

Personal Protective Equipment
INSTRUCTOR'S TRAINING MANUAL

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TRAINING REQUIREMENTS

Employees who work in production areas, who after a workplace assessment determines that they should be wearing Personal Protective Equipment (PPE), should be thoroughly trained in all aspects of PPE. These employees would be those who work directly with chemicals or are exposed to other hazards.

Employees should be trained in several areas of Personal Protective Equipment (PPE).

These areas include but are not limited to:

- 1. When PPE is necessary.**
- 2. What PPE is necessary.**
- 3. How to properly put on, take off, adjust and wear PPE.**
- 4. The limitations of PPE.**
- 5. The proper care, maintenance, use, fit and disposal of the PPE.**

Furthermore, the employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subject of the certification.

RETRAINING:

Retraining must occur if the conditions in which the employee works changes significantly, or they change the type of PPE used or the employee demonstrates a lack of knowledge in any of the areas mentioned above. For example, knowing exactly when, where, how PPE is necessary, how to put on/off, knowing the limitations and how to properly care for and maintain their PPE.

The regulations only require one-time training. However, if through your reviews/audit you find employees demonstrate a lack of knowledge or failure to follow procedure, then you might want to consider annual training as a means of performing “good faith” efforts at compliance.

TRAINING CHECKLIST

1. Ensure all appropriate employees are identified for training.
2. Identify anyone of the above employees who may have learning disabilities or may have difficulty with English, and make arrangements for their training.
3. Designate where training will take place and make sure everyone knows time/place.
4. Ensure you have enough training materials for all participants. You will need the following training materials:
 - a. Student Guides
 - b. Tests/Answer Sheets
 - c. Training Certificates
 - d. Blank Assessment Forms
 - e. Example of your company's PPE i.e. gloves, goggles, back belts, etc.
 - f. Completed workplace hazard assessments (if any).
 - g. Ink pens for taking test and signing certificates. (Not pencils!)
 - h. Class sign-in sheet.
 - i. Video (if you are not conducting class yourself).

Training Sequence

- 1. Review checklist to make sure everything is ready.**
- 2. Have employees sign the Class Sign-In sheet.**
- 3. Pass out training guides to employees.**
- 4. Show ACS provided video (if you are not conducting the class yourself).**
- 5. Give them a brief introduction and cover section 1.**
- 6. Review the remainder of the training guides with them. Encourage discussion or questions.**
- 7. Following student guide instruction ask for any remaining questions.**
- 8. Give out test and instructions.**
- 9. Following the test, have employees trade tests and grade. Answer any questions.**
- 10. Pass out Training Certificates to be filled out and signed.**
- 11. Collect tests and certificates.**
- 12. Have employees fill out Workplace Assessment Forms based on provided samples. Give them a deadline to fill them out.**
- 13. If time allows, go out to production area and review their workplace assessments with them.**

Class Introduction to Personal Protective Equipment

‘Personal Protective Equipment’

Introduction

My name is.....

Today we are going to talk about one of the most important safety programs as it relates to preventing serious accidents, and that is Personal Protective Equipment (PPE).

Approximately 2.8 million serious non-fatal workplace injuries or illnesses occur each year. Furthermore, on average 17 workers die each day from injuries sustained in the workplace. While these statistics are sobering, many of these injuries could have been reduced or eliminated had these employees properly used PPE. This brief class will give you a good overview of the basics of when, where, how, what kind of PPE you should use in your work area.

PPE Student Guide Instruction

You will be instructed on the key aspects of Personal Protective Equipment. Topics we will cover include areas such as Head, Eye, Hand, Foot protection as well as Hearing and Respiratory Protection, among others.

Test

Following the guidebook instruction I will administer a 20-question test. You may use any notes you take, as well as the student guide.

Following the test you will trade papers and I will review the answers. Also, this is your last opportunity in class for you to ask questions, especially for those questions on the test you may have answered incorrectly. (You can of course ask questions later outside of class!)

Certification

Following the test you will fill out certifications and return along with the test.

Practical Exercise

Following the class instruction, you may be asked to complete a written assessment of your work area based on the criteria we are about to discuss in this class. This written assessment you may fill out is in essence your suggestions for what kind of PPE you think should be utilized in your work area.

Personal Protective Equipment Student Guide

Section 1: Introduction

- A. It is a fact that many injuries suffered by employees are a result of not wearing Personal Protective Equipment (PPE) or wearing them incorrectly. The Occupational Safety and Health Administration (OSHA) PPE requirements are designed to encourage employers to assess their workplace to determine what, if any, PPE is required to protect employees. Furthermore, the standard calls for employers to train employees on the safe use of PPE.
- B. In fact, the standard states that the employer must have a written program designed to protect the user of the equipment from safety and health hazards as well as to prevent injury to the wearer from incorrect use and breakdown.
- C. According to the OSHA Act, employers are required to provide a workplace or environment free of recognized hazards. This part of the OSHA Act is referred to as the “**General Duty Safety Clause**”, which states that employers must “*provide employment and place of employment free from recognized hazards that are causing, or are likely to cause death or serious physical harm*”.
- D. In reality, providing a ‘hazard free workplace, though a worthy goal, is obviously impossible (even under the best of conditions). For this reason, OSHA requires employers to assess their workplace in terms of hazards that are present, or are likely to be present, which may necessitate the use of PPE.
- E. This assessment performed by the employer must be documented and the training of the employee certified. This assessment’s purpose is to determine specifically what kind of PPE an employee should use in order to protect them from the 3 basic hazard areas in any workplace. **These 3 areas are chemical, physical and biological hazards.**

Examples of the 3 areas are:

- 1. **A. ‘Chemical Hazards’:** Any chemical or substance which is considered hazardous based on OSHA’s criteria that basically states that any chemical that can cause harm to humans or the environment is considered to be hazardous. Furthermore, these hazardous chemicals are required to have a corresponding Material Safety Data Sheet (MSDS). Examples of chemical hazards are solvents, cleaners, lubricants, coatings, corrosive liquids, etc.
B. Based on our generalized definition, what are some of the main “Hazardous Chemicals” you work with in your work area? (Again, these chemicals could be flammable, corrosive, toxic etc.)
 - 1. _____
 - 2. _____
 - 3. _____
 - 4. _____
 - 5. _____
- 2. **A.** Another area is ‘**Physical Hazards**’. In this case, physical hazards refers to exterior hazards that may cause injury to the employee from the outside in. Examples of these would be, Thermal Hazards such as from open flames or heated equipment, Falling Debris Hazards such as falling objects striking employee’s head or feet, Laceration Hazards such as those existing when handling sharp objects like broken glass or cut metal. Loud Prolonged Noise is obviously a hazard to an employee’s hearing, Flying Fragments or Projectile Hazards from impact chipping, grinding, etc. are dangerous to the eyes.
B. Based on these examples can you name 5 hazards that may exist in your work area?
 - 1. _____
 - 2. _____
 - 3. _____
 - 4. _____
 - 5. _____
- 3. **A.** The third major area is the presence of ‘**Biological Hazards**’, particularly exposure to bodily fluids, the most dangerous of which is blood. Most general industry employees have limited exposure to bodily fluids (unlike health care workers). However, there are situations in which an employee may come into contact with bodily fluids, such as when fellow employees may be severely injured, and as a result, there may be a hazard

to exposure to large amounts of blood. For this reason your company's policy to this type of situation is as follows.

- B. If you experience a minor injury and are cut then you must not only treat your own (minor) wound but also clean up any blood. A cleaning contractor should be brought in to clean up the blood.
 - C. If any employee were to clean up someone else's blood, they would be in the eyes of OSHA "*occupationally exposed*" to bodily fluids. Their occupational exposure would require training in '**Bloodborne Pathogens**' and '**Universal Precautions**'. This training would teach you how to handle such fluids in the safest possible way, minimizing any hazard to the employee.
- F. When considering whether or not to use PPE, there are 3 basic steps to follow:
- 1. **Eliminate the Hazard if possible:** That is, instead of thinking of ways to protect against a hazard, get rid of it altogether, find an alternative chemical, procedure, etc.
 - 2. **Use Engineering Controls:** For example, if you have strong vapors or odors exceeding a known Permissible Exposure Limit (PEL), rather than wearing a respirator, improve ventilation to eliminate the need for a mask.
 - 3. **Use Proper PPE:** When you cannot eliminate a hazard or engineer it out, then you must utilize the appropriate PPE (based on your company's PPE Hazard Assessment).

Section Two: Hazard Assessment

- A. As mentioned above, the employer is required to assess their workplace to determine if hazards are present, or are likely to be present, which would necessitate the use of PPE. If the employer does find hazards present, then they shall:
- 1. Select and have each affected employee use the types of PPE that will protect the affected employee from the hazards identified in the Hazard Assessment.
 - 2. Communicate to employees specifically which type of PPE the employee should be using.
 - 3. Ensure that whatever type of PPE is selected fits each affected employee properly.
 - 4. Ensure that the employee knows **When, Where, PPE may be necessary** as well as how to use and care for properly. The employee should also be **informed of the limitations of PPE**.
- B. When the employer or yourself are attempting to determine which hazards are present in order to perform and document the assessment, there are some important concepts to consider, and these are:
- 1. **The advantages of using PPE out weigh the disadvantages.** That is, making sure that if you use a particular item of PPE you do not at the same time create a greater hazard than the one you are attempting to protect against.
 - 2. **That the use of PPE does not create a 'false sense of security'.** This can occur if an employee using PPE incorrectly thinks that they are protected when in reality they are not, or *using equipment not adequately designed for the job*. You must avoid the temptation to use PPE with the idea **that something is better than nothing, because in reality it may be worse!**
 - 3. **Being overly cautious** as well as not cautious enough. Not being cautious enough is easy to understand, but the idea of being overly cautious, being potentially hazardous, is not. The idea is, if a supervisor is being unrealistically overly cautious it could lead to a situation where employees are de-sensitized to hazards. The idea is similar to the old saying of "Crying wolf " too many times.
 - 4. Once it is determined what PPE is necessary, then **the use of the PPE is not up to the individual but the situation as outlined in the Hazard Assessment.**

Section Three: Training

- A. The employer is required to train you how to effectively and safely use PPE. This would include knowing;
- 1. When PPE is necessary.
 - 2. What type PPE is necessary
 - 3. How to properly don, take off, adjust and wear PPE.
 - 4. The limitations of PPE.
 - 5. The Proper care and maintenance, useful life and disposal of the PPE.
- B. Retraining should occur if there is a change in the type of PPE used, or the employee demonstrates inadequacies in skills required to use PPE.

Section Four: Miscellaneous Issues

- A. The employer must specifically assure that the employee doesn't use defective or damaged equipment. Therefore, if you know the equipment is damaged or defective or not appropriate to the Hazards, you must report it to your supervisor.
- B. The cost of PPE should always be covered by the employer with the possible exception of Foot Protection, which will be discussed latter.

Section Five: The requirements for Head Protection

- A. According to statistics, nearly 70,000 people a year suffer severe head injuries, many resulting in permanent disability. For this reason OSHA requires that **“Each affected employee shall wear protective helmets when working in areas where there is a danger from falling objects.”** However, in most *general industry* situations, hard hats would not normally be needed. The construction industry obviously would require the widespread use of head protection.
- B. Hard hats come in many different forms depending on the hazards present. Some hard hats are designed for example to protect employees from electrical hazards. ‘Class A’ hard hats protect against low voltage hazards and ‘Class B’ hard hats protect against high voltage.
- C. Sometimes wearing ‘bump caps’ may be a good idea while operating a forklift over rough surfaces where an employee may bump their head on the overhead cage.
- D. Even if wearing protective head wear may not be necessary in your workplace, remember that if you have ‘long-hair’ and work around moving machinery, you need to secure your hair so that it does not get caught in the machinery. Securing your hair may mean wearing an industrial hair net. **You must do whatever is necessary to secure your hair from entanglement hazards.**

Section Six: The requirements for Eye and Face Protection

- A. In a recent year, OSHA reported that nearly 66,000 severe eye injuries occurred from accidents in the workplace where employees’ eyes were either struck by flying objects/particles or had chemicals splashed into them. Many of these injuries could have been avoided had these employees suffering injury worn eye protective equipment, either safety glasses with side shields or goggles. In fact one study indicated that 60 percent of injured employees had not worn protective eyewear at all!
- B. For this reason, OSHA now requires through CFR 1910. 132-133, that employers assess the eye hazards of the employee’s work area and determine when, what type, etc. eye protection should be used. In fact the regulation states; **“Each affected employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.”**
- C. Furthermore, the regulations state that **“Each affected employee shall use eye protection that provides side protection when there is a hazard from flying objects.”** That is, if an employee has an eye hazard risk such that objects or chemicals could enter from the side then safety glasses with side shields should be required. Since in reality this type of hazard is ever present, almost all safety glasses come with side shields.
- D. The regulations state that; if you need to use protective eyewear it must meet certain design characteristics. These required design characteristics are outlined in the *American National Standards Institute (ANSI) rule Z-87 1989.* In fact, OSHA requires that all protective eye wear meet **ANSI Standard Z-87 1989.**
- E. **Miscellaneous Issues.** There are several issues concerning the safe usage of protective eyewear that need to be addressed. The following points are the main areas to be covered.
 - 1. **Comfort Fit.** The eye protective wear, whichever type is used, must fit properly and be comfortable. If it does not fit properly, then chemicals, vapors, etc. can get by the eye wear and cause injury. If it is not comfortable, you might be tempted not to use! This mentality has led to most eye injuries which would have been avoided had employees worn their protective eyewear.
 - 2. **Goggles.** The PPE Assessment should determine the level of risk to an employee’s eye. Generally, when the risk involves chemical hazards, goggles should be worn in order to afford the greatest protection for splashes. There are three basic variations of goggles each with advantages and disadvantages vented and non-vented.

- a. **Vented goggles.** Protects the eyes from all angles yet allows air to pass through thereby preventing fogging of the lenses. The disadvantage is that chemicals could still get through.
 - b. **Non-vented.** This type offers the best protection. Even though most non-vented goggles have an anti-fogging coating, it is still susceptible to some degree of fogging over time and use.
 - c. **Chemical Resistant Vented.** There are goggles that incorporate vents while designing these vents to resist chemical exposure to eyes. However, fogging is still a possibility and dangerous vapors could still seep in.
3. **Face Shields:** When a PPE assessment indicates hazards not only to eyes but also to face, then face shield should be worn. Face shields are a form of secondary protection, since it only protects from straight-on hazards. Protective eyewear with side shields should still be worn. We consider the need to wear face shields as a ‘severe exposure’ protection option. Situations that may require this are for example **if you are using corrosive liquids (corrosives are defined as chemicals that destroy living tissue upon contact)**, grinding metal, working with molten metal such as welding, etc.
 4. **The lenses of safety eyewear normally are made of either polycarbonate plastic or glass.** Either one still needs to meet ANSI Standard Z87 for chemical and impact resistance. Polycarbonate is superior in impact resistance but is more susceptible to scratches and chemical damage. Glass is superior for chemical protection and scratch resistance but less impact resistance than polycarbonate.
 5. **Prescription Eyewear:** If you need to wear prescription eyewear then you then must utilize eye protection that will accommodate your prescriptive eyewear. The eye protection should securely and comfortably cover the prescription eyewear in such a way to still afford effective protection from all angles. You can buy “Prescription Safety Glasses” that are just like your normal glasses but also ANSI approved. Never use normal prescription eyewear in lieu of eye protection wear.
 6. **Contact Lenses:** If you wear contact lenses it is critical that you protect your eyes since more damage can be done to your eyes from chemicals coming into direct contact with ‘contact lenses’. The regulations also state that you cannot wear contact lenses (especially gas permeable) in contaminated atmospheres. This is because the contact lens may absorb harmful vapors and the lens may actually fuse to your eye.
 7. **Care Maintenance:** You must continually inspect your protective eyewear for signs of wear and scratches. Severe scratches will weaken a lens’s impact resistance. You must clean and keep sanitary your protective eyewear. Discard old or clearly defective glasses.
 8. **Eyewash:** It is needed in any situation where you need to use safety eyewear. It also means you need to have the means to flush your eyes should your PPE fail. In these hazardous situations, a 15 minute eyewash must be available within 10 seconds of potential splash areas, or hazard areas (such as near bench grinders or battery chargers).
 9. **Splash Hazards:** One way to lessen splash hazards is to pour or mix chemicals in such a way to lessen splashes, or lessen the dangers that chemical splashes present. To lessen splash hazards period, avoid pouring large amounts of chemicals. Use a pump and hose or use plunger type devices for dispensing. If mixing/pouring chemicals together, pour the greater hazardous chemical into the lesser. For example, pour acid into water and do not pour water into acid. The reason is, if you pour acid into water and it does splash it will be diluted, whereas if you did the opposite, the splash would be corrosive.
 10. **Light Radiation:** The PPE Assessment should determine if there are any light radiation hazards in your workplace. Obvious examples are arc welding, bright UV lamps, sunlight, (even if reflected), etc.
 11. **Eyewear Use Disadvantages:** Using protective eyewear itself can create other disadvantages. A few examples of these disadvantages are, restricted vision, uncomfortable fit, fogging, etc.

Section Seven: The requirements for Hand Protection

- A. The most important tool a persons uses (beside the brain!) is their hands, for obvious reasons. The nature of work requires that our hands be used for various tasks. Consequently, they are at greater risk than most other body parts. In fact, statistics tell us that well over 200,000 workers a year experience injuries to their hands and fingers, accounting for nearly 12% of all injuries.
- B. For this reason, OSHA promulgated specific regulatory requirements to protect workers hands. These regulations state: **“Employers are to require employees to use appropriate hand protection when hands are exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns and harmful temperature extremes.**
- C. Again, employers are to assess their workplaces to determine exactly what are the hand protection needs of the employees. The regulations are very specific on this point stating that: **“Employer shall base the selection of the**

appropriate hand protection on an evaluation of performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified”.

- D. Employee’s hands are exposed to three basic hazards and these are Mechanical, Environmental and Irritating substances.
1. **Mechanical Hazards:** Examples of which would be the possibility of injuries such as crushing, punctures, abrasions, and cuts, from operating in/around/on machinery.
 2. **Environmental Hazards:** These would be hazards from excessive temperatures either too hot or too cold, wetness, etc.
 3. **Irritating Substances:** Hazards such as those from contact with chemicals or biological agents (be they bacterial, fungal or viral), resulting in skin conditions such as dermatitis. Exposure hazards are increased if hands have open cuts or wounds.
- E. **Basic Glove Types:**
1. **Chemical gloves:** Gloves obviously designed to protect against chemical hazards such as toxic chemicals, etc. Examples are neoprene, nitrile, butyl rubber, latex, etc.
 2. **Acid Resistant Rubber Gloves:** As the name implies, these gloves are designed to protect against corrosive liquids. Normally appear as ‘thick’ big black rubber gloves.
 3. **Fabric Gloves:** Used to protect against sharp edges, cold temperatures or mild heat temperatures.
 4. **Leather Gloves:** To be used to protect against rough surfaces, broken glass, broken pallets, etc.
- F. **Various PPE Issues:**
1. **Engineering Controls:** First defense! Example would be machine guards that directly protect your hands.
 2. **Good Housekeeping/Hygiene:** Keeping your hands clean by consistent, repeated washing. This would also possibly cause skin irritation from doing it too much.
 3. **MSDS:** This is *the first best place to look for information concerning what type of hand protection you should be wearing*. If it is unclear from the MSDS, call the manufacturer whose number should be on the MSDS.
 4. **Proper Material:** You want to be sure you are using the proper material otherwise the glove may not be designed to protect you from certain hazards. For example; certain gloves may melt right on your hand if they come into contact with an incompatible chemical. Also, the glove may also absorb the chemicals like latex gloves tend to do.
 5. **Proper Fit:** Gloves that are too small tire your hands and wear out quickly, while too large of gloves may interfere with your dexterity and increase the likelihood of an accident, such as getting caught in machinery rollers.
 6. **Barrier Creams:** These creams can be used by themselves or in conjunction with other PPE. These creams fall into 3 basic categories; Vanishing Cream, Water-Repellent Cream, and Solvent Repellent Cream.
 - a. **Vanishing Cream:** These creams may contain emollients and soap which in effect coat the skin. Their clear advantage is the relatively easy cleanup after use.
 - b. **Water-repellent Cream:** These creams leave an insoluble film on the skin, which helps protect against water-borne or water carrying hazards such as acids and alkalis.
 - c. **Solvent-repellent Cream:** As the name implies, helps protect against solvent hazards.
 7. **Glove Removal:** If you go to the trouble of using the proper glove, you do not want to come into direct contact with a chemical when you remove the glove. Therefore, the best way to remove a glove is to ‘peel’ it off, or if they are big, to throw them off (if they slide off easily!).
 8. **Latex Gloves:** Though these gloves offer the advantage of a snug fit, thereby making it easier to maintain finger dexterity, they also have the disadvantage of being semi-permeable. That is, they may allow some chemicals to pass through. Also, some people may have allergic reactions to latex.

Section Eight: Requirements for Foot Protection

- A. An employee’s feet are potentially exposed to many hazards in the workplace that could result in injuries such as cuts, burns, sprains, fractures, etc. However, *Heavy or sharp objects falling on an employee’s foot are normally the most common types of injury in the workplace.*
- B. In fact, statistics tell us that on average nearly 90,000 foot and toe injuries occur every year, representing nearly 5% of all disability injuries.
- C. For this reason, OSHA regulations require that **“Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling and rolling objects, or objects piercing the sole, and where such employees feet are exposed to electrical hazards”**

- D. Some of the most common types of hazards are as follows:
1. **Compression:** The foot is compressed between the floor and something heavy, or something heavy ‘rolls-over’ the foot.
 2. **Puncture:** Sharps objects that can penetrate the sole of a shoe.
 3. **Electricity:** Situations where the foot could come into contact with high-voltage.
 4. **Slipping:** Coming into contact with water or oil on the floor, especially if wearing worn soled shoes.
 5. **Chemicals:** Chemicals, especially corrosives, can be absorbed or burn their way through a shoe and contact the foot.
 6. **Extreme heat or cold:** Dangers from cold and wetness can cause frostbite, or uninsulated shoes can also cause injuries to the foot.
 7. **Wetness:** Even if temperatures are neither too hot nor too cold, wetness itself can cause foot injury by fostering sores, peeling skin, fungal infections, etc.
- E. To protect against the above hazards, there is available a wide variety of protective shoes. Some shoe examples:
1. **Safety Shoes:** These are all-around good shoes for General Industry usages. These offer basic steel-toed protection, hard rubber soles for good traction as well as penetration resistance
 2. **Metatarsal Guarded Shoes:** These offer steel-covered protection over the entire top of the foot and not just the toes.
 3. **Conductive Shoes:** These shoes help to safely dissipate static electricity that may build up in someone’s body. This would be hazardous if someone is working in explosive atmospheres where a simple spark could cause an explosion.
 4. **Safety Boots:** Come in many different forms from steel toed to puncture resistant, but they are primarily designed to protect feet from chemical exposure (or from wetness). Sometimes these can be used as ‘pull overs’, which is pulled over other safety shoes.
 5. **Electrical Hazard Shoes:** Designed to protect the foot from electric shock of 600 volts or less. The toebox is insulated from the shoe so there is no exposed metal.
 6. **Sole Puncture Resistant Footwear:** Used primarily in construction, these shoes offer added protection against penetration from sharp objects.
 7. **Static Dissipative Shoes:** Similar to Conductive shoes but simultaneously protects against electrical shock while dissipating static electricity.
 8. **Foundry Shoes:** Are designed to protect the foot from molten metal by having elastic gores instead of laces that will allow for quick removal should hot metal gets inside of shoe.
 9. **Add-on Foot Protection:** These are such protective items as ‘metatarsal guards’ or shoe covers that can be added to conventional work shoes.
- F. All of the above shoes **must meet ANSI Standard Z41-1991** which states that these safety footwear meet certain minimum protective criteria. These ‘protective criteria’ are such that the footwear protect the employee’s feet from impact, compression, conductive hazards and puncture resistant to ANSI Testing Criteria. Each specific type of shoe will indicate which type of hazard within the standard it protects against. I.e., if it offers metatarsal protection, it will be stamped or indicated somewhere on the shoe with the code ANSI Z41 1991 MT. (MT means ‘metatarsal’.)
- G. **Many injuries result from employee’s simply not wearing protective footwear.** Many employees have various excuses based on their perceived disadvantages such as:
1. **Too expensive:** Normally the employer pays for or provides for a safety shoe allowance, though they are not required to. It’s worth every penny, if it protects your foot from serious injury!
 2. **Ugly:** Women may not care for the look of big bulky safety shoes, but how ugly is a disfigured foot! Besides, protective foot wear now comes in many different fashionable styles.
 3. **Not comfortable:** This historically may have been true. However, with newer lighter composite materials being used, you may be surprised as to how comfortable they truly are.
 4. **The idea that the materials an employee is working with are extremely heavy and protective footwear wouldn’t make any difference.** Every workplace would still have hazards from falling small tools, etc.
 5. **Too bulky/clumsy:** Especially for climbing ladders, etc. If you look hard enough, you should find a shoe that will work for you. Be sure that it has a defined heel and good traction.
 6. **Steel toecaps will cut my toes off if they are crushed.** Though this is a legitimate concern, it is not a very likely possibility. Some shoes are designed to lessen the “cutting” effect, should they be crushed.
 7. **‘I’m careful and I have had no problems in the past.’** This is probably one of the most dangerous situations that could arise. This attitude and resulting “false sense of security” has led to numerous unnecessary injuries.

H. Miscellaneous Issues

1. **Open-toed shoes** should never be worn by production employees! Even office personnel who go into production areas need protection or appropriate footwear, if their feet may come into possible contact with hazards.

Section Nine: Hearing Protection Considerations

- A. OSHA regulations require hearing protection to be made available if you are exposed to noise levels above 85 decibels for eight hours at a time. This requirement includes having your company establish a formal hearing conservation program.
- B. To give you an idea of what a decibel is, think of the following:
 1. Your home is exposed to 20-50 decibels even in an apparently quiet room.
 2. A power saw operates with noise levels that exceed 110 decibels.
- C. A good rule of thumb is, if you have to shout to be heard by someone standing only three feet away, the noise level is probably more than 85 decibels, and you should wear hearing protection. Continuous exposure to 90 or more decibels could lead to permanent hearing damage to some degree, and hearing protection is mandatory. Folders and web presses run at over 90 decibels.
- D. Ear plugs can reduce noise levels by up to 30 decibels. Be sure to check the Noise Reduction Rating (NRR) for the hearing protection you may be considering using.

Section Ten: Respiratory Protection Considerations

- A. If a company determines through a Hazard Assessment that employees are working in areas where the air is contaminated above a 'Permissible Exposure Limit' (PEL), then that company must require those affected employees wear appropriate respiratory protection.
- B. A PEL is a Time Weighted Average (TWA) exposure to a given chemical of 8 hours. If an employee is exposed to air contaminated above the PEL (8 hours TWA) they would be required to wear the proper respiratory protection.
- C. For example: If your company had employees exposed to 200 parts per million (ppm) of Petroleum Naphtha for an 8 hour TWA, then they would be required to wear an 'air-purifying' respirator with an organic vapor cartridge, since the PEL for Petroleum Naphtha is just 50 ppm.
- D. Should respiratory protection be required, employers would be subject to further regulation. The following is a highlight of some of those requirements:
 1. Affected Employees would have to have annual physical exams to determine whether or not it was safe for them to continue to wear.
 2. Affected employees would be required to participate in yearly training and fit testing.
 3. Medical/Training records would have to be maintained.
 4. Employees with facial hair or deep scars would not be allowed to wear respirators since they could not be guaranteed a proper/secure seal.
- E. These Respiratory Protection Requirements apply basically to masks that need to be 'cleared and sealed', not to simple 'dust masks', if they are only used for minor exposure to dust that employees are protecting themselves against. In other words, they are using them for 'comfort-sake' only.

Section Eleven: Back Belt Considerations

- A. Many companies provide their employees with lifting back belts. Before you use one, be sure to know the following information:
 1. Back belts do not necessarily prevent back injuries. That is it is still possible to hurt your back if you are lifting improperly. You still need to use your legs etc.
 2. If you use a back belt you should have it pre-adjusted but not tightened.
 3. Only tighten the back belt when you do the actual lifting, then release it when you are finished lifting.
 4. Do not try to lift more than you are comfortable lifting, just because you have a back belt on. Know your limit (40 – 75 lbs).

- B. This last point is precisely why OSHA does not endorse the use of back belts, since in their research they do not significantly lessen back injuries, and in some cases cause back injuries due to employees having a **'false sense of security'**.
- C. Always use the following proper lifting techniques:
 - 1. Place feet slightly apart with your back straight.
 - 2. Assume a squatting position with your knees bent.
 - 3. Tuck chin, tilt head forward, and use both hands and all fingers.
 - 4. Hold load against your body and below your chin.
 - 5. Gradually push up with your back straight.

Section Twelve: Sample Certificates

Personal Protective Equipment Training Certification (*SAMPLE*)

I John Doe, hereby certify that on Jan.1, 2000, I received training concerning Personal Protective Equipment. I received information and I fully understand when PPE is necessary, what PPE is necessary, how to properly put on, take off, adjust, and wear PPE, the limitations of PPE, and the proper care, maintenance, useful life and disposal of PPE.

**EMPLOYEE
NAME**

**DATE
EMPLOYED**

DEPT.

John Doe Jan. 1, 1990-Jan 1, 2000 Pressroom

John Doe
Employee Signature

Jane Doe
Program Coordinator

James G. Harris
ACS Representative Signature
(Only applies if training conducted by ACS)

Section Thirteen: Sample/Blank PPE Assessments

Hazard Assessment and Personal Protective Equipment Requirement

Company Name: _____

Date: _____

Employee Name: _____

Dept.: _____

Job Function: _____

Job Function Requirement: _____

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____
11.	_____	_____	_____
12.	_____	_____	_____
13.	_____	_____	_____
14.	_____	_____	_____
15.	_____	_____	_____
16.	_____	_____	_____
17.	_____	_____	_____

Hazard Assessment and Personal Protective Equipment Requirement (EXAMPLE)

Company Name: ABC Printing Company, Inc.

Dept. Name: Press

Job Function: Press Operator

Job Function Requirement: Printing, mixing & pouring chemicals, clean ups, lifting, etc.

"Minimum" Hazard Assessment and PPE Requirement

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
1.	Press wash splash from pouring, pumping, mixing, and press clean ups.	Eye Contact	Safety Glasses with side panels or Splash Goggles
2.	Press wash splash from pouring, pumping, mixing, and press clean ups.	Hand Contact	Nitrile or Butyl Rubber Gloves

All Hazards/Potential Injuries/PPE to be Worn that are shown below may apply to you!

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
3.	Loud Equipment	Hearing	Ear Plugs or Ear Muffs
4.	Press wash splash from pouring, pumping, mixing, and press clean ups.	Skin/Clothes Contact	Impervious Apron
5.	Large Rolls of Paper	Foot Crush	Steel Toe Shoes
6.	Long Hair catching in moving rollers	Hair and Scalp	Industrial Hair Net
7.	Breathing solvent vapors when cleaning press without adequate ventilation	Respiratory	NIOSH approved Respirator (organic vapors cartridges)
8.	Repetitive Bending and Lifting	Back	Back Belt
9.	Flying Particles from Grinder	Eye and Face	Impact Full Face Shield
10.	_____	_____	_____

Hazard Assessment and Personal Protective Equipment Requirement (EXAMPLE)

Company Name: ABC Printing Company, Inc.
 Dept. Name: Prepress
 Job Function: Prepress employee
 Job Function Requirement: Film developing, plate making, mixing & pouring chemicals, clean ups, etc.

"Minimum" Hazard Assessment and PPE Requirement

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
1.	Fix/Developer or Solvent splash from pouring, pumping, mixing, and clean ups.	Eye Contact	Safety Glasses with side panels or Splash Goggles
2.	Fix/Developer or Solvent splash from pouring, pumping, mixing, and clean ups.	Hand Contact	Nitrile or Butyl Rubber Gloves

All Hazards/Potential Injuries/PPE to be Worn that are shown below may apply to you!

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
3.	Fix/Developer or Solvent splash from pouring, pumping, mixing, and clean ups.	Skin/Clothes Contact	Impervious Apron
4.	Long Hair catching in moving rollers	Hair and Scalp	Industrial Hair Net
5.	Breathing vapors when in Dark Room or cleaning up without adequate ventilation.	Respiratory	NIOSH approved Respirator (organic vapors cartridges)
6.	Repetitive Bending and Lifting	Back	Back Belt
7.	Ultra Violet Light	Eye	UV Protection Eye Wear (UV protected Safety Glasses are available).
8.	_____	_____	_____

Hazard Assessment and Personal Protective Equipment Requirement (EXAMPLE)

Company Name: ABC Printing Company, Inc.

Dept. Name: Bindery

Job Function: Cutter, Folder, Sorter/Inserter Operator

Job Function Requirement: Cutting, folding, sorting, applying lubricants/solvents/adhesives, clean ups, lifting, etc.

"Minimum" Hazard Assessment and PPE Requirement

<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
1. Loud Equipment	Hearing	Ear Plugs or Ear Muffs

All Hazards/Potential Injuries/PPE to be Worn that are shown below may apply to you!

<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
2. Long Hair catching in moving rollers	Hair and Scalp	Industrial Hair Net
3. Repetitive Bending and Lifting	Back	Back Belt
4. Applying lubricants or solvents where there is a chance of splashing in eyes.	Eye Contact	Safety Glasses with side panels or Splash Goggles
5. Applying lubricants or solvents where there is a chance of splashing on hands.	Hand Contact	Nitrile or Butyl Rubber Gloves
6. Applying lubricants or solvents where there is a chance of splashing on clothes.	Skin/Clothes Contact	Impervious Apron
7. Flying Particles from Grinder	Eye and Face	Impact Full Face Shield
8. _____	_____	_____

Hazard Assessment and Personal Protective Equipment Requirement (EXAMPLE)

Company Name: ABC Printing Company, Inc.
 Dept. Name: Warehouse or Shipping & Receiving
 Job Function: Motorized Fork Truck Operator or Shipping and Receiving Clerk
 Job Function Requirement: Load/unload delivery trucks and storage racks of cargo, package/unpackage goods, recharge fork trucks and/or pallet jacks, etc.

"Minimum" Hazard Assessment and PPE Requirement

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
1.	Attach/remove battery charge cables.	Splash of battery acid to eyes/face	Full face Shield or Safety Glasses with side panels.
2.	Attach/remove battery charge cables.	Splash of battery acid to hands	Heavy Duty Acid Resistant Gloves
3.	Handling splintered pallets and cutting steel/plastic straps.	Cuts to hands	Leather Gloves
4.	Handling splintered pallets and cutting steel/plastic straps.	Eyes/Face	Safety Glasses with side panels Or Full Face Shield.

All Hazards/Potential Injuries/PPE to be Worn that are shown below may apply to you!

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
5.	Mount/dismount fork truck seat	Head Bump on overhead cage	Hard Bump Hat
6.	Repetitive Bending and Lifting	Back	Back Belt
7.	Carrying loads around Loud Equipment	Hearing	Ear Plugs or Ear Muffs
8.	Applying lubricants or solvents where there is a chance of splashing in eyes.	Eye Contact	Safety Glasses with side panels or Splash Goggles
9.	Applying lubricants or solvents where there is a chance of splashing on hands.	Hand Contact	Nitrile or Butyl Rubber Gloves
10.	Applying lubricants or solvents where there is a chance of splashing on clothes.	Skin/Clothes Contact	Impervious Apron
11.	Flying Particles from Grinder	Eye and Face	Impact Full Face Shield
12.	_____	_____	_____

Hazard Assessment and Personal Protective Equipment Requirement (EXAMPLE)

Company Name: ABC Printing Company, Inc.
 Dept. Name: Maintenance
 Job Function: Maintenance, Repair Person
 Job Function Requirement: Maintain and repair equipment and physical plant, etc.

"Minimum" Hazard Assessment and PPE Requirement

<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
1. Flying Particles from Grinder	Eyes and Face	Impact Full Face Shield
2. Loud Equipment	Hearing	Ear Plugs or Ear Muffs
All Hazards/Potential Injuries/PPE to be Worn that are shown below <u>may</u> apply to you!		
<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
3. Operation of Welding Torch	Eyes and Face	Welding Face Shield
4. Operation of Welding Torch	Hands	Welding Gloves
5. Operation of Welding Torch	Arms, Shoulders, Legs	Welding Jacket, Bib Apron
6. Touching Hot Surfaces	Hands	Heat Resistant Gloves
7. Electrically Charged Surfaces	Hands	Correct Voltage Resistant Gloves
8. Attach/remove battery charge cables.	Splash of battery acid to eyes/face	Full face Shield or Safety Glasses with side panels.
9. Attach/remove battery charge cables.	Splash of battery acid to hands	Heavy Duty Acid Resistant Gloves
10. Splintered pallets, other sharp surfaces and cutting steel/plastic straps.	Cuts to hands	Leather Gloves
11. Handling splintered pallets and cutting steel/plastic straps.	Eyes/Face	Safety Glasses with side panels Or Full Face Shield.
12. Repetitive Bending and Lifting	Back	Back Belt
13. Applying lubricants or solvents where there is a chance of splashing in eyes.	Eye Contact	Safety Glasses with side panels or Splash Goggles
14. Applying lubricants or solvents where there is a chance of splashing on hands.	Hand Contact	Nitrile or Butyl Rubber Gloves
15. Applying lubricants or solvents where there is a chance of splashing on clothes.	Skin/Clothes Contact	Impervious Apron
16. Sharp objects, heavy objects, or electrically charged floor.	Feet	Electrically insulated Boots (steel toes).

Hazard Assessment and Personal Protective Equipment Requirement (EXAMPLE)

Company Name: ABC Printing Company, Inc.

Dept. Name: Janitorial or Custodial

Job Function: Janitor or Custodian

Job Function Requirement: Facility Clean up, etc.

"Minimum" Hazard Assessment and PPE Requirement

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
1.	Cleaning Toilets or pouring/mixing strong cleaner or solvent solutions	Eye	Safety Glasses with side panels or Splash Goggles
2.	Cleaning Toilets or pouring/mixing strong cleaner or solvent solutions	Hand	Bowl Cleaner Resistant Gloves

All Hazards/Potential Injuries/PPE to be Worn that are shown below may apply to you!

	<u>Workplace Hazard</u>	<u>Type of Potential Injury</u>	<u>PPE to be Worn</u>
3.	Cleaning Toilets or pouring/mixing strong cleaner or solvent solutions	Skin/Clothes Contact	Impervious Apron
4.	Breathing solvent vapors when cleaning without adequate ventilation	Respiratory	NIOSH approved Respirator with appropriate replacement cartridges
5.	Loud Equipment	Hearing	Ear Plugs or Ear Muffs
6.	Touching Hot Surfaces	Hands	Heat Resistant Gloves
7.	Splintered pallets, other sharp surfaces and cutting steel/plastic straps.	Cuts to hands	Leather Gloves
8.	Handling splintered pallets and cutting steel/plastic straps.	Eyes/Face	Safety Glasses with side panels or Full Face Shield.
9.	Repetitive Bending and Lifting	Back	Back Belt
10.	Applying lubricants or solvents where there is a chance of splashing in eyes.	Eye Contact	Safety Glasses with side panels or Splash Goggles
11.	Applying lubricants or solvents where there is a chance of splashing on hands.	Hand Contact	Nitrile or Butyl Rubber Gloves
12.	Applying lubricants or solvents where there is a chance of splashing on clothes.	Skin/Clothes Contact	Impervious Apron
13.	Sharp objects, heavy objects could make contact with feet.	Feet	Work Boots (steel toes).
14.	Wet Floors	Fall to floor	Water resistant rubber soled shoes

Section Fourteen: Test Answer Key (Instructor's Guide Only)

Personal Protective Equipment Initial Test 1 Answer Key

Name: _____

Date: _____

Dept.: _____

- 1) What kind of environment does the OSHA Act expect employers to provide?
Hazard free (Sec. 1 (C) & (D))
- 2) Which of the following is an example of a biological hazard? (Sec. 1 (E)(3)(A))
 - a) Forklift
 - b) Blood**
 - c) Solvent
 - d) Flubber
- 3) When attempting to protect an employee from a recognized hazard, what is the first step? (Sec. 1 (F)(1))
 - a) Require the use of PPE
 - b) Form a committee to come up with a solution.
 - c) Eliminate the hazard if possible.**
 - d) Try to engineer a way around it.
- 4) What is a disadvantage to utilizing eye protection? (Sec. 6 (E) (11))
Restricted Vision
- 5) In addressing safety issues, which of the following items can create a hazardous situation? (Sec. 2 (B)(2)&(3))
 - a) Being overly cautious.
 - b) Using equipment not adequately designed for the job.
 - c) Doing a thorough hazard assessment of your work place.
 - d) Both a & b**
- 6) Which of the following is not recognized as proper personal equipment? (Sec 6 (E)(2) & Sec. 7 (E)(4))
 - a) Goggles
 - b) Light Sabers**
 - c) Leather Gloves
 - d) None of the above
- 7) Which of the following is considered to be proper protective eye wear? (Sec. 6 (D) & (E)(5))
 - a) ANSI approved Safety Glasses**
 - b) Gas permeable contact lenses.
 - c) Optometrist approved prescription eyeglasses.
 - d) Properly fitted 3-D glasses.
- 8) When pouring or mixing acid and water for example, what is the safest way to do this? (Sec. 6 (E)(9))
 - a) Pour the water into the acid carefully.
 - b) Pour the acid into the water.**
 - c) Pour equal amounts of each into an empty container.
 - d) None of the above.
- 9) Which of the following head protective devices are for the most part not needed in General Industry. (Sec. 5 (A))
 - a) Hair nets to prevent hair getting caught in machinery.
 - b) Hard hats.
 - c) Batting helmet
 - d) b & c**
- 10) What kind of hand protection is best to use if you are cleaning debris or trash in a parking lot? (Sec. 7 (E)(4))
 - a) Nitrile gloves
 - b) Latex gloves
 - c) Leather gloves**
 - d) a & b
- 11) Which of the following is the first/best place to look for information about what kind of gloves you should use when handling any chemical? (Sec. 7 (F)(3))
 - a) A dictionary
 - b) A chemistry book
 - c) The MSDS for that particular chemical.**
 - d) Your horoscope

- 12) What type of gloves should be used if you are checking the electrolyte levels in a forklift battery?(Sec. 7 (E)(2))
- a) Nitrile gloves
 - b) Leather gloves
 - c) **Thick black (acid resistant) rubber gloves**
 - d) Lead-lined gloves
- 13) What type of eye protection should you use when pouring a corrosive liquid? (Severe exposure)**Face Shield** (Sec. 6 (E)(3))
- 14) Should the vapors in an area exceed the allowable PPM , what type of PPE should you use? (Sec. 10 (B) & (C))
A Respirator (recommended by the MSDS).
- 15) The three types of hazards you might find in the workplace are: (Sec. 1 (E))
- a) Physical, supernatural, chemical
 - b) **Physical, Biological, chemical**
 - c) Physical, chemical, culinary

True or False (Circle correct answer)

- 16) For the most part, PPE should be provided free of charge. (Sec. 4 (B)) **T F**
- 17) Whether or not PPE should be worn is up to the individual and not the situation. (Sec. 2 (B)(4)) **T F**
- 18) The first choice in addressing a safety hazard is to use the proper PPE. (Sec. 1 (F)(1)) **T F**
- 19) There are rarely, if ever, any disadvantages to using PPE, in fact, there are no known hazards to using chemical gloves.
 (Sec. 7 (F) (5)) **T F**
- 20) Using equipment not necessarily designed for a specific job is better than not using any at all. (Sec. 2 (B) (2)) **T F**