



Electrical Transmission & Distribution Partnership

Continuing Education Training

Hand Injury Prevention

Presenter Guide
2023 Safe and Sound Week

This page intentionally left blank

Introduction

This Qualified Observer Refresher course is a presenter lead (supervisor, safety professional) process. The presenter may choose to augment the material with videos, handouts, or other media to enhance the learning experience. The presenter may want to incorporate visual aids to enhance the presentation.

Using this material in combination with practical experience, good presentation skills and knowledge of adult learning techniques, the presenter has a greater opportunity to deliver the information.

Edgar Dale stated that 2 weeks after a learning event, adult learners remember:

- ✓ 10% of what they read
- ✓ 20% of what they hear
- ✓ 30% of what they see
- ✓ 50% of what they see and hear
- ✓ 70% of what they say
- ✓ 90% of what they say while performing a task

Microsoft® PowerPoint® combined with good instructional skills and instructor/student dialogue work strongly in the fifty to seventy percent range. PowerPoint® presents the information to the attendee and the instructor summarizes the content of the slides. It is critical to engage and involve the attendee in the process. Ask open-ended questions that will elicit conversation and discussion but be cautious to maintain control of the discussion.

Conversation and scenarios are good but can cause the discussion to run long. If it seems like the group is losing focus during the course, the presenter can direct the group back on track by using comments like “Good discussion, but let’s get back to the subject at hand”.

Another tool is the “Parking Lot” which is simply a newsprint chart or dry erase board or note pad where the presenter records questions/discussion points not answered or addressed during the meeting and that may require more research. It is vital to capture any ongoing discussions or questions on the “Parking Lot” and follow up when the information is known.

Deliver this refresher during the second quarter of 2022. Delivery time is approximately 45 minutes to 1 hour, in one setting or divided-up into three, 15-to-twenty-minute settings. The presenter may deliver the topic in a formalized meeting room setting using the PowerPoint slide deck or by using the three, key point sheets (located at the end of each session) as in a tailgate safety talk. It is critical that the facilitator makes him or herself familiar with the material prior to delivery.

This page intentionally left blank



1-1

Introduce the module. Explain that the intent of this presentation is as a continuing education training topic related to certain aspects from the ET&D 10-Hour OSHA training class, the OSHA Partnership Best Practices, and/or incident trending analysis. This training focuses on cuts and puncture hazards and how to prevent and protect against them.

A presentation slide with a dark green border. At the top right is a small circular logo. The main heading is "Objectives" in bold green text. Below it, the text reads "Upon Completion of this module, you should be able to:". A list of five objectives follows, each with a checked box icon: "Describe the effects of hand injuries", "Explain employer responsibilities regarding worker protection", "Explain injury prevention", "Explain workplace hazards that require protection", and "Select appropriate protection based on exposure".

PARTNERSHIP

1-2

Explain the module objectives and explain why this topic is important. Say that lacerations can occur anywhere and with any number of pieces of equipment. When it comes to protecting different parts of the body from lacerations, hands are the most important. This is because just over 40 percent of hand injuries are lacerations. That's huge. Imagine the difference removing those injuries would make. But how can we prevent these injuries? By targeting the two main casual factors: machinery and hand tools. More than 26% of machinery injuries are lacerations. When it comes to hand tools, more than 55% of injuries are lacerations. In both cases gloves can help, but innovative cutting tools designed for safety, and proper training and oversight may drastically reduce injuries. The Takeaway: It's unlikely that large, specialized machinery has a big enough market to encourage the development of safer alternatives, so PPE is a company's best friend here. Safer versions of cutting hand tools reduce injuries to one of the most delicate, complex, and crucial parts of a worker's body.



Facts

- ✓ In 2020 119,000 hand injuries involving days away from work
- ✓ 8% of lost time injuries involve hands
- ✓ Hand/Finger/Thumb injuries make up 26% of Partnership Company injuries
- ✓ Employers are providing hand protection
- ✓ Protection provided by work gloves is increasing
- ✓ PPE is not the only prevention for reducing hand injuries
- ✓ Most Frequent Causes of Hand Injuries:
 - ✓ Caught In/Between
 - ✓ Cuts/Punctures
 - ✓ Struck By



PARTNERSHIP

1-3

Say that in 2020, there were 119,000 reported workplace hand injuries that resulted in days away from work. 8% of lost time injuries involve hands. 26% of Partnership injuries are hand related.

The fact is that employers are providing hand protection like gloves available for employees. The protection offered by gloves is increasing each year.

PPE is not the only prevention for reducing the frequency of hand injuries. We need to look deeper into work practices, tool usage and recognizing Line of Fire hazards.



Facts

 <p>30% of hand injuries caused by wearing the wrong glove</p>	 <p>Result in an average of 6 days away from work</p>	 <p>\$40,023 Cost employers \$40,023 per incident</p>
 <p>30% Make up almost 30% of all job-related injuries</p>	 <p>70% of hand injuries occur when not wearing gloves</p>	

PARTNERSHIP

1-4

30% of hand injuries are the result of using the wrong glove. Evaluate the task hazards and determine if the gloves to be worn protect against the hazards. Selection of correct work glove based on the hazards present is important in preventing hand injuries. Dexterity, comfort, and protection type levels are all important.

Hand injuries result in an average of 6 days away from work.

On average, hand injuries can cost employers approx. \$40K per incident.

Hand injuries make up about 30% of job-related injuries.

70% of injuries occur when gloves are not worn.



Results

- ✓ Modified duty
- ✓ Income loss
- ✓ Possible loss of livelihood
- ✓ Home/family life impact



Hard to do with an injured hand

PARTNERSHIP

1-5

Say that in moderate to serious cases, hand injuries mean modified work duties and, in many situations, a loss in income because of the time off work. In more severe cases the worker could possibly lose their livelihood. There are also impacts outside of work... think playing ball with a child, fishing, and other hobbies.



Results

Hand injuries may not be deadly
They can make your daily life harder

- ✓ Injuries to the hand are difficult to heal
- ✓ Because of the way the hand moves



Hard to do with an injured hand

PARTNERSHIP

1-6

Explain that while hand injuries may not be the deadliest, they can certainly make your day-to-day work much harder. Injuries to the hand can also be more difficult to heal because of the way the hand moves. Hand movement can cause a wound to reopen.



Experience & Young Workers

- ✓ 13% of the total workforce is less than 24 years old
- ✓ Workers under 25 experience higher rate of injury than older workers
- ✓ Less experienced in recognizing hazards
- ✓ Don't always understand the severity of hazards
- ✓ Effective training can benefit in injury reduction



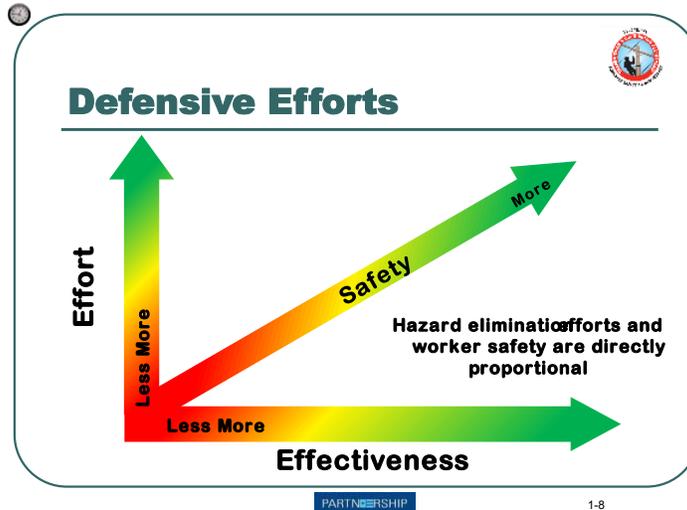
In 2020, emergency room treatment for workers 15 to 24, was over 1.5 times greater than for workers 25 and older

PARTNERSHIP 1-7

State that according to the Center for Disease Control (CDC) young workers have high rates of job-related injury. These injuries are often the result of the many hazards present in the places they typically work, such as sharp knives and slippery floors. Limited or no prior work experience and a lack of safety training also contribute to high injury rates. Middle and high school workers may be at increased risk for injury since they may not have the strength or cognitive ability needed to perform certain job duties.

Fast Stats:

- In 2020, there were about 17.3 million workers under the age of 24. These workers represented 11.7% of the total workforce.
- In 2020, 352 workers under the age of 24 died from work-related injuries.
- In 2020, there were 26 deaths to workers under 18 years of age.
- In 2020, the rate of work-related injuries treated in emergency departments for workers, ages 15–24, was 1.5 times greater than the rate for workers 25 years of age and older.



Explain that the greater the effort toward hazard elimination, the greater the benefit to the worker, the company, the public, and their families. Undoubtedly, more effort takes more time, more planning, and more expense. The bottom line is it takes more effort to work safely. However, the gains far outweigh the costs.

Key Points-Session One

- 70% of workers suffering a hand injury were not wearing gloves.
 - True
 - False
- 30% of hand injuries are a result of not wearing the proper glove.
 - True
 - False
- On average, hand injuries result in 6 lost -time work days .
 - True
 - False
- On average, young workers (< 25 years old) 1.5 times as likely to be injured as more experienced workers (25 and older).
 - True
 - False

- 70% of workers suffering a hand injury were not wearing gloves.
 - True**
 - False
- 30% of hand injuries are a result of not wearing the proper glove.
 - True**
 - False
- On average, hand injuries result in 5 lost time workdays.
 - True**
 - False
- On average, young workers (< 25 years old) twice as likely to be injured as more experienced workers (25 and older).
 - True**
 - False



Hand Injury Prevention

Continuing Education 2023 Safe And Sound Week




Session Two

2-1



Responsibility

Employers must implement safety processes

- ✓ Training
- ✓ Hazard identification
- ✓ Hazard controls
- ✓ Monitor job tasks
- ✓ Provide resources including PPE



PARTNERSHIP

2-2

State that to help minimize cuts and lacerations, employers should establish safe work processes to identify the hazards. Once identified, the employer must train the worker on the hazards and on the expected behavior. Then the employer develops controls and provides the tools, equipment, and support to enable the worker to accomplish the desired outcome.



Injuries

Possible causes

- ✓ Improper training
- ✓ No established procedures
- ✓ Rushing
- ✓ Shortcuts
- ✓ Improper protection
- ✓ Not using PPE
- ✓ Guards missing or misadjusted
- ✓ Improper tool usage
- ✓ Placing hands in line of fire
- ✓ Not recognizing the hazards present





2-3

Explain that there are many typical hazards and possible causes of cuts and lacerations in the workplace may include:

- Improper training
- Lack of established safety procedures
- Employees rushing or taking shortcuts.
- Failure to wear proper hand protection.
- Missing or improperly adjusted guarding equipment.
- Improper tool usage
- Hand placement – in the line of fire
- Failure to recognize the hazards present with the task.

When looking for high risk exposures it is easy to overlook some of the more common injuries and mistakenly categorize them as minor in nature. Hand injuries (cuts, lacerations) are often ignored because they are so common. Under certain circumstances they can be severe and pose a serious concern.



Levels of Defense

Consider the “two-level” approach

- ✓ **Primary** defense (*Plan A*)
 - Eliminate the hazard
- ✓ **Secondary** defenses (*Plan B*)
 - Substitute
 - Engineering controls
 - Administrative controls
 - Personal Protective Equipment



PARTNERSHIP 2-4

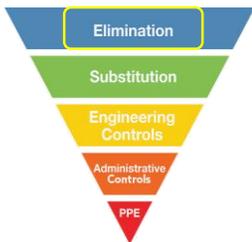
Explain that primary levels of defense include proper planning for each job task, checking material/equipment being handled for rough or sharp edges before handling, and making sure moving parts are guarded. In essence, how can the hazard be eliminated? Explain that secondary defenses may be used when elimination is not possible, or in conjunction with primary defenses. Examples of secondary levels of defense are proper use of hand protection and understanding the limitations of the equipment. When using secondary levels of defense, the hazard still exists but is being controlled. The worker is protected from the hazard, but the hazard still is present. The worker is still at risk, just at a reduced level.



Primary Defense-Plan A

Once identified

- ✓ Take steps to eliminate the Hazard(s)





Elimination of the Hazard should always be the First Consideration

PARTNERSHIP 2-5

Explain that there are conditions in the workplace that can cause a hand injury. The longer we work are exposed to a hazard and suffer no negative consequences the less we respect a hazard’s ability to harm us. The best way to avoid hand injury events is to eliminate the hazards that cause these incidents whenever possible. By totally eliminating the hazards there is no chance that you or anyone else in the work area can be injured by that hazard.

Example: Using a razor knife to cut ground wire molding. Instead use a pair of sheers.



Levels of Defense

Primary defenses are always the most effective

- ✓ Not always an option
- ✓ Hazard elimination may not always be practical or feasible



PARTNERSHIP

2-6

State that it is obvious that the elimination of any identified hazard is the best option. However, because we must go out into the world to perform our jobs and simply to live our everyday lives, we must accept the fact that we are going to be exposed to certain hazards. It is a thought process where we identify the hazard then ask ourselves if the hazards exposure can be avoided. If the answer is “No” then we employ secondary levels of defense.



State that if it is not possible to remove the hazards, we must mitigate them. Explain the hierarchy of controls. State that elimination is the most effective. For example, use proper personal protective equipment to avoid exposure. Explain that PPE is the last line of defense. Do not rely just on your PPE to avoid injury. Think about the conditions that can cause hand injuries and how to mitigate them. State that some great topics to be identified and discussed during the pre-task meeting are:

- Pinch points
- Sharp objects
- Extremes in temperature
- Punctures

Where is my body located in relation to the hazard? What is the worst-case scenario of my task? How can I protect myself from the hazard? When elimination is not possible, engineering controls are the next best choice in protecting yourself from line of fire incidents. Some engineering controls that could protect you from line of fire incidents include physical barriers, guarding around moving parts, and toe boards on elevated work platforms to prevent objects from falling to the area below. There are many other possible engineering controls that could be used depending on the specific hazard. Total elimination of hazards is not always possible and engineering controls may not be feasible or they can fail.



Planning

Plan for what could go wrong; not for everything to go right



PARTNERSHIP 2-8

State that when looking at any job task, plan the task then spend ample time asking, “What can go wrong?” Remember Murphy's Quantum Law states that Anything that can, could have, or will go wrong, is going wrong, all at once. If there are two or more ways to do something, and one of those ways can result in a catastrophe then it will!

Remember... we should be planning for what can go wrong, not what will go right.



Hand Placement

- Hand positioning is one of the most effective ways to prevent hand injuries
- Conduct thorough hazards assessment:
 - ✓ Contact - Chemical, thermal, electrical
 - ✓ Pinch points – latches, gates, doors.
 - ✓ Sharp edges – tools, material, etc.
 - ✓ Stored energy – where will the energy go when released?
 - ✓ Keeps hand and fingers in sight
- Pay close attention both hands; working and non-working.
- Don't reach for suddenly shifting equipment or material. This can place the hand in the Line of Fire.



Ask if this doesn't go as planned; are my hands in on the Line of Fire?

PARTNERSHIP 2-9

Discuss hand placement.

- Working hand placement. Usually, the focus when assessing hazards.
- Non-working hand placement. This is often overlooked. Sometimes we place our non-working hand in locations that we don't perceive as having a hazard.

Discuss hazards that both hands could be exposed to when conducting pre work assessment.

Ask what if the work doesn't go as planned... Will my hands be in the line of fire?



Knives

When using a knife:

- ✓ Wear proper PPE
- ✓ Use correct application
- ✓ Keep hands and body parts out of the line of fire
- ✓ Use a sharp blade
- ✓ Replace dull blades or sharpen blades
- ✓ Never leave an exposed blade unattended

Ask yourself is there a better tool to use to accomplish the task?



PARTNERSHIP 2-10

Discuss some common safety tips for preventing cuts:

- Use the right knife for the job and make sure it's sharp. A dull knife requires more pressure to cut, so you are more likely to cut yourself.
- Handle knives and other sharp utensils with care. Dry your hands before using a knife.
- Use a cutting board or flat surface. Put a damp cloth under cutting boards to prevent it from sliding.
- Wear cut-resistant gloves where possible.
- Curl your fingers and cut away from your body when trimming or deboning.
- If you are interrupted when using a knife, place the knife down, do not continue cutting while distracted.
- Don't use knives for other purposes like to open bags, boxes, and/or cans.
- When carrying a knife, keep it to your side with the point down and cutting edge away from you.
- When passing a knife to someone, put the knife down on a clean work surface and let them pick it up.
- Don't try to catch a knife if it falls.
- Don't leave knives near the edges of tables.
- Store knives securely, blade down, in designated areas

Regarding knife safety at home:

- Do not drop knives into dishwasher in the sink.
- Hand wash knives immediately after use, or place in a container labeled "knives only" near the sink to ensure that another person washing dishes does not accidentally get cut.
- Do not run knives through the dishwasher – it can ruin the blade, loosen rivets, and cause cracks in the handles.

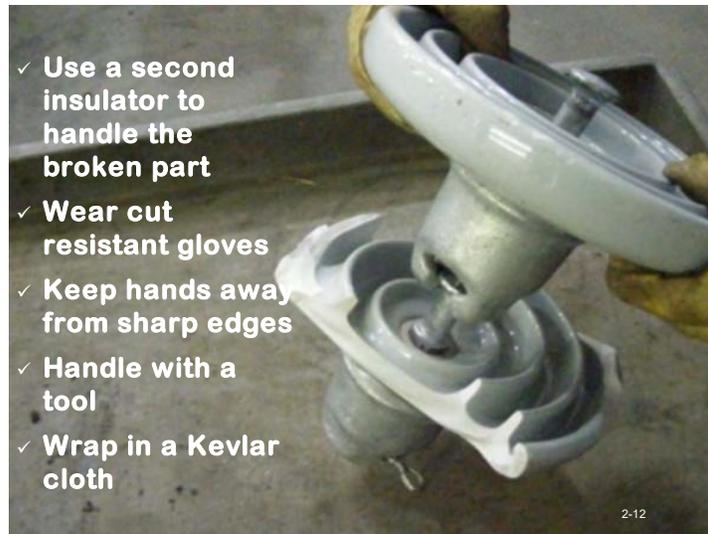
Knives are often the most readily available to us. We should ask ourselves is there another tool that we can use? i.e., sheers, wire stripper, etc.

There are also knives that have blunt tips or are designed for wire skinning that don't have as much exposed sharp edge.

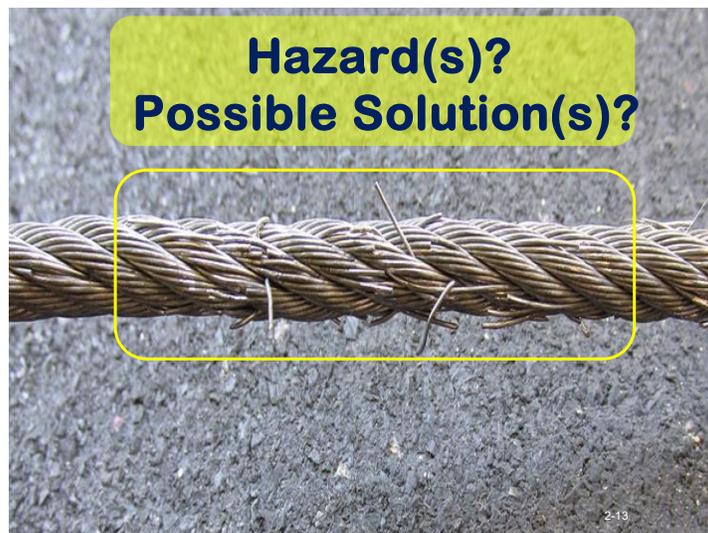
During job planning, identifying the correct cutting tool to be used can help prevent the use of incorrect tools and knives.



Use this picture as an involvement activity. Explain that the key question to ask regarding this picture is "Is a knife the correct tool for this job?" The desired responses here are that there may be a stripper for the job, the worker should be wearing PPE regardless of the tool type being used, and if the only alternative is a knife, then proper use of the knife and ensuring the knife is in good condition is paramount. For almost all applications of this type there are manufactured wire stripping tools designed for the job task. Wire strippers are a tool that anyone can use to remove the insulation covering wires to plug them into terminals or splice loose wires together. The most important part is to take precaution by wearing protective gear when working with wires connected to an electrical source. Then, all you need to do is fit the strippers snugly around the wire. By removing the casing, you'll have a wire you can use to plug into a terminal to operate an electronic device or splice a damaged wire into a new one.



Use this slide as an involvement activity. Ask the group if the defenses listed are primary or secondary defenses (controls). Wearing cut resistant gloves is a “PPE” control, keep hands away from sharp edges is an “administrative control”, and use a tool is a “substitution control”. All are secondary controls. A primary defense or control would be to not handle the broken insulator.



Use this slide as an involvement activity. Discuss the fact that wire rope can have broken wires which create a cut and puncture hazard. State the need to always use appropriate protective gloves when handling wire rope. Primary defense is number one. Ask the group if this wire rope sling meets the “out of service” criteria listed in the OSHA requirements? The desired answer is “yes”. The out-of-service criteria states that a wire rope shall be removed from service if there are ten randomly distributed broken wires in one rope lay or five broken wires in one strand in one lay.



Key Points-Session Two

1. Employers must implement safety processes that help protect workers from cut and puncture hazards.
 a. True
 b. False
2. Personal Protective Equipment is a Primary Defense.
 a. True
 b. False
3. Cut resistant gloves are not cut and/or puncture proof.
 a. True
 b. False
4. Some possible causes of cuts, punctures, and/or lacerations in the workplace are:
 - a. Improper or no training
 - b. Rushing and/or shortcuts
 - c. Not wearing PPE or improper PPE for the hazard
 - d. All the above

PARTNERSHIP

2-15

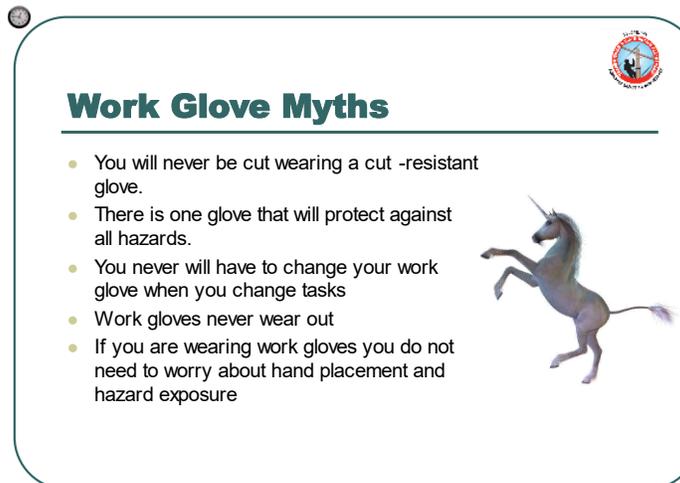
1. Employers must implement safety processes that help protect workers from cut and puncture hazards.
 - a. **True**
 - b. False
2. Personal Protective Equipment is a Primary Defense.
 - a. True
 - b. **False**
3. Cut resistant gloves are not cut and/or puncture proof.
 - a. **True**
 - b. False
4. Possible causes of cuts, punctures, and/or lacerations in the workplace are:
 - a. Improper or no training
 - b. Rushing and/or shortcuts
 - c. Not wearing PPE
 - d. **All the above**



Session Three

3-1

State that the following section will discuss selecting the appropriate glove for the hazard. Say that the nature of hazards and the operation to be performed will determine the type of glove to be worn. A variety of potential hand injuries may make selecting the appropriate pair of gloves more difficult than choosing other PPE. Take care to choose gloves designed for the specific hazard. Manufacturers can provide more information relating to your specific needs and requirements.



- You will never be cut wearing a cut -resistant glove.
- There is one glove that will protect against all hazards.
- You never will have to change your work glove when you change tasks
- Work gloves never wear out
- If you are wearing work gloves you do not need to worry about hand placement and hazard exposure



PARTNERSHIP

3-2

Ask the group: “Where are the cut-proof gloves?” The true and correct answer is that cut proof gloves are the unicorns of the safety world. No, we don't mean that cut-proof gloves are the national animal of Scotland (look it up), we mean they are entirely mythical. There are now 9 levels of cut resistant gloves. In the United States and Canada, we generally follow the ANSI 105 standard.

Ask the group: “Is there one glove that can protect against all hazards on your job today?” Discuss that there is not one glove on the market that will protect employees from all hazards on the job. Gloves must be selected based on the hazards present. In some cases, a layered approach must be taken to achieve the level of protection needed.

Ask the group: “Do you ever need to change your work gloves because you are doing a different task?” Discuss that depending on what the task is gloves may need to be changed. Think rubber gloves when

working on energized equipment, chemical resistant gloves when working with chemicals, cut resistant gloves when work with sharp edges, etc.

Ask the group: “When was the last time you replaced your work gloves? Does protection change after the gloves becomes worn out? “. Gloves need to be changed when they become excessively soiled, damaged, or worn.

Ask the group: “If you are wearing work gloves you don’t need to worry about where you place your hands, right?”. Wrong; the correct work gloves can protect you from many hazards but, you still must know where you are placing your hands and keeping them out of the line of fire can be the best way to prevent an injury.

Assessment & Selection

- There are hundreds of styles and types of work gloves on the market
- In order to select the best option for your work; you must assess the hazards present



PARTNERSHIP 3-3

The variety of potential occupational hand injuries makes selecting the right pair of gloves challenging. It is essential that employees use gloves specifically designed for the hazards and tasks found in their workplace because gloves designed for one function may not protect against a different function even though they may appear to be an appropriate protective device.

Reaching out to your employer’s Safety/EHS team or to manufacturers can help you determine the correct gloves to wear for the task.



Assessment & Selection

- Hazards
 - Cut
 - Heat
 - Cold
 - Impact
 - Abrasion
 - Electrical
 - Chemical
 - Puncture
 - Vibration

PARTNERSHIP

3-4

Review different types of hazards that may be present which would be used in selecting the best work glove.



Work Glove Sizing

- Gloves must fit the wearer to allow them to work safely
- Gloves that are too big or too small are more likely to not be worn or can affect dexterity or protection
- Check with vendor or with a manufacturer for specific sizing



PARTNERSHIP

3-5

Explain that it is important that gloves fit properly. Gloves that are too large will slide around on the hands and won't provide protection where it is needed. Gloves that are too snug can decrease a worker's dexterity and may become so uncomfortable that workers will remove them. Keep in mind that men and women have different requirements relative to glove sizes and shapes.

All gloves do not fit the same so check manufacturer sizing charts for specific glove types.



Cut Resistant Gloves

Prevent or reduce cuts from knives or sharp edges

- ✓ Cut RESISTANT, not Cut PROOF!
- ✓ Offer little protection from pinch points or punctures
- ✓ ANSI Levels 1 through 9
- ✓ Level 9 offers best protection
- ✓ May be a glove with outer shell and inner liner
- ✓ Not all have 360 cut protection



PARTNERSHIP 3-6

Explain that cut resistant gloves help prevent or reduce cuts from knives or sharp edges. The key point here is that these gloves are cut RESISTANT, not cut PROOF! Additionally, these gloves offer little to no protection from pinch points or punctures. These gloves are available in cut levels 1 through 9 with level 9 offering the best protection.

Some gloves have an outer layer with a cut resistant liner. Others are one layer with cut protection. Not all gloves have 360 degree cut protection. They may only have protection in the palms or front of hand. Check manufacturer spec sheet to determine where cut protection is.



Cut Resistant Glove Levels

Cut level	Weight (grams) needed to cut through materials 20mm blade travel	The right cut protection depends on many factors, here are some guidelines for typical applications
A1	200 - 499	Assembly, Maintenance, Material Handling, and Shipping and Receiving
A2	500 - 999	Assembly, Appliance Manufacturing, Automotive, Construction Maintenance, Material Handling, and Metal Handling
A3	1,000 - 1,499	
A4	1,500 - 2,199	Appliance Manufacturing, Automotive, Construction, Glass Handling, Machining, Metal Handling, and Metal Stamping
A5	2,200 - 2,999	
A6	3,000 - 3,999	Appliance Manufacturing, Automotive, Construction, Glass Handling, Machining, Metal Handling, Metal Stamping, and Paper Production
A7	4,000 - 4,999	
A8	5,000 - 5,999	Automotive Manufacturing, Manufacturing, Metal Fabrication, Household Appliance Assembly, Aerospace Manufacturing, and Glass Fabrication
A9	6,000+	

PARTNERSHIP 3-7

Discuss cut levels and application guidelines from the chart. Higher cut level doesn't mean that the gloves are thicker. Cut protection technology in gloves is evolving every year.

Puncture Resistant

Many gloves are designed to protect from slashes

- ✓ ANSI Levels 1 through 5
- ✓ Few provide high levels of puncture resistance
- ✓ Results depend on the nature of puncture i.e. blunt or pointed
- ✓ Performance based on point sharpness and force
- ✓ If needle stick protection is required glove must be labelled with ASTM F2878 Needle rating



PARTNERSHIP 3-8

Explain that “Puncture Resistance” denotes the relative ability of a material or object to inhibit the intrusion of a foreign object. This is defined by a test method, regulation, or a technical specification. The puncture resistance will depend on the nature of puncture attempt, with the two most important features being point sharpness and force. Puncture resistance in fabrics can be obtained through very tight woven fabrics, small ceramic plates in fabric coating or tight woven fabrics with a coating of hard crystals. All described methods significantly reduce the softness and flexibility of the fabric. A fine sharp point such as a hypodermic needle will require a high ability to absorb and distribute the force to avoid penetration, but the total forces applied are still limited. Explain that many gloves are designed to protect from slashes caused by sharp objects, but few provide high levels of puncture resistance from objects such as the ragged edges of a piece of metal or glass.

Leather Gloves

Provides protection from rough surfaces

- ✓ Many styles
- ✓ May be thermally insulated for cold conditions
- ✓ Very cost effective
- ✓ Good for most abrasion hazards
- ✓ May **not** provide adequate cut protection



PARTNERSHIP 3-9

Explain that leather gloves offer some protection from rough and abrasive surfaces. They are comfortable and usually easy to put on and take off. There are many styles to pick from that have varying gauntlet lengths. They are generally available insulated styles for cold conditions and can be very cost effective and affordable. These gloves are good for most hand hazards but offer little to no cut protection.

Chemical Resistant

Prevent direct contact

- ✓ No glove will protect from all chemicals
- ✓ Select gloves based on chemical exposure – refer to SDS.
- ✓ Will break down over time
- ✓ The thicker the glove, the more resistant
- ✓ May be worn in conjunction with other glove types



PARTNERSHIP 3-10

Explain that chemical resistant gloves help to prevent direct contact with chemicals. It is critical to mention that no glove will protect from ALL chemicals and all chemicals will break down the glove material over time. It is important to mention that the thicker the glove, the more resistant it is to chemicals. Workers must reference the SDS sheet to determine what glove is appropriate for a given chemical.

Anti-Vibration Gloves

Reduce the effects of excessive vibration

- ✓ Have padding in palms and fingers
- ✓ Help absorb the vibration
- ✓ Reduces but does not eliminate
- ✓ May be too bulky for regular work
- ✓ Dexterity could be affected



PARTNERSHIP 3-11

Explain that anti-vibration gloves will reduce the effects of excessive vibration from hand tools and machinery. These gloves have padding in palms and fingers to help absorb the vibration. These gloves reduce but not eliminate the exposure from vibration. These gloves may be too bulky for regular work.

Impact Resistant Gloves

Provide added protection from crushing injuries

- ✓ ANSI Levels 1, 2, and 3. Note: not all gloves with back of hand protection are rated.
- ✓ Impact absorbing rubber ribs and padding designed into gloves
- ✓ Usually have a cut resistant rating as well
- ✓ Provide good dexterity and grip



PARTNERSHIP 3-12

Explain that impact resistant gloves are impact resistant not impact proof. The key here is to keep your hands out of the line-of-fire. These gloves provide added protection from crushing injuries. They are equipped with impact absorbing rubber ribs and padding designed into gloves. Usually have a cut resistant rating as well. They provide good dexterity and grip. They are generally best overall option in a glove.

Insulated Rubber Gloves

- ✓ Rated for the voltage to be worked on
- ✓ Must be electrically tested and stamped
- ✓ Inspected before each use
- ✓ Never worn without leather protective covers
- ✓ Changed out periodically per company/contract/OSHA requirements
- ✓ Removed from service when damage suspected



PARTNERSHIP 3-13

Explain that rubber insulating gloves protect only from the voltages for which they are rated. The voltage rating for rubber gloves ranges from 00 to class 4. These gloves must be electrically tested regularly according to local standards and date stamped. The maximum test interval allowed by OSHA is 6 months. Prior to use these gloves must be inspected for leaks, holes, tears, cuts, and/or ozone damage. These gloves should be used with leather protective covers to help prevent damage.



Class, Testing and Rating

Class	AC proof test Voltage	Maximum AC Use Voltage
00	2,500	500
0	5,000	1,000
1	10,000	7,500
2	20,000	17,000
3	30,000	26,000
4	40,000	36,000

PARTNERSHIP

3-13

Explain that in accordance with OSHA, all electrical gloves have a test voltage and safe use voltage requirement. All glove manufacturers incorporate some form of production code or date coding to indicate the date of initial testing. In accordance OSHA, gloves must be tested before first issue and at least every six months thereafter. Gloves must also be tested upon indication that the insulating value is suspect. Also, if the insulating equipment has been electrically tested but not issued for service, the insulating equipment may not be placed into service unless it has been electrically tested within the previous 12 months. These testing requirements can sometimes be a little confusing to interpret. Here's an example: You're considering using your electrical gloves for the first time on March 1, 2017, and notice the date stamp is February 27, 2016. Would you need to get the gloves retested before use? Yes, because you haven't put the gloves into service within the allowable 12-month window. But, if the date stamp read March 2, 2016, you could use them and wouldn't need to retest them until six months after you put them into service on March 1, 2017.

Length

One inch of rubber past the top of protector for each kV class rating

Class	Distance
1	1 inch
2	2 inches
3	3 inches
4	4 inches



OSHA

SAFETY

PARTNERSHIP

3-14

Explain that there is a required amount of rubber cuff that extend past the leather protector. The standard distance is one inch of rubber for each class rating. For example, class 3 gloves must have 3 inches of rubber extending past the leather protector.

Match Up

Glove Type	Match
Chemical	2
Leather	4
Anti-Vibration	1
Cut Resistant	3






This is an involvement activity. Begin with picture number 1. Ask the group which glove in the “Glove Type” list would be appropriate for the job task shown in picture 1. The answer is “Anti-Vibration”. Trigger the animation and a number 1 will appear beside the word “Anti-Vibration” in the “Match” column. Progress likewise through the entire series.



Key Points-Session Three

1. Leather gloves provide good abrasion protection but may not provide good cut/puncture protection.
 a. True
 b. False
2. Puncture resistant glove strength is primarily based on sharpness and force exposure
 a. True
 b. False
3. 20 kV rated insulation gloves have a maximum use voltage of 20 kV.
 a. True
 b. False
4. Gloves selection should be based on which of the following:
 a. Personal preference
 b. Job task & hazards
 c. Price
 d. Environment

PARTNERSHIP

3-16

1. Leather gloves provide good abrasion protection but may not provide good cut/puncture protection.
 - a. **True**
 - b. False
2. Puncture resistant glove strength is primarily based on sharpness and force.
 - a. **True**
 - b. False
3. 20 kV rated insulation gloves have a maximum use voltage of 20 kV.
 - a. True
 - b. **False**
4. Gloves selection should be based on which of the following:
 - a. Personal preference
 - b. **Job task & hazards**
 - c. Price
 - d. Environment



**THANK
YOU!**

PARTNERSHIP

3-17