed to health hazards and chemicals during the course of their work. Topics include definitions, the Hazard Communication Standard, asbestos standards, MDA, lead, worker protection programs, process safety management of highly hazardous chemicals, and cadmium. This section focuses on the topics covered in OSHA 29 CFR 1926 Subpart D.

This part is intended for a general audience. For more information, please contact your local fire department and consult your fire safety and security maintenance supervisor.

Key Terms

Article: A manufactured item other than a fluid or particle:
i. Which is formed to a specific shape or design during manufacture
ii. Which has end use function(s) dependent in whole or in part upon its shape or design during end use and
iii. Which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical and does not pose a physical hazard or health risk to employees.

Chemical: Any element, compound, or mixture of elements and/or compounds.

Container: Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical.

Explosive: A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Physical hazard: A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive.

Trade secret: Any confidential formula, pattern, process, device, information, or compilation of information that is used in an employer's business, and gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

Workplace: An establishment, job site, or project at one geographical location containing one or more work areas.

Lesson 1:
Hazardous Material

Key Points

- Employee exposure to silica dust (breathable quartz) must not exceed 0.1 ug/m(3) averaged over an 8-hour work shift.

- Silicosis can disable a person in many ways, making breathing difficult and painful. Silicosis may also cause death, or turn into lung cancer. Symptoms usually associated with silicosis also include loss of appetite, fevers, and loss of body weight.

- Exposure by inhaling loose asbestos fibers can cause disabling or fatal diseases such as gastrointestinal cancer, cancers of the lung or lung-cavity lining, and the severe lung impairment asbestosis. The symptoms

of these diseases generally do not appear for 20 or more years after initial exposure.

- Short-term exposure must also be limited to not more than 1 f/cc, averaged over 30 minutes. Rotation of employees to achieve compliance with either permissible exposure limit (PEL) is prohibited.

- Even workers' families and friends can be at risk, as asbestos can often be carried on clothing. It is important to note that workers are not always told they are working around asbestos, and even single exposures to very low doses of fibers can result in harm.

- No employee maybe exposed to MDA above the permissible exposure limit (PEL) of 10 parts per billion (ppb) as an 8-hour time-weighted average (TWA), or above a short-term exposure limit (STEL) of 100 ppb over a 15-minute sampling period.

- Decontamination areas, located outside of, but as near as practical, to the regulated area, must also be established for decontaminating workers, materials, and equipment contaminated with MDA. The decontamination area must include an equipment storage area, wash area, and clean change area.

- Lead is most commonly taken into the body by inhalation. When workers breathe in lead as a dust, fume, or mist, their lungs and upper respiratory tract absorb the lead into the body. They can also absorb lead through the digestive system if it enters the mouth and is ingested.

Study Questions

1. Describe the two types of silicosis.

2. Describe the four classifications of asbestos.

3. List eight common symptoms of chronic overexposure to lead.

Module 4:
Cranes and Rigging—Basic

This module is intended for workers who want to learn more about cranes, derricks, hoists, elevators, and/or conveyors. Topics include cranes and derricks, helicopters, base-mounted drum hoists, overhead hoists, conveyors, and aerial lifts. This part covers topics included in OSHA 29 CFR 1926.55 Subpart N.

Key Terms

Accident: Harmful event that is unexpected or without apparent cause.

Act: Such as a statute, decree, or enactment resulting from a decision by a legislative body.

Block: Sheaves or grooved pulleys in a frame with a hook, eye, and strap.

Boom: An inclined spar, strut, or other long member supporting the hoisting tackle.

Boom angle indicator: An accessory device that measures the angle of the boom base section centerline to horizontal load and the weight of the object being lifted which includes load blocks and hooks, wire ropes, rigging, boom attachments, and ancillary attachments.

Boom stops: A device used to limit the angle of the boom at its highest position.

Brake: To slow or stop motion by friction or power.

Counterweight: Weights used for balancing loads and the weight of the crane in providing stability.

Crane: Consists of a rotating structure on rubber tires or crawler treads used for lifting and lowering horizontally.

Deck: The revolving superstructure or turntable bed.

Drum: The spool or cylindrical member around which cables are wound for raising and lowering loads.

Hoist: Used to lift and lower load.

Jib: Extension attached to the boom point to provide added boom length for lifting specified loads.

Outriggers: Support members attached to the crane's carrier frame that are used to level and stabilize the crane.

PCSA: Power Crane and Shovel Association

Pendants: Stationary wire ropes used to support the boom.

Radius: The horizontal distance from the axis of the rotation of the crane's superstructure to the center of the suspended load.

Standards: Measure of comparison for quantitative or qualitative value; a criterion.

Superstructure: The rotating frame, gantry, and boom or other operating equipment.

Lesson 1:
General Standards

Key Points

- The employer should designate a competent person to inspect all of the machinery and equipment before and during use to ensure that they are within safe working parameters. All

deficiencies must be promptly repaired and defective parts replaced before the machine can be used.

- OSHA's analysis of crane accidents in general industry and construction identified an average of 71 fatalities per year. A study conducted by OSHA showed that nearly 30 percent of work-related electrocutions involved cranes.

- Although mechanical failures represent only 11 percent of the causes of crane accidents, they usually result in major accidents involving injuries, fatalities, substantial material costs, and negative media coverage.

- Studies and analyses often show that mechanical failures are frequently due to the result of a lack of preventive maintenance or adequate training, and/or experience on the part of the personnel involved.

Study Questions

1. Name six crane hazards.

2. What has OSHA identified as eight major causes of crane accidents?

Lesson 2:
Cranes

Key Points

- Crane operators must know the load limits of the crane and the approximate weight of the load about to be lifted.

- Once the load weight is known, the operator must verify lift calculations and determine if the load is within the load rating of the crane.

- It is advised that all employees stay out of the swing radius of the crane. OSHA determined that the preferred way to protect employees in these situations is to completely barricade the entire swing radius of the equipment and prevent employee access to the area.

- A boom angle indicator must be located on the crane in a position where it will be clearly visible to the operator.

- The crane must be uniformly level within one percent of level grade and located on firm footing.

- A thorough documented inspection of hoisting machinery must be carried out by a competent person on an annual basis.

- In addition to the annual documented inspection, the OSHA standard requires a visual inspection before and during each shift, and an additional inspection at least once a month.

- Wire ropes should not be used in any of the following conditions:

    - In running ropes, with six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
    - Wear of one-third the original diameter of outside individual wires with kinking, crushing, bird caging,

or any other damage resulting in distortion of the rope structure.
    - Evidence of any heat damage from any cause.
    - In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

- All operators must be certifiably qualified to operate a specific type of crane before they are allowed to do so. Furthermore, all operators must undergo a period of on-the-job training, so as to familiarize themselves with any conditions specific to the workplace.

Study Questions

1. For what reasons are load or load-moment indicators not reliable?

2. The operator must take into consideration what six conditions that may limit the load rating of a crane?

3. List seven items/parts of a crane that must be inspected on a regular basis.

Lesson 3:
Cranes, the Personnel Platform, and Rigging

Key Points

- Always make sure that the rated load of the crane does not exceed the original capacity specified by the crane's manufacturer. To avoid accidents, a load rating chart with clearly visible letters and figures shall be provided with each crane, and should be fixed at a location where the chart can easily be read by the operator of the crane.

- When installing cranes and derricks permanently on a barge, make sure their capacity and limitations of use are in compliance with current design criteria.

- Cranes and derricks that have variable angle booms should be equipped with a boom angle indicator. The indicators must be placed where they can be easily seen by operators.

- It is important that the suspension system and the personnel platform be designed by a qualified engineer or by a competent person qualified in structural design.

- If access gates are installed in the area, make sure that they do not swing outward during hoisting. In addition, to prevent accidents, the gates must be equipped with a restraining device.

- Only a qualified welder who is familiar with the weld types, material, and grades is allowed to perform the welding of the personnel platform.

- When bridles and associated rigging are not hoisting personnel, they should not be used for other purposes.

- When the crane engine is running and the platform is occupied, the crane or derrick operator should remain at the controls at all times.

- Do not hoist employees if weather conditions are bad, or if any other indication of impending danger exists. If employees are hoisted and a dangerous situation arises, they should be grounded immediately and safely.

Study Questions

1. Always make sure that the total weight of the loaded personnel platform and related rigging does not exceed how much of the manufacturer's rated capacity for the configuration and radius of the crane or derrick?

2. Cranes having telescoping booms must be equipped with what?

Module 5:
Electrical Safety for Construction

This module provides you with a basic understanding of OSHA's role in the prevention and elimination of work-related illnesses and injuries. It emphasizes hazard identification, avoidance, control, and standards.

OSHA's1926 Subpart K–Electrical is all about the safe operation of electricity. Electricity is accepted as a source of power without much thought given to the hazards encountered. Some employees work with electricity directly during construction. This is the case with engineers, electronic technicians, and power line workers. Others, such as office workers and salespeople, work with electricity indirectly.

Key Terms

Amperes or Amps: The volume of the current flow.

AWG: American wire gauge (AWG), which is one measurement standard used to size wire.

Circuit: Completion of the path of the current; including a voltage source, conductors, and the load (such as a lamp, tool, or heater).

Conductors: Materials that contain free electrons that allow current to flow through the material.

Current: Electron flow (measured in amperes).

Electric shock: The physical effect nerve stimulation and/or muscle contraction caused by the flow of current through the body.

Electrocution: Death caused by electrical shock.

GFCI: Ground-Fault Circuit Interrupter, a device that detects current imbalance between the circuit conductors and reference to the grounding conductor. If an imbalance or "leak" occurs as small as 5 milliamps (.005 amps) for as little

as 1/40th of a second this device will interrupt the circuit, preventing a shock which most people would not feel.

Grounding: An intentional conductive connection to the earth that provides a path back to the source from any conductive portion of the load device or equipment for any fault current that may occur in a circuit.

Insulators: Materials with few free electrons. Current does not easily flow through insulators, if at all.

Resistance: Opposition to current flow.

Volts: The electrical pressure (measure of electrical force).

Watts: Measurement work produced by the electrical circuit.

Wire gauge: System used to measure the physical size of wire.

Lesson 1:
Introduction to Electrical Hazards and Control

Key Points

- The following are some of the dangers associated with electricity:
    - More than five workers are electrocuted every week.
    - Electricity causes 12 percent of young worker deaths in the workplace.
    - It takes very little current flow to cause harm to a person who comes in direct contact with an electrical circuit.
    - There is a significant risk of fires due to electrical malfunctions.
- LOW VOLTAGE DOES NOT MEAN LOW HAZARD!
- Burns are the most common shock-related injury. Approximately 10 persons per day receive electrical

burns severe enough to require treatment at special burn hospitals.

- Many burns occur as a result of arc flash. Burns typically occur on the hands, although other parts of the body may be affected and are very serious injuries that require immediate attention.

- In the case of arc flash, additional internal injuries may occur with the burns as a result of the concussion force produced by the explosion from the arc flash.

- The heat produced by an arc flash is four times hotter than the surface of the sun.

- Electric shock can also cause indirect injuries. Workers in elevated locations who experience a shock can fall, resulting in serious injury or death.

- Conductors entering boxes, cabinets, or fittings must be protected from abrasion.

- Overhead and buried power lines are especially hazardous because they carry extremely high voltage. Fatal electrocution is the main risk, but burns and falls from elevation are also hazards. Using tools and equipment that can contact power lines increases the risk.

- A wire that is too small for the current is a hazard.

- Sometimes the insulation inside an electrical tool or appliance is damaged. When insulation is damaged, exposed metal parts may become energized if a live wire inside touches them, although you are more likely to receive a shock if the tool is not grounded or double-insulated.

- Improper use of cords also can cause shocks, burns, or fire.

- In an arc flash incident, a large amount of concentrated radiant energy explodes outward from electrical equipment, creating pressure waves that can damage a person’s hearing, a high-intensity flash that can

damage eyesight and a superheated ball of gas that can severely burn a worker's body and melt metal.

- A difference of potential (voltage reading) exists between any two phase conductors, or any phase conductor and a grounded part (grounded systems only).

Study Questions

1. The amount of incident energy that is exerted outward at the point of an arc fault is primarily dependent on what two factors?

2. You will get an electrical shock if parts of your body complete an electrical circuit by doing one of what two things?

3. The severity of a shock depends on what?

4. Electrical accidents are caused by a combination of what three factors?

5. Power lines hazards can be avoided if what five precautions are taken?

6. If a portable tool with an extension cord has a wire too small for the tool, what may happen and what is the reason for this happening?

7. Cords can be damaged as a result of what five factors?

8. Flexible cords must not be used in any of what three ways?

Lesson 2:
Electrical Hazards—Other Preventive Measures

Key Points

- Grounding creates a low-resistance path from a tool to the earth to disperse unwanted current.
- An employer must use *either ground fault circuit interrupters* or an assured equipment grounding conductor to protect employees on construction sites.
- Flexible cords must be connected to devices and fittings so that strain relief is provided which will prevent pull from being directly transmitted to joints or terminal screws.
- Equipment or circuits that are de-energized must be rendered inoperative and must have tags attached at all points where the equipment or circuits could be energized.
- As appropriate, the employer shall ensure that all wiring components and utilization equipment in hazardous locations are maintained in a dust-tight, dust-ignition-proof, or explosion-proof condition.
- Wet clothing, high humidity, and perspiration increase your chances of being electrocuted.
- Safety shoes should be used with other insulating equipment and in connection with active precautions to reduce or eliminate the potential for providing a path for hazardous electrical energy.

- Wearing a hard hat will protect your head up to 20,000 volts.

Study Questions

1. What three functions does a GFCI perform?

2. The AEGCP on construction sites must cover what three items?

3. When batteries are being charged, the vent caps shall be kept in place to avoid what from occurring?

Module 6:

Struck-By and Caught In Between Hazards

This module provides an overview of construction-related incidents of workers who have been struck by and caught in between hazards. It identifies the types of operations that most often cause these hazards. Additionally, it discusses the engineering controls that should be followed and lists the personal protective equipment (PPE) that should be used to limit or eliminate injuries resulting from being struck by and caught in between hazards.

Key Terms

Audible backup alarms: These devices must be installed on heavy construction vehicles and maintained in proper working order. They sound an alarm to nearby workers that a dangerous vehicle is backing up.

Chock: A wedge or block used to keep a vehicle parked from rolling on an incline.

Excavation work: Excavation-related work is a major cause of caught in between hazards. In 2005, the vast majority of caught in between hazard citations were related to excavation operations.

Limited access zone: The area adjacent to masonry wall construction that clearly limits access by all but essential employees.

PSI: Pressure per square inch; used to measure compressed air.

Shoring: A structure like a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and is used to prevent cave-ins.

Toeboards: A type of guard installed along the lower edge of scaffold platforms and overhead walkways that is designed to

keep tools and other objects from falling and injuring workers below. Installing toeboards is considered an engineering control.

Lesson 1:
Struck-By Hazards

Key Points

- When working near a public roadway, workers are exposed to being struck by trucks, cars, or other vehicles. Some workers face similar dangers in their everyday workplaces.

- Important engineering controls to consider follow:

    - Always install, use, and maintain vehicle back-up alarms.
    - Station flaggers behind vehicles that have obstructed rear views.
    - Keep non-essential workers away from areas of vehicle use.
    - Keep workers away from temporary overhead activities.
    - Place barriers and warning signs around hazardous operations and public roadways.

- Two important general rules to follow are:

    - **Never** put yourself between moving or fixed objects.
    - **Always** wear bright, highly visible clothing when working near equipment and vehicles.

- Don’t allow workers to drive equipment in reverse without an alarm or flagger.

- Proper maintenance of vehicles and the surfaces on which they operate will eliminate many struck-by injuries.

- Depending on the situation, injuries from being struck by flying or falling objects range from minor ones like

bruises to severe ones like concussions, blindness, and death.

- Always follow these safe practices while working around cranes and hoists:
    - Never allow employees to work underneath loads being moved.
    - Barricade areas and post warning signs to keep non-essential employees and outsiders away from overhead equipment.
    - Inspect cranes and hoists before each use to ensure components are in good working condition.
    - Never exceed the lifting capacity of cranes and hoists.
- Secure unrolled wire mesh so it cannot recoil.

Study Questions

1. According to OSHA estimates, how many struck-by fatalities involve heavy equipment like trucks or cranes?

2. With what three things are struck-by accidents usually associated?

Lesson 2:
Caught in Between Hazards

Key Points

- It is bad enough if a worker is struck by a vehicle, but if he or she is also pinned or caught in between another stationary surface, almost certainly life or limb will be lost.

- Always properly stack building materials so they are clear of work areas and so they do not suddenly shift or slide onto a worker.

- Operational plans must always allow for adequate work areas in which to move suspended loads.

- Always allow enough space around stacks of materials or wide walkways to allow workers to quickly move out of the way in case materials slide or are accidentally pushed over.

Study Questions

1. OSHA's Web site states that the top four causes of construction fatalities are a result of what?

2. Never allow workers to enter an unprotected trench (or excavation) that is this deep or deeper unless an adequate protective system is in place. How many feet is this?

Module 7:
Fall Protection—Basic

This module gives you a basic understanding about OSHA's role in prevention and elimination of work-related illnesses and injuries. The OSHA standard identifies areas or activities where fall protection is needed.

It clarifies what an employer must do to provide fall protection for employees, such as identifying and evaluating fall hazards and providing training. Under the standard, employers are able to select fall protection measures compatible with the type of work being performed.

OSHA places its rules for fall protection in several different subparts in the construction standards, depending primarily on the nature of the work. The standard covers most construction workers, except those inspecting, investigating, or assessing workplace conditions prior to the actual start of work or after all work has been completed.

Key Terms

Anchorage: A secure point of attachment for lifelines, lanyards, or deceleration devices.

Body belt: A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body harness: Straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Connector: A device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.

Controlled access zone: A work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional

fall protection systems—guardrail, personal arrest or safety net—to protect employees working in the zone.

Deceleration device: Any mechanism, such as rope, grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, which serve to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

Guardrail system: A barrier erected to prevent employees from falling to lower levels.

Hole: A void or gap 2 inches (5.1 cm) or more in the least dimension in a floor, roof, or other walking/working surface.

Lanyard: A flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

Leading edge: The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed.

Lifeline: A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorage at both ends to stretch horizontally (horizontal lifeline), and that serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Low-slope roof: A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Opening: A gap or void 30 inches (76 cm) or more high and 18 inches (46 cm) or more wide, in a wall or partition, through which employees can fall to a lower level.

Personal fall arrest system: A system including, but not limited to, an anchorage, connectors, and a body harness used to arrest an employee in a fall from a working level. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Positioning device system: A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning backwards.

Rope grab: A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

Safety-monitoring system: A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Self-retracting lifeline/lanyard: A deceleration device containing a drum-wound line that can be slowly extracted from, or retracted onto, the drum under minimal tension during normal employee movement and which, after onset of a fall, automatically locks the drum and arrests the fall.

Snap-hook: A connector consisting of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.

Steep roof: A roof having a slope greater than 4 in 12 (vertical to horizontal).

Unprotected sides and edges: Any side or edge (except at entrances to points of access) of a walking/working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1 meter) high.

Walking/working surface: Any surface, whether horizontal or vertical, on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work duties.

Warning line system: A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing

work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

Lesson 1:
Fall Protection

Key Points

- Falls are the leading cause of fatalities in the construction industry.
- If an employee is exposed to falling 6 feet (1.8 meters) or more from an unprotected side or edge, the employer must provide a guardrail system, safety net system, or personal fall arrest system to protect the worker.
- Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 meter) above the walking/working surface must be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.
- A safety net must have a border rope with a minimum breaking strength of 5,000 pounds.
- All components of a fall arrest system must be inspected before each use and after impact. Defective components must be removed from service.

Study Questions

1. What are the distinguish characteristics of a safety monitoring system and a warning line system?

2. If safety nets are connected together, the connection must be as strong as the individual nets and not more than how far apart?

3. When stopping a fall, a PFAS must be attached to an anchor point capable of withstanding how many pounds of force?

4. When stopping a fall, a PFAS must bring an employee to a complete stop and limit maximum deceleration distance an employee travels to how many feet?

5. When stopping a fall, a PFAS must have sufficient strength to withstand how much of the potential impact energy of an employee free falling a distance of six feet?

Lesson 2:
Inspection and Safety Monitoring Systems

Key Points

- Body belts cannot be used for fall arrest.
- Lanyards and vertical lifelines must have a minimum breaking strength of 5000 pounds.
- Lanyards should be attached to a D ring between the shoulder blades above the employee.
- Snap hooks and D rings must have tensile strength of 5000 pounds and be proof tested to 3600 pounds.

- When using snap hooks, use only one snap hook per D ring to prevent rollout.

- All snap hooks must have a locking mechanism.

- A positioning device system is a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and to work with both hands free while leaning.

- A positioning device system is not a fall arrest system!

- The employer must designate a competent person to monitor the safety of other employees; this person must among other things:

    - Be on the same walking/working surface and within visual sighting range of the employee being monitored.
    - Be close enough to communicate orally with the employee.
    - Not have other responsibilities, which could take attention away from his or her monitoring function.

- The fall protection plan option is available only to employees (engaged in leading edge work, precast concrete erection work, or residential construction work) who can demonstrate that it is infeasible or that it creates a greater hazard to use conventional fall protection equipment.

Study Questions

1. Of the several types of lanyards, what are four and their given characteristics?

2. Describe the two different forms of life lines.

3. What is a warning line system?

4. A Controlled Access Zone (CAZ) must be erected how far away from an unprotected edge?

Module 8:
OSHA 1926 Subpart E–Personal Protective Equipment

The life of every human being is precious. Yet due to negligence and improper safety measures, thousands of workers die each year in the construction industry alone. To minimize or eliminate casualties and fatalities, OSHA requires employers to protect their employees from workplace hazards through proper and effective engineering or work practice controls. When these controls are not feasible, the use of personal protective equipment (PPE) is required.

It is the employer's responsibility to assess the workplace hazards. If they are present or are likely to be present and work practice controls alone are not sufficient, then the employer must provide personal protective equipment to the exposed employees. This part provides a basic understanding of OSHA's role in the prevention and elimination of work-related casualties and fatalities.

Key Terms

Contaminant: Any material which by reason of its action upon, within, or to a person is likely to cause physical harm.

dBA: Adjusted decibels

Radiant energy: A kind of energy that travels outward in all directions from its sources.

Lesson 1:
Protecting Employees from Workplace Hazards

Key Points

- To ensure the greatest possible protection for employees in the workplace, the cooperative efforts of both employers and employees will help in establishing and maintaining a safe and healthful work environment.

  In general, employers are responsible for:

  - 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, updating, and evaluating the effectiveness of the PPE program.

- According to the Bureau of Labor Statistics (BLS), three out of every five workers injured at the workplace were not wearing eye protection at the time of their accidents.

- It is necessary that employers protect employees from various hazards such as falling objects, harmful substances, and noise exposures that can cause injuries. Employers must utilize all feasible engineering and work practice controls to eliminate and reduce workplace hazards. If controls are not sufficient, personal protective equipment is required.

- A work practice control is a type of administrative control in which the employer modifies the manner/way in which employees perform their tasks and duties.

- Employees should use PPE according to the instructions provided and inspect/maintain PPE on a daily basis so that it will remain in good working condition.

- If several different types of PPE are worn together, make sure they are compatible. If PPE does not fit properly, it can make the difference between a worker being safely covered or dangerously exposed. It may not provide the level of protection desired and may discourage employee use.

- For hand protection, there is no ANSI standard for gloves, but OSHA recommends that selection be based upon the tasks to be performed and the performance and construction characteristics of the glove material. For protection against chemicals, glove selection must be based on the chemicals encountered, the chemical resistance, and the physical properties of the glove material.

- After selecting PPE, proper training should be provided to all those employees who are required to use PPE.

- If an employer believes that a previously trained employee is not demonstrating the proper understanding and skill level in the use of PPE, that employee should receive retraining.

- The employer must document the training of each employee required to wear or use PPE by preparing a certification containing the name of each employee trained, the date of training and a clear identification of the subject of the certification.

- It is essential to determine whether or not employees are trained well enough to use personal protective equipment properly. Furthermore, retraining is important when employees do not have the required skills.

Study Questions

1. In general, employee responsibilities involving PPE are what?

2. It is imperative that employers provide PPE to employees if what is true?

3. Name the basic hazard categories.

4. Name four work practice controls.

5. Employees must know and understand what about PPE?

6. The protective equipment, including personal protective equipment (PPE) shall be provided by the employer at no cost to the employees, except when?

Lesson 2: Head, Eye, Face, Hearing, Foot, Hand, and Body Protection

Key Points

- Bump caps do not meet hard hat requirements.
- The main cause of eye injuries is failure to wear proper eye protection equipment or wearing improper equipment.
- Goggles protect the eyes and the area around the eyes from impact, dust, and splashes. Furthermore, laser (welding) safety goggles must be used when intense concentrations of light produced by lasers are present.
- In one study, only 1% of approximately 770 workers who suffered face injuries were wearing face protection at the time.
- Always use helmets or hand shields during arc welding or arc cutting operations, except during submerged arc welding. It is obligatory that helpers or attendants use proper eye protection. In addition, goggles or any other suitable eye protection should be used during all gas welding or oxygen cutting operations.
- If employees are exposed to occupational noise at or above 85 dB averaged over an eight-hour period, the employer is required to institute a hearing conservation program that includes regular testing of employees' hearing by qualified professionals.

- Hands are the second most injured body part in the workplace. (Backs are the most injured.)

Study Questions

1. Describe different classes of hard hats.

2. Name and describe the three classes of safety shoes.

3. Name common causes of body injury.

Lesson 3: Choosing Personal Protective Equipment

Key Points

- Gloves should be replaced periodically, depending on the frequency of use and permeability to the substance(s) handled. Contaminated gloves should be rinsed and then carefully removed after use.

- Gloves should also be worn whenever it is necessary to handle rough or sharp-edged objects and very hot or very cold materials.

- Careful attention must be given to hand protection when working with tools and machinery. Power tools and machinery must have guards installed or incorporated into their design that prevents the hands from contacting the point of operation, power train, or other moving parts.

- When selecting chemical resistance gloves, be sure to consult the manufacturers' recommendations, especially if the gloved hand will be immersed in the chemical.

- Because many substances which are health hazards can become airborne, knowing how to protect one's person is very important.

- A respirator is a protective device that covers the worker's nose and mouth or the entire face and head to keep airborne contaminants out of the worker's respiratory system and provide a safe air supply.

- It should be noted that before an employer would provide any employee with a respirator to use in a workplace, the employer must have created a formal written respiratory protection program and have every employee who will wear a respirator medically evaluated by a licensed healthcare professional.

- Every time an employee uses a respirator, that employee must first inspect it. If he or she finds anything wrong with the respirator, have it repaired or replaced immediately.

- Safety belt lanyard shall be a minimum of 1/2-inch nylon, or equivalent, with a maximum length to provide for a fall of no greater than 6 feet. The rope shall have a nominal breaking strength of 5,400 pounds.

- Safety nets shall be provided when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

- At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.

- Where safety net protection is required by this part, operations shall not be undertaken until the net is in place and has been tested.

- Nets shall extend 8 feet beyond the edge of the work surface where employees are exposed and shall be installed as close under the work surface as practical but in no case more than 25 feet below such work surface. Nets shall be hung with sufficient clearance to prevent user's contact with the surfaces or structures below. Such clearances shall be determined by impact load testing.

- The mesh size of nets shall not exceed 6 inches by 6 inches. All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers, and shall bear a label of proof test.

Study Questions

1. What type of boots feature quick-release fasteners or elasticized insets to allow speedy removal should any hazardous substances get into the boot itself?

2. Most accidents involving hands and arms can be classified under what four main hazard categories?

3. To protect hands from injury due to contact with moving parts, it is important to do what?

4. Describe four basic methods of controlling breathing hazards.

5. What are the four basic questions one must ask in choosing the proper respirator?

6. List six warning signs to look for when inspecting a respirator.

Module 9: Hand and Power Tools—Basic

This module gives you a basic understanding about OSHA's role in the prevention and elimination of work-related illnesses and injuries. Hand and power tools are a part of our everyday lives and help us to easily perform tasks that otherwise would be difficult or impossible. However, these simple tools can be hazardous and have the potential for causing severe injuries when used or maintained improperly. Special attention to hand and power tool safety is necessary to reduce or eliminate these hazards.

Key Terms

Hazard: Danger or risk

PPE: Personal Protective Equipment

P.S.I.: Pounds per square inch

Training: Process of teaching or learning a skill, etc.

Lesson 1: Safe Use of Hand and Power Tools

Key Points

- The employer is responsible for the safe condition of tools and equipment used by employees. Employers shall not issue or permit the use of unsafe hand tools. Employees should be trained in the proper use and handling of tools and equipment.

- Hand tool hazards are usually caused by misuse and improper maintenance.

- Circular saws, chainsaws, and percussion tools without positive accessory holding means must be equipped

with a constant pressure switch that will shut off when the pressure is released.

- All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than two inches in diameter, disc sanders, belt sanders, reciprocating saws, and saber saws must be equipped with a momentary contact “off” switch and may have a lock-on provided that they can be turned off by a single motion of the same finger that turned them on. Additionally:

    - Disconnect tools when not in use, before servicing and cleaning, and when changing accessories.
    - Keep people not involved with the work away from the tools.
    - Secure work with clamps or a vice, freeing both hands to operate the tool.
    - Don’t hold the switch button while carrying a plugged-in tool.
    - Keep tools sharp and clean.
    - Consider what you wear, as loose clothing and jewelry can get caught in moving parts.
    - Remove damaged electric tools and tag them: “Do Not Use.”

Study Questions

1. Different types of power tools are determined by their power source, which may take one of which five forms?

2. List four power tool precautions that apply to electric cords.

Lesson 2: Classification of Tools

Key Points

- Never remove guards because it makes it easier to see what you are doing. The removal of guards on moving parts may cause severe injury or even death to an employee or other persons near them. For example:

    - All pneumatic driven nail guns, staplers, and other similar equipment with automatic fastener feeds shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.
    - The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded. Eye protection should be worn while operating pneumatic tools.
    - Hearing protection should be worn while operating jackhammers.
    - Compressed air hoses with an inside diameter (ID) greater than one-half (1/2) inch must have a safety device in place to reduce pressure in case of hose failure.

- With pneumatic devices, ensure tool is fastened securely to the air hose to prevent a disconnection.

- Use a short wire or positive locking device that attaches the air hose to the tool.

- Do not use compressed air for cleaning.
  Exception: Compressed air may be used for cleaning where it is reduced to less than 30 P.S.I. with effective chip guarding and PPE.

Study Questions

1. Machine guards must protect the operator and others from what?

2. All hazards involved in the use of power tools can be prevented by following five basic safety rules, name these.

Lesson 3: Mechanical Power-Transmission Apparatus

Key Points

- Never remove guards while in operation. Always use proper lockout/tagout procedures when performing maintenance.
- Any part of the flywheel that extends through the working floor must be completely enclosed or surrounded by a guardrail and toeboard.
- Flywheels that are located above working areas must be guarded by installing guards that have sufficient strength to hold their weight in the event of a shaft or wheel-mounting failure.
- Never place your hands past protective guards or try to remove them. Doing so may result in one or multiple body parts being crushed.
- You must ensure that all metal is free from burrs and sharp edges at all times.

- Each continuous line of shafting must be secured in position against excessive endwise movement. Inclined and vertical shafts, particularly inclined idler shafts, have to be securely held in position against endwise thrust.

- Pulleys that have cracks or pieces broken out of rims must never be used.

- A guide must be provided to prevent the belt from leaving the pulley on the side where there is insufficient clearance, unless the distance to the nearest fixed pulley, clutch, or hanger exceeds the width of the belt used.

- If the upper and lower runs of horizontal belts are located in such a way that passage of persons between them would be possible, the passage must be completely barred by a guardrail or other barrier. Alternatively, a platform can be provided over the lower run and guarded on either side by a railing completely filled in with wire mesh or other filler, or by a solid barrier. The upper run must be guarded in a way as to prevent contact with either the worker or by objects carried by him.

- Overhead chain and link belt drives follow the same rules as overhead horizontal belts and should be guarded in the same manner.

- All guards for inclined belts have to be arranged in such a manner that a minimum clearance of 7 feet (or 2.128 meters) is maintained between belt and floor at any point outside of a guard.

- It is recommended that no projecting setscrews or oil-cups be used in any revolving pulley or part of machinery.

- All revolving collars, including split collars, must be cylindrical. All screws or bolts used in collars should not project beyond the largest periphery of the collar.

- Protection against falling must be provided in any area where the drive extends over other machines or

working areas. However, this does not apply to manually operated sprockets.

- Openings with hinged or sliding, self-closing covers must be present if frequent oiling has to be done. Oil feed tubes must be attached to all points that are not easily accessible to add lubricant while machinery is in motion.

- Where belt shifters are not directly located over a machine or bench, the handles should be cut off 6 feet 6 inches (or 1.976 meters) above floor level.

- Belt perches in the form of brackets, rollers, etc., can be used where loose pulleys or idlers are not practical to keep idle belts away from the shafts.

Study Questions

1. All projecting shaft ends and edges must be smooth and not project more than how much the diameter of the shaft, unless guarded by non-rotating caps or safety sleeves?

2. In power plants, only which part of the belt needs to be guarded?

Module 10: Scaffolds

This part provides a general overview of the safety measures that are required when working on a scaffold. It begins with an introduction into the various types of scaffolds, and goes on to outline the OSHA safety requirements and safety measures that can be taken to ensure that employees working on scaffolds are at little risk of injury or death.

Key Terms

Bearer (Putlog): A horizontal transverse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests and which joins scaffold uprights, posts, poles, and similar members.

Boatswains' chair: A single-point adjustable suspension scaffold consisting of a seat or sling designed to support one employee in a sitting position.

Body harness: A design of straps which may be secured about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders, with means for attaching the harness to other components of a personal fall arrest system.

Brace: A rigid connection that holds one scaffold member in a fixed position with respect to another member or to a building or structure.

Chimney hoist: A multi-point adjustable suspension scaffold used to provide access to work inside chimneys.

Coupler: A device for locking together the tubes of a tube and coupler scaffold.

Crawling board (Chicken ladder): A supported scaffold consisting of a plank with cleats spaced and secured to provide footing for use on sloped surfaces such as roofs.

Maximum intended load: The total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Outrigger: The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability to the scaffold.

Outrigger beam (Thrustout): The structural member of a suspension scaffold or outrigger scaffold which provides support for the scaffold by extending the scaffold point of attachment to a point out and away from the structure or building.

Lesson 1: Introduction to Scaffolds

Key Points

- The main purpose behind the use of scaffolds is to provide support and balance to an employee and his or her materials as the employee conducts tasks in inaccessible or otherwise difficult-to-reach areas.

- The prime advantage of a tube and coupler scaffold, for instance, lies in the fact that it can be built in several directions and combinations that cater to any structure; however, this also makes it hard to build.

Study Questions

1. This type of scaffold consists of a platform supported by two bearers and is hung from a fixed overhead support with ropes. What is the name for this type?

2. There are a large number of scaffolds that are not widely used but are employed only in specific jobs; name five.

Lesson 2: Overview of OSHA Directives for the Construction of Scaffolds

Key Points

- The regulations presented for the two-point scaffold are applicable to all other types of suspension scaffolds, unless stated otherwise.

- Both fall arrest systems and guardrails should be provided on any scaffold that is expected to be elevated to more than six feet above the ground.

- A minimum clearance to maintain from all electrical lines up to 50 kv is 10 feet, unless the line is insulated and carrying less than 300 volts, in which case the minimum clearance to maintain is 3 feet.

- Catenary scaffolds should not have more than two interconnected platforms at any one time. Furthermore, because catenary scaffolds do not usually have guardrails, all employees on a scaffold must be protected with personal fall arrest systems.

- Catenary scaffolds have a maximum weight load of 500 pounds; therefore, it is safe to assume that no more than two people should be on the scaffold at any one time.

- The platform should be fully planked, and the gaps between the planks should not exceed one inch. The platform should not be more than 14 inches from the structure being worked on.

- Unless they have been designed for that specific purpose, scaffolds should not be moved horizontally while employees are on them.

- If wood is used on a pump jack, it must be straight-grained and free of shakes, dead knots, and other defects.

- The maximum height at which a platform can be placed is 20 feet from the supported base.

Study Questions

1. The platform for a two-point scaffold should be no more than how many inches wide?

2. The support rope must be maintained in a vertical position unless what four conditions are met?

Lesson 3: Scaffold Safety Measures

Key Points

- One out of every three deaths in construction results from fatal falls.
- If you have scaffolds from two or more manufacturers, do not under any circumstances try to mix and match the components.
- Do not use different metals for the components of the scaffold.
- Any systems that have been involved in a fall impact (that is, have been involved in arresting a falling worker) should be removed immediately and not used again until they have been inspected to ensure that they are undamaged.

Study Questions

1. When stopping a fall, personal fall arrest systems should limit the maximum arresting force to no more than how many pounds?

2. The fall arrest system must have sufficient strength to withstand how much the potential impact energy of a worker freefalling for six feet?

Module 11: Stairways and Ladders

Stairways and ladders are major sources of workplace injuries and fatalities for construction workers. According to OSHA estimates, there are 24,882 injuries and 36 fatalities per year due to falls from stairways and ladders used for construction purposes in various industries. Almost half of these injuries are serious in nature and may result in time away from the job.

This part gives you a basic understanding of OSHA standards and the role they play in the prevention and elimination of work-related injuries and fatalities due to stairways and ladders at workplaces.

Key Terms

Double-cleat ladder: A ladder with a center rail to allow simultaneous two-way traffic for employees ascending or descending.

Failure: Load refusal, breakage, or separation of components.

Fixed ladder: This is one that cannot be readily moved or carried because it is an integral part of a building or structure.

Handrail: A rail used to provide employees with a handhold for support.

Job-made ladder: A ladder that is fabricated by employees, typically at the construction site and not commercially manufactured.

Point of access: All areas used by employees for work-related passage from one area or level to another.

Portable ladder: A ladder that can be readily moved or carried.

Single-cleat ladder: A ladder consisting of a pair of side rails connected together by cleats, rungs, or steps.

Stair rail system: A vertical barrier erected along the unprotected sides and edges of a stairway to prevent employees from falling to lower levels.

Tread depth: The horizontal distance from front to back of a tread, excluding nosing, if any.

Lesson 1: OSHA Standards and Stairways

Key Points

- It is mandatory for employers to provide a stairway or ladder at points of access where the elevation between two steps is 19 inches or more.
- In those places where doors or gates open directly to a stairway, a platform must be provided that is at least 20 inches in width beyond the swing of the door.
- Stairway landings at least 30 inches deep and 22 inches wide, at every 12 feet or less of vertical rise, are essential for stairways that are not a permanent part of the structure.
- Remember that a guardrail system may also be needed on a platform with a swinging door to protect from potential falls of six feet or more.
- Handrails must be provided to all stairways that have four or more risers, or are higher than 30 inches. If there is a fall hazard of six feet or more on an exposed side of the stairs, then a stair rail system must be provided to prevent workers from falling off the side.
- Handrails and top rails must be capable of withstanding a load/force of 200 pounds.
- If the top edge of a stair rail system is serving as a handrail, it cannot be less than 36 inches, nor more

than 37 inches, from the upper surface of the rail to the tread.

- In grandfathered stairwells, stair rails may be between 34 to 30 inches from the upper surface of the stair rail system to the surface of the tread.

Study Questions

1. Variations in riser height or tread depth shall not be over how much in any stairway system?

2. The clearance of temporary handrails must be at least how far between handrail and walls, stair rail systems, and other objects?

Lesson 2: Ladders and Training

Key Points

- Always use ladders only for their designed purposes. Do not lash ladders together to make a long ladder, unless they are designed for that purpose. Never try to overload ladders beyond their capacities; the manufacturer's rated capacity must be taken into consideration.

- Before using portable ladders always inspect for cracks, dents, and missing rungs.

- Side rails of portable ladders must be at least 11.5 inches apart.

- Never try to use the top or top step of a stepladder as a step; otherwise, it could lead to a severe accident.

- If a defective ladder is found, immediately mark it defective or tag it **"*Do Not Use.*"**

- Ladders must be constructed with nonconductive side rails if they are used in places where the employee or the ladder could contact exposed energized electrical equipment.

- Always use double-cleated ladders when ladders are the only way to enter and exit a working area with 25 or more employees and when ladders are used for two-way simultaneous traffic.

- Non-self-supporting ladders must be placed or positioned at an angle where the horizontal distance from the top support to the foot of the ladder is 1/4 the working length of the ladder—working length of a ladder is the distance along the ladder between foot and top support.

- When portable ladders are used to access an upper landing surface, the side rails must extend at least three feet above the upper landing surface. When such an extension is not possible, the ladder must be secured, and a grasping device such as a grab rail must be provided to assist workers in mounting and dismounting the ladder.

- Fixed ladders must be able to support at least two loads of 250 pounds each, concentrated between any two consecutive attachments. They must also support added anticipated loads caused by ice buildup, winds, rigging and impact loads resulting from using ladder safety devices.

Study Questions

1. Portable ladders must be able to withstand how much their maximum load?

2. It is mandatory to equip fixed ladders of 24 feet or more in height by using at least one of what three methods of protection?

Lesson 3: Safety Measures

Key Points

- Each non-self-supporting ladder shall support at least four times the maximum intended load applied or transmitted to the ladder in a downward and vertical direction when the ladder is placed at a 75.5 degree angle from horizontal.

- Fixed ladders shall be capable of supporting at least two loads of at least 250 pounds each, concentrated between any two consecutive attachments, plus anticipated loads caused by ice buildup, winds, rigging, and impact loads resulting from the use of ladder safety devices.

- The minimum toe clearance between the centerline of ladder rungs and steps and any obstructions behind the ladder shall be seven inches. Toe clearances of no less than four and one-half inches are acceptable when a specific work operation renders a seven inch clearance infeasible.

- When unavoidable obstructions are encountered, the minimum perpendicular clearance between the centerline of fixed ladder rungs and steps and the obstruction on the climbing side of the ladder may be reduced to 24 inches, provided that a deflection device is installed to guide employees around the obstruction.

- Fixed ladders shall be equipped with personal fall protection systems or with cages or wells, wherever

the length of any climb on any fixed ladder exceeds 24 feet, or wherever the top of the ladder is at a distance greater than 24 feet above lower levels.

- Fixed ladders with continuous lengths of climb greater than 150 feet shall be provided with rest platforms at least every 150 feet. The rest platforms shall provide a horizontal surface of at least 18 inches by 24 inches and have at least the same strength as required for the fixed ladder.

Study Questions

1. The minimum perpendicular clearance between the centerline of fixed ladder rungs and steps and any obstruction on the climbing side of the ladder shall be how much?

2. The length of continuous climb for any fixed ladder equipped only with a cage or well shall not exceed how many feet?

Supplements

Weekly Fatality/Catastrophe Report

Weekly Fatality/Catastrophe Report *SAMPLE of Actual Report*

This table contains the weekly summaries of fatalities and catastrophes resulting in the hospitalization of three or more workers. Employers must report these incidents to OSHA within eight hours. The summaries below include only preliminary information, as reported to OSHA Area Offices or to States which operate OSHA-approved State Plans. The fatalities listed here include only those that initially appear to be work-related, but excludes fatalities that do not appear to be work-related, such as an apparent heart attack of a sedentary worker. OSHA investigates all work-related fatalities and catastrophes. After OSHA's investigation is complete, these reports will be updated with inspection results and citation information.

Weekly Summary (Federal and State data tabulated week ending Dec 25, 2009)

FATALITIES

Date of Incident	Company and Location	Preliminary Description of Incident
12/17/2009	Manion & Associates, Inc., Brandenburg, KY 40108	Two workers were doing road surveying each on either side of the road. A civilian driver came over the hill and suddenly applied his brakes, even though no person, equipment, or car was in the road. This caused his car to spin off the road, running over one of the workers.
12/17/2009	TBM, Inc., Visalia, CA 93277	Worker fell from a ladder while working inside an airplane.
12/18/2009	Pro-Tech Contracting of Georgia LLC, Lawrenceville, GA	Worker was securing tarp on a roof (not wearing fall protection, although it was available) and fell 35 feet to lower level.
12/18/2009	Sonoma Compost Company, LLC, Petaluma, CA 94952	Worker was on ground when he was run over by a front loader.
12/19/2009	Auto Zone Store, Oakland, CA 94603	Security guard worker was shot three times during robbery. The assailants took his weapon.
12/20/2009	Gateco, Newbery Park, CA 91360	Worker, who is the owner, was doing electrical work and fell through the skylight. (No inspection planned)
12/20/2009	Premier Asphalt and Masonry, Inc., Coram, NY 11727	Worker was found in vehicle with engine running; carbon monoxide over exposure.
12/21/2009	County of Los Angeles - Office of Education, Downey, CA 90242	Worker was found unconscious in her cubicle by a janitor. (Inspection planned)
12/21/2009	Country Club Auto Repair, Inc., Lake Charles, LA 70305	Worker was repairing a roof insulation and fell 14 feet to the ground.
12/21/2009	Estes Express Lines, Seekonk, MA 02771	Worker was crushed between the forklift he was operating and a concrete bollard next to the loading dock door after stepped off the forklift.
12/21/2009	Kenvelm, Inc. dba KE Beal Company, Cape Coral, FL 33919	Worker was part of a four man tree trimming crew and was in the process of cutting down a 25-foot palm tree. Worker walked into the path of the falling tree and was struck by the tree.
12/22/2009	3 ML Construction Company, Inc., Methuen, MA	Worker was installing shingles and moving planks on a roof and fell 20' 6" from the roof to a driveway below.

Weekly Fatality/Catastrophe Report

Weekly Summary (Federal and State data tabulated week ending Dec 25, 2009)		
FATALITIES		
Date of Incident	**Company and Location**	**Preliminary Description of Incident**
12/22/2009	ANF Engineering, Inc., Redwood City, CA 94061	Worker was cleaning up on side of the road and was run over by a dump truck backing up.
12/22/2009	South Dakota Wheat Growers Association, McLaughlin, SD 57642	Worker entered a storage bin through a track side access hole that was 15 feet above ground and was engulfed by sunflower seeds.
12/23/2009	Golden Empire Concrete Products, Inc., Bakersfield, CA 93311	Worker, a Quality Control Manager, was found lying face down. (Inspection planned)
12/23/2009	I.G. Express Electric, New Braunfels, TX 78130	Worker was being elevated from a trash box on a forklift to reach a light pole. The trash box and worker fell to the parking lot.
12/23/2009	Storage Battery Systems, Inc., Alsip, IL 60803	Worker was working beneath an elevated hydraulic platform and the platform failed, crushing the worker.
12/23/2009	Walls Contractors, Inc., Newport, AR 72112	Worker was preparing drywall to be painted and found a coil of wire hanging from the ceiling. He attempted to throw the coil over a beam in the ceiling. The coil of wires struck the beam and fell back down. The wires contacted the worker and he was electrocuted.
12/25/2009	Stark Excavation, Inc., Normal, IL 61790	Worker was operating a track hoe to remove columns lodged against a building. The columns were rigged with a nylon strap and were attached to the track hoe. While hoisting the façade from the building, the strap broke and the concrete facade fell on the cab of the track hoe, fatally injuring the worker.
12/26/2009	Tomcat Drilling, LLC, Ames, OK 73718	Worker on a derrick board fell with the collapsing mast. The derrick board broke loose from the mast and the worker was thrown against a metal structure on the ground.
CATASTROPHES - MULTIPLE WORKERS HOSPITALIZED (None Reported)		

NOTES:

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 2009

U.S. Department of Labor
Occupational Safety and Health Administration

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Form approved OMB no. 1218-0176

Establishment name **ABC Co.**

City Anywhere State USA

Identify the person				Describe the case		Classify the case											
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of illness (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	CHECK ONLY ONE box for each case based on the most serious outcome for that case:				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
						Death (G)	Days away from work (H)	Remained at work: Job transfer or restriction (I)	Remained at work: Other recordable cases (J)	Away From Work (days) (K)	On job transfer or restriction (days) (L)	(M) Injury (1)	Skin Disorder (2)	Respiratory Condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)
1	Tammy Newcomer	Chemist	2/5	Lab	Breathing difficulty-inhaled chlorine gas		X			13				X			
2	Pat James	Electrican	3/4	Maintenance Dept.	Gunshot wound left shoulder from ex-wife on 3rd shift		X			25	28	X					
3	Jose Ortega	CNA	5/30	3rd Fl, South wing	Hernia, lower right abdomen from lifting resident			X			5	X					
4	Georgina Gonzella	Welder	6/29	Welding Area	Welder flash, both eyes from TIG welder				X								X
5	William Handwerk	Temp Help	8/7	Shipping Department	Broke left wrist from fall to dock floor		X			5	15	X					
6	Privacy Case	Janitor	10/4	Rm 6, 2nd Fl, North Wing	Needlestick from used syringe Right Hand				X			X					
7	Ellen Bass	Press Opr	12/5	Sheet Metal Dept.	Hearing loss, right ear				X							X	
					Page totals	0	3	1	3	43	48	4	0	1	0	1	1

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

	Injury (1)	Skin Disorder (2)	Respiratory Condition (3)	Poisoning (4)	Hearing Loss (5)	All other illnesses (6)

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

Job Safety and Health

It's the law!

OSHA

Occupational Safety and Health Administration
U.S. Department of Labor

EMPLOYEES:

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the *OSH Act* that apply to your own actions and conduct on the job.

EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

This free poster available from OSHA –
The Best Resource for Safety and Health

[Print Note: Check "Print Scaling" setting; original is 8.5"x14"]

Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

1-800-321-OSHA
www.osha.gov

OSHA 2165-12-001

Navigating the OSHA Website

http://www.osha.gov

The elements of this valuable source of occupational safety and health information are featured:

Refusing to Work because Conditions are Dangerous

Workers have the right to refuse to do a job if they believe in good faith that they are exposed to an imminent danger. "Good faith" means that even if an imminent danger is not found to exist, the worker had reasonable grounds to believe that it did exist.

The United States Supreme Court, in the Whirlpool case, issued the landmark ruling which more clearly defined a worker's right to refuse work where an employee has reasonable apprehension that death or serious injury or illness might occur as a result of performing the work. **However, as a general rule, you do not have the right to walk off the job because of unsafe conditions.**

REFUSING WORK IS PROTECTED IF:

Your right to refuse to do a task is protected if **ALL** of the following conditions are met:

- ✓ Where possible, you have asked the employer to eliminate the danger, and the employer failed to do so; **and**
- ✓ You refused to work in "good faith." This means that you must genuinely believe that an imminent danger exists. Your refusal cannot be a disguised attempt to harass your employer or disrupt business; **and**
- ✓ A reasonable person would agree that there is a real danger of death or serious injury; **and**
- ✓ There isn't enough time, due to the urgency of the hazard, to get it corrected through regular enforcement channels, such as requesting an OSHA inspection.

CONDITIONS ARE MET, NEXT STEPS:

When all of these conditions are met, you take the following steps:

- ✓ Ask your employer to correct the hazard;
- ✓ Ask your employer for other work;
- ✓ Tell your employer that you won't perform the work unless and until the hazard is corrected; **and**
- ✓ Remain at the worksite until ordered to leave by your employer.

The table below offers a few "IF/THEN" scenarios to follow.

IF	THEN
You believe working conditions are unsafe or unhealthful.	Call your employer's attention to the problem.
Your employer does not correct the hazard or disagrees with you about the extent of the hazard.	You may file a complaint with OSHA.
Your employer discriminates against you for refusing to perform the dangerous work.	Contact OSHA immediately.

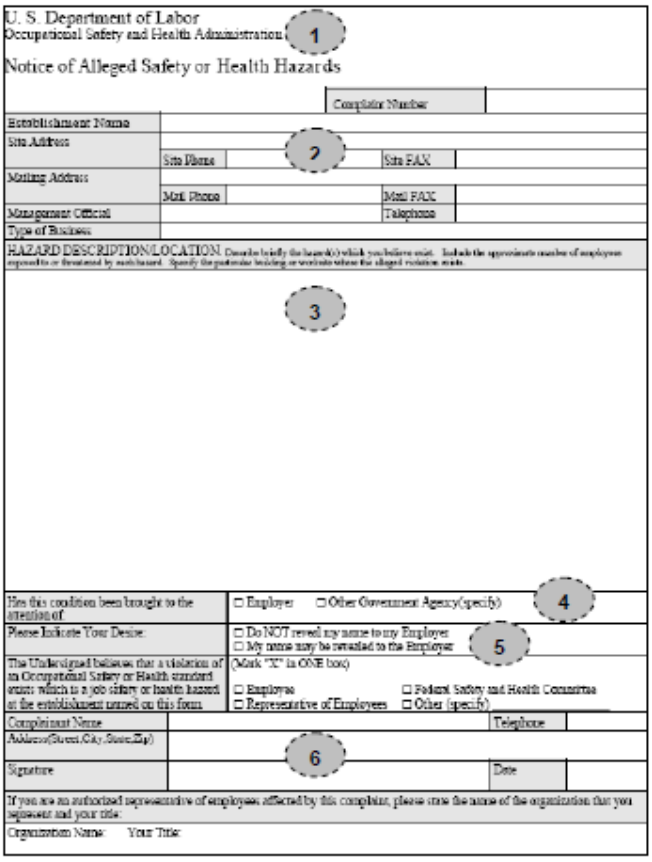
Source: http://www.osha.gov/as/opa/worker/refuse.html

Filing an OSHA Complaint – Tips for Completing the OSHA-7 Form

INSTRUCTIONS Provided on the Form:
Open the form and complete the front page as accurately and completely as possible. Describe each hazard you think exists in as much detail as you can. If the hazards described in your complaint are not all in the same area, please identify where each hazard can be found at the worksite. If there is any particular evidence that supports your suspicion that a hazard exists (for instance, a recent accident or physical symptoms of employees at your site) include the information in your description. If you need more space than is provided on the form, continue on any other sheet of paper. After you have completed the form, return it to your local OSHA office.

Here are tips for completing the form:

1. Be specific and include appropriate details: The information on the complaint form may be the only description of the hazard that the inspector will see before the inspection. The inspector will base his or her research and planning on this information.
2. Establishment Name, Address, & Type of Business: Be thorough and specific. The inspector's research on the company and the industry's hazards will be based on this information.
3. Hazard Description/Location: The hazard description is the most important part of the form. Your answer should explain the hazards clearly. If your complaint is about chemicals, identify them whenever possible and attach copies of labels or MSDSs if you can. Identify the location so the inspector will know where to look.
4. Has this condition been brought to the attention of the employer or another government agency? You should indicate on the form if you have tried to get the employer to fix the hazard before filing the complaint. Also, if another agency, such as a local fire or building department, has been notified of these hazards, OSHA may want to consult with them.


U. S. Department of Labor
Occupational Safety and Health Administration
1
Notice of Alleged Safety or Health Hazards
Complaint Number
Establishment Name
Site Address
Site Phone
2
Site FAX
Mailing Address
Mail Phone
Mail FAX
Management Official
Telephone
Type of Business
HAZARD DESCRIPTION/LOCATION Describe briefly the hazard(s) which you believe exist. Include the approximate number of employees exposed to or threatened by each hazard. Specify the particular building or worksite where the alleged violation exists.
3
Has this condition been brought to the attention of
☐ Employer ☐ Other Government Agency(specify)
4
Please Indicate Your Desire:
☐ Do NOT reveal my name to my Employer
☐ My name may be revealed to the Employer
5
The Undersigned believes that a violation of an Occupational Safety or Health standard exists which is a job safety or health hazard at the establishment named on this form.
(Mark "X" in ONE box)
☐ Employee ☐ Federal Safety and Health Committee
☐ Representative of Employees ☐ Other (specify)
Complainant Name
Telephone
Address(Street,City,State,Zip)
6
Signature
Date
If you are an authorized representative of employees affected by this complaint, please state the name of the organization that you represent and your title:
Organization Name: Your Title:

5. Do NOT reveal my name: OSHA will keep your name off the complaint, if you wish. Remember that discrimination for health and safety activity is illegal. If you are a union representative, you may wish to have your name on the complaint.
6. Signature and address: It is important to sign the complaint if you want OSHA to conduct an onsite inspection. Also, your address will allow OSHA to send copies of inspection related materials to you.

General Industry Complaint Scenario

Use the following scenario to determine what information should be put on an OSHA complaint form. Is any additional information needed?

You have worked at Ben Brothers Woodworking for 8 years as a janitor. Ben Brothers is located at 88 Wren Street, Anytown, USA, 40001. The company makes and refinishes office furniture. You usually work the second shift, but come in early sometimes. You and at least 3 of your co-workers have been getting headaches when you are working in the warehouse and the propane-operated forklift is running. You have had headaches over the past two months, at least twice a week.

The forklift operator told you that there are a lot of problems with the forklift and it needs to be replaced. You reported your headaches to your supervisor. She told you to go outside until you felt better and that there was nothing more she could do. You did some research and found out that exposure to propane in a confined, unventilated area can cause headaches, dizziness, difficulty breathing and unconsciousness. There is no monitoring of the air in the warehouse. There is no union at the facility. You decide to file a complaint with OSHA.

NOTES:

U.S. Department of Labor
Occupational Safety and Health Administration

Notice of Alleged Safety or Health Hazards

For the General Public:

This form is provided for the assistance of any complainant and is not intended to constitute the exclusive means by which a complaint may be registered with the U.S. Department of Labor.

Sec 8(f)(1) of the Williams-Steiger Occupational Safety and Health Act, 29 U.S.C. 651, provides as follows: Any employees or representative of employees who believe that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, may request an inspection by giving notice to the Secretary or his authorized representative of such violation or danger. Any such notice shall be reduced to writing, shall set forth with reasonable particularity the grounds for the notice, and shall be signed by the employee or representative of employees, and a copy shall be provided the employer or his agent no later than at the time of inspection, except that, upon request of the person giving such notice, his name and the names of individual employees referred to therein shall not appear in such copy or on any record published, released, or made available pursuant to subsection (g) of this section. If upon receipt of such notification the Secretary determines there are reasonable grounds to believe that such violation or danger exists, he shall make a special inspection in accordance with the provisions of this section as soon as practicable to determine if such violation or danger exists. If the Secretary determines there are no reasonable grounds to believe that a violation or danger exists, he shall notify the employees or representative of the employees in writing of such determination.

NOTE: Section 11(c) of the Act provides explicit protection for employees exercising their rights, including making safety and health complaints.

For Federal Employees:

This report format is provided to assist Federal employees or authorized representatives in registering a report of unsafe or unhealthful working conditions with the U.S.Department of Labor.

The Secretary of Labor may conduct unannounced inspection of agency workplaces when deemed necessary if an agency does not have occupational safety and health committees established in accordance with Subpart F, 29 CFR 1960; or in response to the reports of unsafe or unhealthful working conditions upon request of such agency committees under Sec. 1-3, Executive Order 12196; or in the case of a report of imminent danger when such a committee has not responded to the report as required in Sec. 1-201(h).

INSTRUCTIONS:

Open the form and complete the front page as accurately and completely as possible. Describe each hazard you think exists in as much detail as you can. If the hazards described in your complaint are not all in the same area, please identify where each hazard can be found at the worksite. If there is any particular evidence that supports your suspicion that a hazard exists (for instance, a recent accident or physical symptoms of employees at your site) include the information in your description. If you need more space than is provided on the form, continue on any other sheet of paper.

After you have completed the form, return it to your local OSHA office.

NOTE: It is unlawful to make any false statement, representation or certification in any document filed pursuant to the Occupational Safety and Health Act of 1970. Violations can be punished by a fine of not more than $10,000. or by imprisonment of not more than six months, or by both. (Section 17(g))

Public reporting burden for this voluntary collection of information is estimated to vary from 15 to 25 minutes per response with an average of 17 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An Agency may not conduct or sponsor, and persons are not required to respond to the collection of information unless it displays a valid OMB Control Number. Send comment regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Directorate of Enforcement Programs, Department of Labor, Room N-3119, 200 Constitution Ave., NW, Washington, DC; 20210.

OMB Approval# 1218-0064; Expires: 03-31-2011

Do not send the completed form to this Office.

OSHA-7(Rev. 9/93)

U.S. Department of Labor
Occupational Safety and Health Administration

Notice of Alleged Safety or Health Hazards

			Complaint Number	
Establishment Name				
Site Address				
	Site Phone		Site FAX	
Mailing Address				
	Mail Phone		Mail FAX	
Management Official			Telephone	
Type of Business				

HAZARD DESCRIPTION/LOCATION. Describe briefly the hazard(s) which you believe exist. Include the approximate number of employees exposed to or threatened by each hazard. Specify the particular building or worksite where the alleged violation exists.

Has this condition been brought to the attention of:	☐ Employer ☐ Other Government Agency(specify)
Please Indicate Your Desire:	☐ Do NOT reveal my name to my Employer ☐ My name may be revealed to the Employer
The Undersigned believes that a violation of an Occupational Safety or Health standard exists which is a job safety or health hazard at the establishment named on this form.	(Mark "X" in ONE box) ☐ Employee ☐ Federal Safety and Health Committee ☐ Representative of Employees ☐ Other (specify)

Complainant Name		Telephone	
Address(Street,City,State,Zip)			
Signature		Date	

If you are an authorized representative of employees affected by this complaint, please state the name of the organization that you represent and your title:

Organization Name: Your Title:

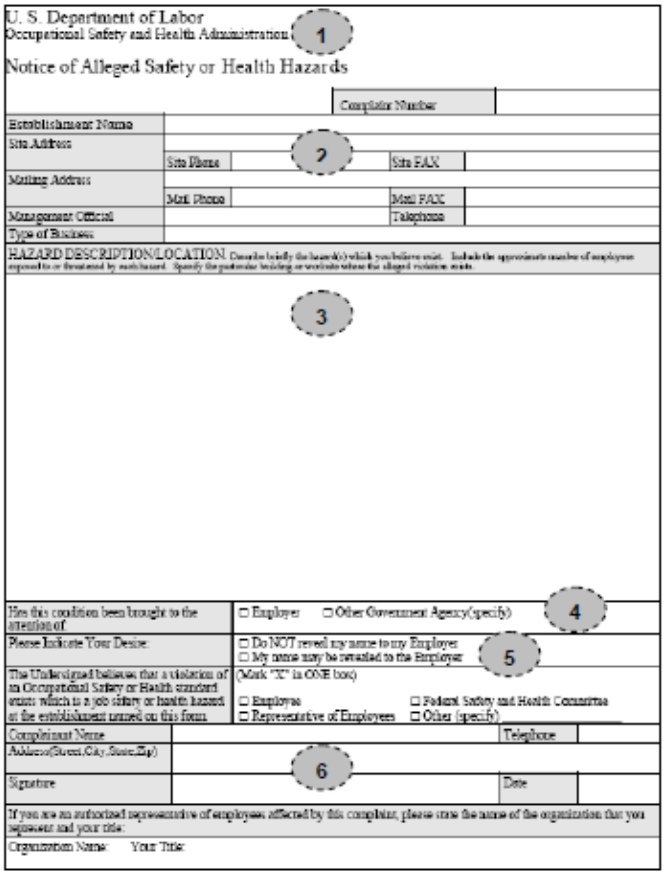
2 OSHA-7(Rev. 3/96)

Filing an OSHA Complaint – Tips for Completing the OSHA-7 Form

INSTRUCTIONS Provided on the Form:
Open the form and complete the front page as accurately and completely as possible. Describe each hazard you think exists in as much detail as you can. If the hazards described in your complaint are not all in the same area, please identify where each hazard can be found at the worksite. If there is any particular evidence that supports your suspicion that a hazard exists (for instance, a recent accident or physical symptoms of employees at your site) include the information in your description. If you need more space than is provided on the form, continue on any other sheet of paper. After you have completed the form, return it to your local OSHA office.

Here are tips for completing the form:

1. Be specific and include appropriate details: The information on the complaint form may be the only description of the hazard that the inspector will see before the inspection. The inspector will base his or her research and planning on this information.
2. Establishment Name, Address, & Type of Business: Be thorough and specific. The inspector's research on the company and the industry's hazards will be based on this information.
3. Hazard Description/Location: The hazard description is the most important part of the form. Your answer should explain the hazards clearly. If your complaint is about chemicals, identify them whenever possible and attach copies of labels or MSDSs if you can. Identify the location so the inspector will know where to look.
4. Has this condition been brought to the attention of the employer or another government agency? You should indicate on the form if you have tried to get the employer to fix the hazard before filing the complaint. Also, if another agency, such as a local fire or building department, has been notified of these hazards, OSHA may want to consult with them.


U. S. Department of Labor
Occupational Safety and Health Administration
1
Notice of Alleged Safety or Health Hazards
Complaint Number
Establishment Name
Site Address
2
Site Phone
Site FAX
Mailing Address
Mail Phone
Mail FAX
Management Official
Telephone
Type of Business
HAZARD DESCRIPTION/LOCATION Describe briefly the hazard(s) which you believe exist. Include the approximate number of employees exposed to or threatened by each hazard. Specify the particular building or worksite where the alleged violation exists.
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Has this condition been brought to the attention of
☐ Employer ☐ Other Government Agency(specify)
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Please Indicate Your Desire:
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☐ My name may be revealed to the Employer
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(Mark "X" in ONE box)
☐ Employee ☐ Federal Safety and Health Committee
☐ Representative of Employees ☐ Other (specify)
Complainant Name
Telephone
Address(Street,City,State,Zip)
6
Signature
Date
If you are an authorized representative of employees affected by this complaint, please state the name of the organization that you represent and your title:
Organization Name: Your Title:

5. Do NOT reveal my name: OSHA will keep your name off the complaint, if you wish. Remember that discrimination for health and safety activity is illegal. If you are a union representative, you may wish to have your name on the complaint.
6. Signature and address: It is important to sign the complaint if you want OSHA to conduct an onsite inspection. Also, your address will allow OSHA to send copies of inspection related materials to you.

Construction Complaint Scenario

Use the following scenario to determine what information should be put on an OSHA complaint form. Is any additional information needed?

You are a construction worker for ABC, Inc, 1000 Sweet Road, Anytown, USA, 40001. ABC does non-residential plumbing, heating and air-conditioning work. You have worked for ABC for 3 years. You, along with 7 co-workers, have been installing sheetmetal ductwork in the lower level of the Anytown Shopping Mall, which is undergoing renovation, for the past few weeks. The site is located in the Northwest quadrant, in the basement of the anchor store, located at 555 Times Drive, in Anytown. One of your co-workers has been operating a 65-horsepower concrete cutting saw in the same area. The saw is being run in the propane mode. You and several co-workers get headaches from the fumes whenever the saw is used and have told your supervisor about the problem. The supervisor said that nothing could be done, because the General Contractor, CAB Management, has control over the site and this job will be complete in another month. You did some research and found out that exposure to propane in a confined, unventilated area can cause headaches, dizziness, difficulty breathing and unconsciousness. There is no ventilation or monitoring of the air in the area.

After talking to your union representative, you decide to file a complaint with OSHA.

NOTES:

U.S. Department of Labor
Occupational Safety and Health Administration

Notice of Alleged Safety or Health Hazards

For the General Public:

This form is provided for the assistance of any complainant and is not intended to constitute the exclusive means by which a complaint may be registered with the U.S. Department of Labor.

Sec 8(f)(1) of the Williams-Steiger Occupational Safety and Health Act, 29 U.S.C. 651, provides as follows: Any employees or representative of employees who believe that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, may request an inspection by giving notice to the Secretary or his authorized representative of such violation or danger. Any such notice shall be reduced to writing, shall set forth with reasonable particularity the grounds for the notice, and shall be signed by the employee or representative of employees, and a copy shall be provided the employer or his agent no later than at the time of inspection, except that, upon request of the person giving such notice, his name and the names of individual employees referred to therein shall not appear in such copy or on any record published, released, or made available pursuant to subsection (g) of this section. If upon receipt of such notification the Secretary determines there are reasonable grounds to believe that such violation or danger exists, he shall make a special inspection in accordance with the provisions of this section as soon as practicable to determine if such violation or danger exists. If the Secretary determines there are no reasonable grounds to believe that a violation or danger exists, he shall notify the employees or representative of the employees in writing of such determination.

NOTE: Section 11(c) of the Act provides explicit protection for employees exercising their rights, including making safety and health complaints.

For Federal Employees:

This report format is provided to assist Federal employees or authorized representatives in registering a report of unsafe or unhealthful working conditions with the U.S.Department of Labor.

The Secretary of Labor may conduct unannounced inspection of agency workplaces when deemed necessary if an agency does not have occupational safety and health committees established in accordance with Subpart F, 29 CFR 1960; or in response to the reports of unsafe or unhealthful working conditions upon request of such agency committees under Sec. 1-3, Executive Order 12196; or in the case of a report of imminent danger when such a committee has not responded to the report as required in Sec. 1-201(h).

INSTRUCTIONS:

Open the form and complete the front page as accurately and completely as possible. Describe each hazard you think exists in as much detail as you can. If the hazards described in your complaint are not all in the same area, please identify where each hazard can be found at the worksite. If there is any particular evidence that supports your suspicion that a hazard exists (for instance, a recent accident or physical symptoms of employees at your site) include the information in your description. If you need more space than is provided on the form, continue on any other sheet of paper.

After you have completed the form, return it to your local OSHA office.

NOTE: It is unlawful to make any false statement, representation or certification in any document filed pursuant to the Occupational Safety and Health Act of 1970. Violations can be punished by a fine of not more than $10,000. or by imprisonment of not more than six months, or by both. (Section 17(g))

Public reporting burden for this voluntary collection of information is estimated to vary from 15 to 25 minutes per response with an average of 17 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An Agency may not conduct or sponsor, and persons are not required to respond to the collection of information unless it displays a valid OMB Control Number. Send comment regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Directorate of Enforcement Programs, Department of Labor, Room N-3119, 200 Constitution Ave., NW, Washington, DC; 20210.

OMB Approval# 1218-0064; Expires: 03-31-2011

Do not send the completed form to this Office.

OSHA-7(Rev. 9/93)

U.S. Department of Labor
Occupational Safety and Health Administration

Notice of Alleged Safety or Health Hazards

			Complaint Number	
Establishment Name				
Site Address				
	Site Phone		Site FAX	
Mailing Address				
	Mail Phone		Mail FAX	
Management Official			Telephone	
Type of Business				

HAZARD DESCRIPTION/LOCATION. Describe briefly the hazard(s) which you believe exist. Include the approximate number of employees exposed to or threatened by each hazard. Specify the particular building or worksite where the alleged violation exists.

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Signature		Date	

If you are an authorized representative of employees affected by this complaint, please state the name of the organization that you represent and your title:

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OSHA-7(Rev. 3/96)

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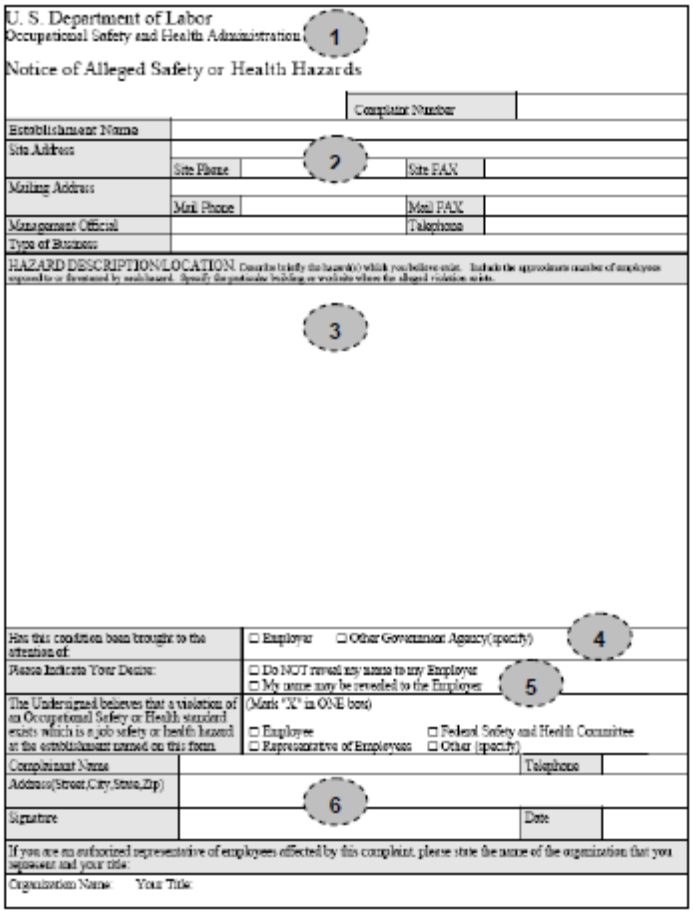
4. Has this condition been brought to the attention of the employer or another government agency? You should indicate on the form if you have tried to get the employer to fix the hazard before filing the complaint. Also, if another agency, such as a local fire or building department, has been notified of these hazards, OSHA may want to consult with them.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Maritime Industry Complaint Scenario

Use the following scenario to determine what information should be put on an OSHA complaint form. Is any additional information needed?

You are a longshoreman who operates a propane-operated forklift truck for ABC, Inc, 1000 Pier Street, Anytown, USA, 40001. ABC is involved in terminal operations and warehousing. You have worked for ABC for 3 years. For the past week, you have been transporting rolls of coiled steel from a storage area to a different section of the longshoring terminal, due to hurricane damage to another part of the terminal. As a result, you have been working inside the terminal more than you usually do. The area you are working in is somewhat confined and crowded due to extra storage. You have noticed that you are getting headaches and feeling dizzy. Two other co-workers working with you are also having the same symptoms. You are concerned that the forklift needs maintenance, and have asked your supervisor to have it checked out, but he looked it over and said it didn't need service. You and your union representative requested air monitoring of the area, but your supervisor did not agree. There is limited ventilation in the area. You did some research and found out that exposure to propane in a confined, unventilated area can cause headaches, dizziness, difficulty breathing and unconsciousness.

After talking to your union representative, you decide to file a complaint with OSHA.

NOTES:

U.S. Department of Labor
Occupational Safety and Health Administration

Notice of Alleged Safety or Health Hazards

For the General Public:

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NOTE: Section 11(c) of the Act provides explicit protection for employees exercising their rights, including making safety and health complaints.

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OSHA-7(Rev. 9/93)

U.S. Department of Labor
Occupational Safety and Health Administration

Notice of Alleged Safety or Health Hazards

			Complaint Number	
Establishment Name				
Site Address				
	Site Phone		Site FAX	
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Management Official			Telephone	
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Complainant Name		Telephone	
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Organization Name: Your Title:

OSHA FactSheet

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 and health, commercial motor carrier safety, pipeline safety, air carrier safety, nuclear safety, the environment, asbestos in schools, corporate fraud, SEC rules or regulations, railroad carrier safety or security, or public transportation agency safety or security.

Whistleblower Laws Enforced by OSHA

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

You may file complaints by telephone or in writing under the:

- *Occupational Safety and Health Act* (30 days)
- *Surface Transportation Assistance Act* (180 days)
- *Asbestos Hazard Emergency Response Act* (90 days)
- *International Safe Container Act* (60 days)
- *Federal Rail Safety Act (180 days)*
- *National Transit Systems Security Act (180 days)*

Under the following laws, complaints must be filed in writing:

- *Clean Air Act* (30 days)
- *Comprehensive Environmental Response, Compensation and Liability Act* (30 days)
- *Energy Reorganization Act* (180 days)
- *Federal Water Pollution Control Act* (30 days)
- *Pipeline Safety Improvement Act* (180 days)
- *Safe Drinking Water Act* (30 days)
- *Sarbanes-Oxley Act* (90 days)
- *Solid Waste Disposal Act* (30 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:

- Firing or laying off
- Blacklisting
- Demoting
- Denying overtime or promotion
- Disciplining
- Denying benefits
- Failing to hire or rehire
- Intimidation
- Reassignment affecting promotion prospects
- Reducing pay or hours

Filing a Complaint

If you believe that your employer retaliated against you because you exercised your legal rights as an employee, contact your local OSHA office *as soon as possible*, because you must file your complaint within the legal time limits. OSHA conducts an in-depth interview with each complainant to determine whether to conduct an investigation. For more information, call your closest OSHA Regional Office:

Boston	*(617) 565-9860*
New York	*(212) 337-2378*
Philadelphia	*(215) 861-4900*
Atlanta	*(404) 562-2300*
Chicago	*(312) 353-2220*
Dallas	*(972) 850-4145*
Kansas City	*(816) 283-8745*
Denver	*(720) 264-6550*
San Francisco	*(415) 625-2547*
Seattle	*(206) 553-5930*

Addresses, fax numbers and other contact information for these offices can be found on OSHA's website, www.osha.gov, and in local directories. Some complaints must be filed in writing and some may be filed verbally (call your local OSHA office for assistance). Written complaints may be filed by mail (we recommend certified mail), fax, or hand-delivered during business hours. The date postmarked, faxed or hand-delivered is considered the date filed.

If retaliation for protected activity relating to occupational safety and health issues takes place in a state that operates an OSHA-approved state plan, the complaint should be filed with the state agency, although persons in those states may file with Federal OSHA at the same time. Although the *Occupational Safety and*

Health Act covers only private sector employees, state plans also cover state and local government employees. For details, see http://www.osha.gov/fso/osp/index.html.

How OSHA Determines Whether Retaliation Took Place

The investigation must reveal that:

- The employee engaged in protected activity;
- The employer knew about the protected activity;
- The employer took an adverse action; and
- The protected activity was the motivating factor (or under some laws, a contributing factor) in the decision to take the adverse action against the employee.

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

Limited Protections for Employees Who Refuse to Work

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 to get your employer to correct the condition, 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.

Regardless of the unsafe condition, you are not protected if you simply walk off the job. For details, see http://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 are protected from retaliation by their employers for refusing to violate or for reporting violations of Department of Transportation (DOT) motor carrier safety standards or regulations, or refusing to operate a vehicle because of such violations or because they have a reasonable apprehension of death or serious injury.

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 who 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 who raise 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, or bank fraud; violations of rules or regulations of the SEC, or federal laws relating to fraud against shareholders.

More Information

To obtain more information on whistleblower laws, go to www.osha.gov, and click on the link for "Whistleblower Protection."

This is one in 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 or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For more complete information:

OSHA Occupational Safety and Health Administration

U.S. Department of Labor

www.osha.gov

(800) 321-OSHA

DEP 11/2007

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	Workers should:
✓ 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, updating and evaluating the effectiveness of the PPE program.	✓ Properly wear PPE ✓ Attend training sessions on PPE ✓ Care for, clean and maintain PPE, an ✓ 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

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)*

How to Read the OSHA Standards
29 CFR 1910 – General Industry

Under Title 29, Chapter XVII, the OSHA regulations are broken down into Parts. Part 1910, for example, is commonly known as the OSHA General Industry standards. Part 1926 covers OSHA construction standards and Parts 1915, 1917 and 1918 include the OSHA standards for the maritime industry.

Subparts

Under each part, such as Part 1910, major blocks of information are further broken into subparts. The major subparts in 1910 standards include:

Subpart D	Walking-Working Surfaces
Subpart E	Means of Egress
Subpart F	Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms
Subpart G	Occupational Health and Environmental Control
Subpart H	Hazardous Materials
Subpart I	Personal Protective Equipment
Subpart J	General Environmental Controls
Subpart K	Medical and First Aid
Subpart L	Fire Protection
Subpart M	Compressed Gas and Compressed Air Equipment
Subpart N	Materials Handling and Storage
Subpart O	Machinery and Machine Guarding
Subpart P	Hand and Portable Powered Tools
Subpart Q	Welding, Cutting and Brazing
Subpart R	Special Industries
Subpart S	Electrical
Subpart Z	Toxic and Hazardous Substances

Sections

Each Subpart is further broken down into sections. For example, Subpart D – Walking-Working Surfaces has sections 1910.21 through 1910.30.

- 1910.21 – Definitions.
- 1910.22 – General requirements.
- 1910.23 – Guarding floor and wall openings and holes.
- 1910.24 – Fixed industrial stairs.
- 1910.25 – Portable wood ladders.
- 1910.26 – Portable metal ladders.
- 1910.27 – Fixed ladders.
- 1910.28 – Safety requirements for scaffolding.
- 1910.29 – Manually propelled mobile ladder stands and scaffolds (towers).
- 1910.30 – Other working surfaces.

Notes:

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Example: Reading OSHA Standards –Breaking Down the Numbers

Standard: **29 CFR 1910.110(b)(13)(ii)*(b)(7)(iii)***

Portable containers shall not be taken into buildings except as provided in paragraph (b)(6)(i) of this section.

Numbers:

Title	Code of Fed. Reg.	Part	Section	Lower Case Alpha	Arabic Number	Lower Case Roman	Italicized*
29	CFR	1910	.110	(b)	(13)	(ii)	*(b)(7)(iii)*

*For standards promulgated prior to 1979, italics are used to list the fourth set of parentheses. After 1979, a capital/upper case letter is used in this space.

How to Read the OSHA Standards
29 CFR 1926 – Construction

Under Title 29, Chapter XVII, the OSHA regulations are broken down into Parts. Part 1926, for example, is commonly known as the OSHA Construction standards. Part 1910 covers OSHA General Industry standards and Parts 1915, 1917 and 1918 include the OSHA standards for the maritime industry.

Subparts

Under each part, such as Part 1926, major blocks of information are further broken into subparts. The major subparts in 1926 standards include:

Subpart C	General Safety and Health Provisions
Subpart D	Occupational Health and Environmental Controls
Subpart E	Personal Protective and Life Saving Equipment
Subpart F	Fire Protection and Prevention
Subpart G	Signs, Signals and Barricades
Subpart H	Materials Handling, Storage, Use, and Disposal
Subpart I	Tools – Hand and Power
Subpart J	Welding and Cutting
Subpart K	Electrical
Subpart L	Scaffolds
Subpart M	Fall Protection
Subpart N	Cranes, Derricks, Hoists, Elevators, and Conveyors
Subpart O	Motor Vehicles, Mechanized Equipment, and Marine Operations
Subpart P	Excavations
Subpart Q	Concrete and Masonry Construction
Subpart R	Steel Erection
Subpart S	Underground Construction, Caissons, Cofferdams, and Compressed Air
Subpart T	Demolition
Subpart U	Blasting and the Use of Explosives
Subpart V	Power Transmission and Distribution
Subpart W	Rollover Protective Structures; Overhead Protection
Subpart X	Ladders
Subpart Y	Commercial Diving
Subpart Z	Toxic and Hazardous Substances

Sections

Each Subpart is further broken down into sections. For example, Subpart C – General Safety and Health Provisions, has sections 1926.20 through 1926.35.

- 1926.20 – General safety and health provisions.
- 1926.21 – Safety training and education.
- 1926.22 – Recording and reporting of injuries.
- 1926.23 – First aid and medical attention.
- 1926.24 – Fire protection and prevention.
- 1926.25 – Housekeeping.
- 1926.26 – Illumination.
- 1926.27 – Sanitation.
- 1926.28 – Personal protective equipment.
- 1926.29 – Acceptable certifications.
- 1926.30 – Shipbuilding and ship repairing
- 1926.31 – Incorporation by reference.
- 1926.32 – Definitions.
- 1926.33 – Access to employee exposure and medical records.
- 1926.34 – Means of egress.
- 1926.35 – Employee emergency action plans.

NOTES:

Example: Reading OSHA Standard Numbers

Standard: **29 CFR 1926.152(i)(1)(i)(C)**
Tanks built of materials other than steel shall be designed to specifications embodying principles recognized as good engineering design for the material used.

Breaking down the number:

Title	Code of Fed. Reg.	Part	Section	Lower Case Alpha	Arabic Number	Lower Case Roman	Capital/Upper Case Alpha*
29	CFR	1926	.152	(i)	(1)	(i)	(C)

*For standards promulgated after 1979, a capital/upper case letter is used in the fourth set of parentheses. Prior to 1979, the fourth set of parenteses are italicized.

How to Read the OSHA Standards
29 CFR 1915, 29 CFR 1917, 29 CFR 1918 – Maritime Industry

Under Title 29, Chapter XVII, the OSHA regulations are broken down into Parts. Parts 1915, 1917 and 1918 include the OSHA standards for the maritime industry. Part 1910 covers OSHA General Industry standards and Part 1926 is commonly known as the OSHA Construction standards.

Subparts of 29 CFR 1915

Under each part, such as **Part 1915 Occupational Safety and Health Standards for Shipyard Employment**, major blocks of information are further broken into subparts. The major subparts in 1915 standards include:

Subpart A	General Provisions
Subpart B	**Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment**
Subpart C	Surface Preparation and Preservation
Subpart D	Welding, Cutting and Heating
Subpart E	Scaffolds, Ladders and Other Working Surfaces
Subpart F	General Working Conditions
Subpart G	Gear and Equipment for Rigging and Materials Handling
Subpart H	Tools and Related Equipment
Subpart I	Personal Protective Equipment
Subpart J	Ship's Machinery and Piping Systems
Subpart K	Portable, Unfired Pressure Vessels, Drums and Containers, Other Than Ship's Equipment
Subpart L	Electrical Machinery
Subpart M, N, O	[Reserved]
Subpart P	Fire Protection in Shipyard Employment
Subpart Q, R, S, T, U, V, W, X, Y	[Reserved]
Subpart Z	Toxic and Hazardous Substances

Sections

Each Subpart is further broken down into sections. For example, **Subpart B – Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment**, has sections 1915.11 through 1915.16 with Appendixes.

- 1915.11 – Scope, application, and definitions applicable to this subpart.
- 1915.12 – Precautions and the order of testing before entering confined and enclosed spaces and other dangerous atmospheres.
- 1915.13 – Cleaning and other cold work.
- 1915.14 – Hot work.
- 1915.15 – Maintenance of safe conditions.
- 1915.16 – Warning signs and labels.
- 1915 Subpart B App A – Compliance Assistance Guidelines for Confined and Enclosed Spaces and Other Dangerous Atmospheres
- 1915 Subpart B App B – Reprint of U.S. Coast Guard Regulations Referenced in Subpart B, for Determination of Coast Guard Authorized Persons.

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Example: Reading OSHA Standard Numbers

Standard:	Breaking down the Number:							
1915.7(b)(2)(iii)(B) The roster shall contain, as a minimum, the date the employee was trained as a competent person.	Title	Code of Fed. Reg.	Part	Section	Lower Case Alpha	Arabic Number	Lower Case Roman	Capital/ Upper Case Alpha*
	29	CFR	1915	.7	(b)	(2)	(iii)	(B)

*For standards promulgated after 1979, a capital/upper case letter is used in the fourth set of parentheses. Prior to 1979, the fourth set of parenteses are italicized.

How to Read the OSHA Standards
29 CFR 1915, 29 CFR 1917, 29 CFR 1918 – Maritime Industry

Subparts of 29 CFR 1917

Under each part, such as **Part 1917 Marine Terminals**, major blocks of information are further broken into subparts. The major subparts in 1917 standards include:

Subpart A	Scope and Definitions
Subpart B	Marine Terminal Operations
Subpart C	Cargo Handling Gear and Equipment
Subpart D	Specialized Terminals
Subpart E	Personal Protection
Subpart F	Terminal Facilities
Subpart G	**Related Terminal Operations and Equipment**

Sections

Each Subpart is further broken down into sections. For example, **Subpart G – Related Terminal Operations and Equipment**, has sections 1917.151 through 1917.158.

- 1917.151 – Machine guarding.
- 1917.152 – Welding, cutting and heating (hot work)
- 1917.153 – Spray painting
- 1917.154 – Compressed air.
- 1917.155 – Air receivers.
- 1917.156 – Fuel handling and storage.
- 1917.157 – Battery charging and changing.
- 1917.158 – Prohibited operations.

NOTES:

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Subparts of 29 CFR 1918

Under each part, such as **Part 1918 Safety and Health Regulations for Longshoring**, major blocks of information are further broken into subparts. The major subparts in 1918 standards include:

Subpart A	Scope and Definitions
Subpart B	Gear Certification
Subpart C	Gangways and Other Means of Access
Subpart D	**Working Surfaces**
Subpart E	Opening and Closing Hatches
Subpart F	Vessel's Cargo Handling Gear
Subpart G	Cargo Handling Gear and Equipment Other Than Ship's Gear
Subpart H	Handling Cargo
Subpart I	General Working Conditions
Subpart J	Personal Protective Equipment

Sections

Each Subpart is further broken down into sections. For example, **Subpart D – Working Surfaces**, has sections 1918.31 through 1918.37.

- 1918.31 – Hatch coverings.
- 1918.32 – Stowed cargo and temporary landing surfaces.
- 1918.33 – Deck loads.
- 1918.34 – Other decks.
- 1918.35 – Open hatches.
- 1918.36 – Weather deck rails.
- 1918.37 – Barges.

Example: Reading OSHA Standard Numbers

Standard:	Breaking down the Number:							
29 CFR 1917.43(g)(2)(i)(C) The drive chain shall be enclosed to a height of eight feet (2.44 m) except for that portion at the lower half of the lower sprocket.	Title	Code of Fed. Reg.	Part	Section	Lower Case Alpha	Arabic Number	Lower Case Roman	Capital/ Upper Case Alpha*
	29	CFR	1917	.43	(g)	(2)	(i)	(C)

Standard:	Breaking down the Number:							
1918.66(a)(14)(iii)(A) *[Holding brakes torque]*125 percent when used with an other than mechanically controlled braking means;	Title	Code of Fed. Reg.	Part	Section	Lower Case Alpha	Arabic Number	Lower Case Roman	Capital/ Upper Case Alpha*
	29	CFR	1918	.66	(a)	(14)	(iii)	(A)

***For standards promulgated after 1979, a capital/upper case letter is used in the fourth set of parentheses. Prior to 1979, the fourth set of parenteses are italicized.**

Safety & Health Resources

Government Resources

OSHA: http://www.osha.gov/
Contact the OSHA Office nearest you or contact the toll free number:
1-800-321-OSHA (6742)

NIOSH: http://www.cdc.gov/niosh/
Phone NIOSH at
1-800-CDC-INFO (1-800-232-4636)
or Email at: cdcinfo@cdc.gov

NIOSH is a part of the Centers for Disease Control and Prevention (http://www.cdc.gov/).
CDC has extensive information on health and safety topics.

Universities

CORNELL UNIVERSITY
School of Industrial and Labor Relations:
http://www.ilr.cornell.edu/healthSafety/

LABOR OCCUPATIONAL HEALTH PROGRAM, University of California at Berkeley: http://www.lohp.org/

NATIONAL LABOR COLLEGE, George Meany Center: http://www.nlc.edu/

UCLA, Labor Occupational Safety and Health (UCLA-LOSH):
http://www.losh.ucla.edu/

COSH GROUPS

COSH groups are private, non-profit coalitions of labor unions, health and technical professionals, and others interested in promoting and advocating for worker health and safety. *If you don't see a COSH group in your area, check the NATIONAL COSH website for local COSH groups.*

NATIONAL COUNCIL FOR OCCUPATIONAL SAFETY & HEALTH National COSH is a federation of local and statewide "COSH" groups:
http://www.coshnetwork.org/

CACOSH – Chicago Area Committee on Occupational Safety and Health:
http://www.cacosh.org/

MASSCOSH –Massachusetts Coalition on Occupational Safety and Health:
http://www.masscosh.org/

NYCOSH – New York Committee for Occupational Safety and Health:
http://www.nycosh.org/

PHILAPOSH – Philadelphia Area Project for Occupational Safety and Health:
http://www.philaposh.org/
Prevention (http://www.cdc.gov/).

Unions

The following is a sample list of unions with links to useful health and safety information.
AFL-CIO: http://www.aflcio.org/issues/safety/

AFSCME: http://www.afscme.org/issues/73.cfm

eLCOSH – The Electronic Library of Construction Safety and Health is a collection of information on construction safety and health developed by CPWR – Center for Construction Research and Training, with funding by NIOSH: http://www.elcosh.org/

SEIU (Service Employees International Union) Health and Safety Department:
http://www.seiu.org/a/members/safety-and-health.php

UAW Health and Safety Department: http://www.uaw.org/hs/

Section 1 – PRODUCT AND COMPANY INFORMATION

Manufacturer	IMS Company 10373 Stafford Road Chagrin Falls, OH 44023-5296 WEB imscompany.com	Emergency Phone Prepared by Prepared/Revised E-mail	800-424-9300 Product Safety Advisor April 19, 2006 sales@imscompany.com

Item Number	Size	Former Item Number
107320	2 ounce jar	SAG1-OB500-2
107439	14 ounce cartridge	SAG1-OB500-14C
105998	16 ounce jar	SAG1-OB500-16
107526	8 pounds, 1 gallon pail	SAG1-OB500-1G
107433	42 pounds, 5 gallon pail	SAG1-OB500-5G

Hazardous Material Information System

Health 1	Flammability 1	Reactivity 1	Protection X
0 Normal use Material	0 Will Not Burn	0 Stable	X = Consult the
1 Slight Hazard (temporary)	1 Possible to Burn	1 Unstable if Heated	MSDS and
2 Health Affected (lengthy)	2 Burns if Heated	2 Violent Chemical Change	your supervisor
3 Extreme Danger	3 Easily Burns	3 Shock and Heat Sensitive	for your special
4 Severe or Fatal	4 Very Easily Burns	4 May Explode	workplace need
* Chronic (Accumulates)			

NOTE The HMIS may not be enough hazard information for this chemical in all workplaces. The HMIS system requires employee training about the system and about information in this MSDS.

Section 2 – INGREDIENTS INFORMATION

#	Chemical/Common Name	CAS-Number	%	PEL-OSHA	TLV-ACGIH
1	1-Decene homopolymer	68037-01-4	70 to 90	5mg/m^3	5mg/m^3
2	Organophillic clay	68953-58-2	5 to 25	10 mg/m^3 (4) (1) (3)	0.1 mg/m^3 (4) (1) (3)
3	Polytetrafluoroethylene	9002-84-0	0.1 to 10	(1)	5 mg/m^3
4	Methylene bis dithiocarbonate	10254-57-6	0.1 to 10	5mg/m^3	5mg/m^3
5	Zinc oxide (2)	1314-13-2	0.1 to 10		

(1) Not Established
(2) Subject to SARA Title III Section 313 reporting requirements.
(3) Manufacturer's exposure level is 5mg/m^3 for respirable dust.
(4) As respirable quartz.

This product Does Not Contain carcinogens according to NTP, IARC, or OSHA.

Section 3 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW Small amount (very thick material) is not expected to cause any emergency condition.

HEALTH EFFECTS (Acute and Chronic)

Nose No vapors expected. Vapors from elevated temperatures may cause respiratory irritation, harmful if aspirated into lungs. Vapors from over 400° F (204° C) may cause "Fume Fever."

Mouth May be harmful if swallowed. Possible irritation, nausea, or diarrhea.

Eyes Minimal irritation, tearing, reddening, or swelling. Avoid prolonged contact.

Skin May irritate skin. Avoid long-term contact. Prolonged contact may result in defatting, drying which may lead to irritation, dermatitis, allergic reaction. If injected under skin (with a high pressure grease gun), necrosis could result.

Chronic Not available

PRIMARY ROUTES OF ENTRY Skin, Eye

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE Preexisting skin, and eye disorders could be aggravated by exposure to this type of product.

Section 4 – FIRST AID MEASURES

NOTE If irritation persists after any kind of body exposure, get medical help.

Breathing Vapors are not likely to injure, unless the product is heated. Get to fresh air if symptoms appear. If breathing has stopped, administer artificial respiration and get medical attention.

Eating **Get Medical Help at once** Do not induce vomiting.

Eye Contact Immediately flush eyes thoroughly with plenty of water for at least 15 minutes. Remove contact lenses. Hold eyelids open to irrigate fully. Get medical attention if irritation persists.

Skin Contact Remove contaminated clothing. Wash exposed area with soap and water. Wash contaminated clothing before re-use. If irritation persists, or if contact has been prolonged, get medical attention.

Medical Notes Treat symptomatically

Section 5 – FIRE FIGHTING MEASURES

Flash Point (estimated) .....420° F(215° C)
Autoignition temperature .....590° F(310° C)
Flammable Limits.....LEL = NA ...UEL = NA

Extinguishing Media Water spray, alcohol-type foam, or all-purpose-type foam, for large fires. Carbon dioxide or dry chemical for small fires.

Special Fire Fighting Procedures Material will not burn unless preheated. Cool exposed containers with water. Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity. Firefighters should wear full bunker gear, self-contained, positive-pressure breathing apparatus, and protective clothing.

Unusual Fire and Explosion Hazards Streams of water are likely to spread fire. Use water spray only to cool containers. Will not flash spontaneously. Stable at ambient temperatures and pressures. Toxic fumes may be evolved on burning or exposure to heat.

Hazardous Combustion/Decomposition Products Hydrogen fluoride (HF), carbonyl fluoride, perfluoroolefin, carbon anoxide, fluorocarbons, carbon monoxide, carbon dioxide, and unidentified organic compounds.

Section 6 – ACCIDENTAL RELEASE MEASURES

Steps to be Taken in Case Material is Released or Spilled May burn, although not readily ignitable. Wear appropriate personal protective equipment according to the conditions, such as respirator and protective clothing. Small spills can be collected or absorbed with appropriate absorbing materials. Soak up residue with an absorbent such as clay, sand, or other suitable material. Dispose of properly. Flush area with water to remove trace residues, but do not let product or contaminated water get to drains, sewers, or rainfall. All spill response should be carried out in accordance with Federal, State, County/Provincial, and local requirements.

Section 7 – HANDLING AND STORAGE

Precautions to be Taken in Storage Product will burn. Eliminate open flames, strong oxidizers, and other sources of ignition from the storage area. Keep containers closed to avoid contamination from airborne dust and moisture. Observe applicable fire codes. Store in accordance with good industrial practices. These include store in cool, dry area out of direct sunlight (below120º F, 49º C). Do not puncture or burn containers.

Handling Thoroughly wash after handling and before eating, drinking, or using tobacco products.

Maintenance Precautions Do not remove or deface label. Keep container closed.

Other Precautions As per any petroleum-based products, read and follow directions and cautions on the container label.

Section 8 – EXPOSURE CONTROLS – PERSONAL PROTECTION

Ventilation Usually not specifically required. No local exhaust required. General (mechanical) room ventilation may be adequate to maintain product and its components below TLV/PEL, if handled at ambient temperatures or in covered equipment. Local exhaust ventilation or other engineering controls may be required, if ambient temperatures are exceeded or if used in operations that may produce mist, aerosol, or vapor.

Respiratory Protection Usually none. If personnel exposure exceeds exposure limit at any time, select respiratory protection equipment in accordance with 29 CFR 1910.134. NIOSH approved atmosphere-supplying respirator or a NIOSH approved air-purifying respirator with organic vapor cartridge and dust/mist pre-filter is recommended.

Section 8 – EXPOSURE CONTROLS – PERSONAL PROTECTION (cont)

Protective Gloves If needed to avoid long-term or repeated contact, natural rubber, neoprene, nitrile (NBR), and butyl are recommended materials.

Other Protective Equipment Safety glasses or goggles, and face shield, as appropriate for exposure.

Other Engineering Controls To determine exposure levels, monitoring should be performed. Eye bath and safety shower station should be available.

Work Practices Avoid long-term or repeated contact. Stained clothing should be removed and laundered before re-use. Sudden release of hot vapor or mist from process equipment operating at elevated temperature and pressure, or sudden ingress of air into hot equipment under vacuum, may result in ignition without the presence of obvious ignition sources. Autoignition temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated-temperature processes must be thoroughly evaluated to establish and maintain safe operating conditions.

Avoid contact with eyes. Wear chemical goggles if there is likelihood of contact. Avoid prolonged or repeated contact with skin. Wear chemical resistant gloves and other clothing as required to minimize contact.

Ventilation should maintain the concentration of the components below their TLV/PEL values.

Hygienic Practices Avoid contact with skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands before eating, drinking, or using restroom after using this or any chemical product. Launder contaminated clothing before reuse. Product can contaminate tobacco, causing flu-like sickness (from inhaling product's polytetrafluoroethylene component heated in tobacco smoke or ingested from handling tobacco and/or food products). After using this, or any chemical product, wash thoroughly before eating or smoking.

Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	NA	Specific Gravity (Water=1)	0.87
Vapor Pressure at 68° F (20° C)	NIL	Percent Volatile by Volume (%)	NIL
Vapor Density (Air=1)	NIL	Evaporation Rate (butyl acetate=1)	NIL
VOC	NIL	Pour point	NA
Solubility in Water	NIL	pH	NA
Melting point	NA		

Appearance and Odor Information Light tan to off-white paste, sticky, almost odorless.

Section 10 – STABILITY AND REACTIVITY

Incompatibility (Materials to Avoid) Strong oxidizers

Will Hazardous Polymerization Occur? No

Conditions to Avoid for Polymerization See Incompatibility

Is the Product Stable? Yes

Conditions to Avoid for Stability Temperatures above 392° F (200° C), See Incompatibility

Section 11 – TOXICOLOGICAL INFORMATION

COMPONENT #	COMMENTS
1	Not listed in NTP, IARC, OSHA, Prop 65, and SARA 313. Is listed as a component of non-food article intended for use in contact with food or as a lubricant added to food directly as a result of incidental contact with container or equipment.
2	AKA Di (tallow alkyl) dimethyl ammonium bentonite, a quaternary compound
3, 4, 5	Not listed in NTP, IARC, OSHA, Prop 65, and SARA 313.

Section 12 – ECOLOGICAL INFORMATION

COMPONENT #	COMMENTS
1, 2, 3, 5	No ecological or environmental effects known
4	Considered toxic to aquatic life

Section 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Methods Consult Federal, State, County/Provincial, and Local regulations. Product is readily reclaimed from many applications; reclamation from spent fluids is encouraged where possible. At low concentrations in water, this product is biodegradable in a biological wastewater treatment plant. Where reclamation is not practical, this product may be incinerated where permitted under Federal, State, County/Provincial, and Local regulations, but only if the facility is capable of scrubbing out HF and other acidic products. Never dispose by means of public sewers or drainage. Empty containers should be recycled or disposed of through an approved waste management facility.

Section 14 – TRANSPORT INFORMATION

COMPONENT # COMMENTS
1, 2, 3, 4, 5 .....Not regulated

Section 15 – REGULATORY INFORMATION

	Component 1	Component 2	Component 3	Component 4	Component 5
ACGIH	N	N	N	N	N
AIHA	N	N	N	N	N
ANSI	N	N	N	N	N
Canada - DSL	Y	Y	Y	Y	Y
CFC	N	N	N	N	N
DOT listed	N	N	N	N	N
EINECS listed	Y	Y	Y	Y	Y
EPA - CAA, CAW	N	N	N	N	N
EU rating #'s	N	N	N	N	N
HCFC	N	N	N	N	N
OSHA listed	Y	Y	N	N	N
PROP 65 listed	N	N	N	N	N
RCRA listed	N	N	N	N	N
SARA 313 list	N	N	N	N	Y
TSCA listed	Y	Y	Y	Y	Y
WHMIS-other	N	N	N	N	N

Section 16 – OTHER INFORMATION

CAUTION Intentional misuse of this chemical product, as with any industrial chemical in contact with the body, can be harmful or fatal. This includes such things as deliberately breathing, placing in mouth, swallowing, placing on skin, or any other body contact, or repeated, or continuous contact.

IMS provides this information in good faith, but makes no representation as to its comprehensiveness or its accuracy. This document is offered as a guide to a trained person, for appropriate precautionary handling. Persons using the product and receiving the information must exercise independent judgment in determining the appropriateness of the use and the safety information for their particular purpose. IMS MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THIS INFORMATION OR TO THE PRODUCT. ACCORDINGLY, IMS WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE ON THIS INFORMATION.

ACGIH	American Conference of Governmental Hygienists
AKA	Also Known As, Synonym
CAS	Chemical Abstract Service
IARC	International Agency for Research of Cancer
mg/m^3	milligrams per Cubic Meter
N	No, None, Not listed
NA	Not Applicable, Not Available
ND	Not Determined
NIL	Not measurable, significant, noticeable, or an affect
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
ppm	parts per million
Y	Yes, Does Exists, Is Listed,

Identifying Safety and Health Problems in the Workplace

Identifying health and safety problems can be as easy as answering basic questions. To determine if there are health and safety problems that need to be addressed in your workplace, use these questions:

- Do you or your co-workers have injuries or health complaints? If so, what types?
- Who has been hurt or is having symptoms?
- When do you or your co-workers feel these symptoms?
- Where in the workplace are safety or health problems occurring?
- What are the conditions that are causing problems?

HEALTH HAZARDS	SAFETY HAZARDS
Common types of health hazards in the workplace are: o Chemical (asbestos, solvents, chlorine) o Biological (tuberculosis, HIV, hepatitis, molds) o Physical (noise, heat and cold, radiation, vibration) o Ergonomics or Repetitive Strain Injuries (carpal tunnel syndrome, back injuries) o Psychological (stress)	**Common types of safety hazards in the workplace are:** o Slips, trips and falls o Being caught in or struck by moving machinery or other objects o Fire and explosions o Transportation and vehicle-related accidents o Confined spaces o Violence
How health hazards enter your body: o Breathing (inhalation) o Swallowing (ingestion) o Skin (absorption) o Cuts (injection)	**Slips, Trips and Falls** o Bad housekeeping and poor drainage can make floors and other walking surfaces wet and slippery. o Electrical wires along the floor pose a tripping hazard. o You can fall if you are not provided with fall protection equipment, guardrails, and safe ladders.
The harm caused by health hazards depends on: o Strength, or potency, of the agent. o Amount of the agent that is present. o How long you are exposed to the agent. o Part of your body that is exposed.	**Caught In or Struck By Moving Machinery/Objects** Machinery can cause injuries in different ways: o You can get parts of your body caught in or struck by exposed moving parts if machines are not properly guarded, or not locked out when being repaired. o You can be struck by flying objects from machines without protective guards.
Types of health effects: o Acute: the effect shows up right away. o Chronic: problems show up after a long period of exposure and/or long after the exposure ends. o Local: only the part of the body that was exposed is affected. o Systemic: an agent enters the body and affects other parts of the body.	**Fire and Explosions** o Improper labeling, handling or storage of certain materials can pose a risk of fire or explosion. o Every workplace should have an evacuation plan for getting people out of a building in case of fire and an alarm or alert system to quickly inform employees of an emergency. o Every worker should be trained on what to do in case of an emergency.
Cancer o Cancer is a term for many diseases in different parts of the body. o Carcinogens are agents that cause cancer. o There is no totally safe level of exposure to something that causes cancer. o Cancer from a workplace exposure may develop 10, 20 or more years after the exposure.	**Transportation and Vehicle-Related Accidents** o Operators of vehicles and equipment can be injured or cause injury to pedestrians if equipment is unsafe or if adequate training has not been provided. o You can be seriously injured or killed after being hit by a vehicle while repairing roads or doing other work in traffic zones. This danger exists when traffic is not properly routed and/or adequate barriers are not placed between the workers and the traffic.
Reproductive effects o Both men and women can be affected by reproductive hazards at work. o Reproductive hazards cause miscarriages and birth defects.	**Confined Spaces** o A confined space is an area with small openings for a worker to enter and exit and is not designed for regular work. Examples of confined spaces include manholes, sewer digestors and silos. There are many hazards in confined spaces. o Workers can become unconscious and die from a lack of oxygen. o There may be too much oxygen, or other chemicals that can catch fire or explode. o Poisonous gases and vapors, such as hydrogen sulfide or carbon monoxide, may also build up in a confined space. o Confined spaces can also pose physical hazards. They can be very hot or cold, very loud, or slippery and wet. o Grain, sand or gravel can bury a worker.
Sensitization o You may become allergic or sensitive to some agents you work with. Sensitization can develop over time. o For example, a health care worker may develop a serious allergic reaction to latex used in gloves.	**Violence** o Violence on the job is a growing problem. o Homicides are the second leading cause of workplace fatalities. Workplace violence includes physical assault as well as near misses, verbal abuse and sexual harassment.

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