# Quiz: PPE – Hands, Wrists and Fingers

## QUESTION

**What are the three kinds of Hazards that have the potential risk of hand and finger injury?**

A. Power tools, hand tools, extreme hot or cold temperatures.
B. Chemical applications, contact hazards, jewelry and loose clothing.
C. Personal hazards, personal protective equipment, substitution.
D. Mechanical, Contact, Personal.

## ANSWER

D. Mechanical, Contact, Personal.

## WHY IS IT RIGHT

Our hands, wrists and fingers are valuable tools, the most valuable we'll ever own.

A hand injury, such as the loss of a finger, a broken bone, nerve damage, MSD, or skin disorder, can interfere with a worker's job performance and quality of life – and even end a career. Work-related hand injuries are also costly to the employer, in terms of lost work time and productivity, and higher insurance rates.

27 bones, 20 muscles and dozens of tendons and ligaments. Add blood vessels and nerves to feed and control the moving parts, and you have one of the more brain power than other body parts, your hands are involved in almost everything you do. Yet many things are done without any deliberate thought or anticipation of danger.

Because it is so well designed and useful, the hand is usually where the action is and is the part of the body most likely to be

injured. In the Ontario mining industry, approximately 50% of all hand and finger injuries are cuts or puncture wounds. One out of every 10 hand injuries results from the improper use of hand tools and four out of ten injuries occur in the handling of materials. Among the leading causes of hand and finger injuries are failure to follow procedures, using the wrong tool for the job, inattention, and failure to wear personal protective equipment.

Traumatic injuries, contact injuries and repetitive motion injuries are the most common types of hand injuries.

Traumatic injuries can occur from the careless use of tools or machinery. Hands and fingers may get caught, pinched or crushed in chains, wheels, rollers, or gears. They may be punctured, torn or cut by spiked or jagged tools and edges that shear or chop.

Contact injuries can occur from contact with solvents, acids, cleaning solutions, flammable liquids and other substances that burn or injure tissue.

Safety precautions to minimize contact injuries include reading product labels and Material Safety Data Sheets, using the correct gloves or barrier cream, and washing your hands frequently.

When tasks require repeated, rapid hand movements for long periods of time, repetitive motion injuries can occur. These injuries often disable the soft tissue and joints of the body. Examples of repetitive motion injuries include tendinitis, tenosynovitis, “tennis elbow,” carpal tunnel syndrome and white finger. To avoid muscle strain in your hands, change your grip, hand position or motion. If possible, alternate tasks to give your hands a rest.

White Finger is also known as Raynaud’s phenomenon due to HandArm Vibration exposure (HAVS). Workers exposed to vibration are the most likely to show signs of this disease. Repeated surveys find that about 50% of people using rock drills or other tools with high vibration have HAVS. Hand-held power tools such as chain saws, jackhammers and pneumatic rock drillers and chippers are the primary culprits. Damage can also extend to nerves, muscles, bones and joints of the hand and arm. This condition is a blood

circulation and nerve disorder that is aggravated by the exposure to cold temperatures. Attacks can occur at work or at home, such a while fishing, golfing, or touching cold objects. Severe cases of Raynaud's phenomenon may cause disability, and rare, severe cases can lead to a breakdown of the skin and gangrene.

The first step in understanding the potential risk of hand and finger injury is to understand the three kinds of hazards. Once these are understood and evaluated it is possible to apply a hierarchy of possible controls.

- Mechanical Hazards – these are situations where hands and fingers can get caught, pinched, crushed or severed in chains, rollers, gears, or other moving parts. Objects could fall on your hands. Or, your hands could get hurt while handling materials. Even hand tools can be a mechanical hazard if they are used incorrectly or are damaged.
- Contact Hazards – these hazards cause hands and fingers to get cut on sharp edges of tools, materials, packaging, containers or even debris from a manufacturing process. These hazards also include electrical current, chemicals, and extreme hot and cold temperatures.
- Personal Hazards – these hazards include wearing jewelry, loose clothing or using improper or defective personal protective equipment.

**MECHANICAL HAZARDS**

When working with using equipment:

- Make sure all guards are secure and in place.
- Keep hands and fingers out of the moving parts.
- Never reach blindly into any spaces in, around, under or near the equipment.
- Follow all lockout/tagout procedures.

When using portable power tools:

- Make sure they are operating correctly and all guards are in place.
- Unplug corded tools or remove the battery from cordless

tools before changing bits, blades or accessories.
- Lock out a tool to service it or send it out for service.

When using hand tools:

- Make sure you are using the correct tool for the job – no improvising.
- Select the right size and head style for screwdrivers.
- Screw drivers are not pry bars, scrapers, chisels or puncturing tools.
- Use a wood chisel for wood and a cold chisel for metal.
- Select the right type and size of wrenches and pliers for the job.
- Never use a cheater bar on a wrench.
- Look the tool over to be sure it is in good working order and not damaged in any way.
- Never use a hammer with a splintered, cracked or loose handle.
- Don’t use a chisel with a mushroomed head.
- Don’t use pliers with worn grooves or adjustable wrenches with worn or sprung jaws.
- Use penetrating oil on rusted nuts and bolts – give it time to work.
- Secure your work in a vise or a bench.
- Don’t hold it in your hand.
- Use a locking pliers when grinding, trimming or cutting small parts.

When handling or moving materials and equipment:

- Never place your hands between pieces of a load or between a load and a fixed object.
- When using a crane or hoist, keep your hands out of the place where the sling, chain or hook will tighten the load.

**CONTACT HAZARDS**

Blind reaching is a common way to injure hands. That’s reaching into, under, over, between or behind something when you can’t see where your hands will be. Blind reaches can cause your hands to:

- Get burned on something hot or cold.
- Be cut on a sharp edge.
- Come in contact with moving parts.

If you can’t see:

- Get down on your hands and knees to look under something first.
- Use a flashlight or mirror.
- Shut down equipment and lockout to remove a guard to work on it or pick up a fallen item.

Sharp tools also cause contact injuries. To prevent these injuries:

- Keep blades on knives and tools sharp.
- Wear cut-resistant gloves.
- Use the right knife and blade for the material being cut.
- Check the path the knife will follow before starting a cut.
- Keep momentum away from your body when cutting.
- Dispose all sharps in a labeled-sharps container; not the regular trash bin.

**PERSONAL HAZARDS**

Make wise choices before you start working about what you are wearing:

- Remove rings, watches and bracelets when working with tools, machinery or if they could get caught on anything.
- Make sure sleeves or other loose clothing can’t get caught in or on anything.
- Select the right work glove for the job and make sure they fit properly – not too tight and not too loose.
- Inspect gloves for tears, holes and wear.

Wash hands frequently to keep them safe:

- Avoid frequent use of solvents, harsh soaps or abrasive cleansers.
- Wash hands immediately after using any chemical – even if you wore gloves.

- Get medical attention for skin rashes or irritations on your hands.

**WHY IS EVERYTHING ELSE WRONG**

**9 Ways To Protect Your Hands At Work**

In almost every work environment, hands play an important role – but that also means hands are particularly vulnerable to injury. Most hand injuries result from physical or chemical hazards which can cause burns, bruises, cuts, and fractures to name just a few. Fortunately, these injuries can be prevented by using some common sense tips:

1. Protect your hands when working with chemicals, hot substances, sharp objects and other common workplace hand hazards.
2. Avoid using strong solvents or gasoline to clean your hands.
3. Use the proper tool for the job and if using power tools, be sure you know how to use them safely. Never operate machinery or power tools under the influence of alcohol or drugs – even prescription drugs.
4. Wear appropriate gloves to protect against particular hazards.
5. Be mindful of where both hands are placed at all times while working, especially when working with machinery.
6. Avoid using hands to feed material into machines.
7. Never use your hands to sweep up glass, metal shavings, wood chips, or other sharp objects.
8. When working with rotating machinery avoid wearing long sleeves, jewelry or anything that can catch into the machine.
9. Stretch your hands and fingers from time to time to give tense and tired muscles & tendons a chance to relax.

**Prevent Hand and Finger Injuries**

Allow rotating parts to come to a stop before working on them:

- Do not use your fingers to retrieve objects from saw blades, knife blades or parts moving together.

- Do not use your fingers to retrieve dirt or other objects from rotating parts of machinery, such as the blades on a rototiller.

Perform maintenance only when the tool or machinery is not in operation:

- Use the lockout/tagout procedure during maintenance. If the guards are removed to perform maintenance, replace them immediately after servicing.

Know when to wear gloves:

- Wear gloves if your hands will be exposed to hazards causing cuts, scrapes, or temperature/chemical burns.
- Do not wear gloves around reciprocating or rotating machinery. Gloves can get caught in the device and draw in your hand, which can cause serious injury.

Handle sharp or pointed tools carefully:

- These types of tools include but are not limited to hatchets, pruning shears, punches, knives, pitchforks and machine blades.

Be aware of hot and cold surfaces:

- Do not use your hands or fingers to test the temperature of a liquid or a solid surface.
- Let engines and other hot parts on machinery cool down before performing maintenance.
- Do not wear rings when operating or repairing machinery, or performing electrical work:
- Machinery should be operated as designed and within specified limitations.

**WRIST INJURY PREVENTION**

Each day we use the muscles and tendons in the wrist and hand to perform various upper extremity tasks. The physical stress and strain to these muscles and tendons can produce microscopic wear and fatigue to these tendons and muscles.

As long as the amount of fatigue is lower than the body's ability to recover, the soft tissues in the wrist will remain healthy. But too much strain and fatigue, coupled with too little repair, can lead to inflammation and eventually a painful and costly musculoskeletal disorder (MSD).

**Potential MSDs of the Wrist**

- tendonitis
- carpal tunnel syndrome
- ganglion cysts
- trigger finger
- DeQuervain's

**Think Prevention!**

There are a number of things we can do to decrease the risk of wrist fatigue and discomfort for team members.

**1. Ergonomic Design Principles**

Ergonomics is the science of fitting the work to the worker, making sure jobs and tasks are within the worker's capabilities and limitations. It's part of your company's commitment to provide a safe workplace.

Ergonomic Design Principles for Wrist Injury Prevention:

- Maintain neutral posture.
- Avoid repeated or sustained flexion and ulnar deviation.
- Avoid repeated or sustained pinching and allow for small hands when designing gripping tasks and selecting hand tools.
- Allow plenty of access space for large hands.

**2. Educate and Train Team Members**

Poor work practices, a poor health profile and no recognition of early signs and symptoms by team members contribute to musculoskeletal disorders (MSDs). Implement a comprehensive Workplace Athletics process to control risk factors related to individual team members and enhance human performance.

- A good pre-shift stretching program will help increase circulation and elasticity of the muscles and tendons.
- Team members should be educated regarding proper lifting techniques to reduce stress on the lower back.
- Team members should also be trained and motivated to perform specific stretches to counteract tightness and compression in the low back.
- Team members should be encouraged and motivated to adopt good health habits and keep their body fit for work.

**3. Recognize and Report Early Signs of MSDs**

At the first signs of excessive fatigue and discomfort, team members should be trained to recognize it and strongly encouraged to report it. When an early report is received, an on-location preventative health care professional should conduct a one-on-one early intervention consultation to identify the root causes and help the team member utilize injury prevention best practices.

There is a seven-step safety approach that to take in preventing workers from becoming just another hand injury statistic.

**Step 1: Eliminate the Hazard**

Chances are, the idea of eliminating a workplace hazard sounds either obvious or silly to a safety professional. The truth is, it's the absolute easiest and best way to reduce on-the-job injuries.

The first step is to see if there are any hazards that you can remove with engineering or job controls. According to OSHA, many industries have found successful ways to eliminate hazards and improve employee safety.

OSHA says, "Controlling a hazard at its source is the best way to protect employees." An example of doing so would be building a barrier between the hazard and the employee (engineering control) or changing the way in which employees perform their work (administrative control).

**Step 2: Upgrade Equipment**

Using outdated equipment can increase the danger of a hazard that can’t otherwise be eliminated. Assess your workplace equipment with the help of a safety expert to determine whether upgrades or updates could help prevent injuries.

**Step 3: Re-Engineer Equipment**

Engineering or administrative controls always should be considered first when seeking to eliminate workplace hazards. Some examples of this are moving employees away from noisy equipment to eliminate noise exposure, installing two-handed safety control interlocks and light curtains to stop equipment from running when hands are

**Step 4: Training**

Step four is the first step where employees actually are involved at all. Training plays a critical role in preventing workplace injuries. Safety training shows an organization’s commitment to workplace safety and encourages an organizational culture of safety.

Think outside the box when it comes to hand safety training. The secret to training success is to make training interesting enough to be memorable. During its hand safety training, U.S. Steel wanted to demonstrate to employees how serious hand injuries can be. To do this, employees were asked to perform simple daily tasks, like opening a jar of peanut butter or putting on a work shirt, without using their fingers or hands.

Always remember that training shouldn’t be a one-time affair, but an ongoing conversation between employees and safety leaders. Consider holding quarterly safety workshops or sending around monthly safety newsletters to help keep hand safety top of mind.

**Step 5: Enforce Policies and Procedures**

Talking about and training for safety does little good if there’s no method of enforcing policies and procedures. And although repercussions may be a necessary tactic for those who ignore safety rules, it’s rewarding good, safe behavior that

professionals find to be the most effective method for encouraging compliance.

We've seen several excellent examples this year of safety leaders recognizing individuals or groups of employees when they achieve safety milestones. Some of these include creating a new trophy or award, providing perks such as rock star parking or extra vacation time, or even hosting a steak dinner for the entire workforce.

**Step 6: Provide Adequate PPE**

Chance are, you've heard it before: Personal protective equipment (PPE) should be your last line of defense against workplace hand injuries, not your first. But that certainly doesn't mean it's not an essential step. In fact, 70 percent of workplace hand injuries occur because workers aren't wearing gloves at the time of the injury.

Reluctance to wear gloves is the biggest hurdle to overcome in this step toward safety excellence. In addition to training employees on how gloves can save their digits, consider trying new gloves that better meet their needs. Bulkiness, sweating hands and lack of grip are common complaints workers cite when explaining why they choose not to wear cut-resistant gloves, for example.

Recent advancements in technology make gloves today lighter, more comfortable, more breathable and safer than ever before. For example, ultra high molecular weight polyethylene (UHMWPE) is 15 times stronger than steel and offers level 5 cut protection. New materials like UHMWPE feel cool, comfortable and lightweight, while providing resistance to cuts, abrasions, chemicals, water, humidity and UV light.

**Step 7: Evaluate and revise**

Safety excellence is an ongoing journey. Make it a point to evaluate what's working and what isn't and revise your method accordingly.

Review your safety successes and failures, determine what's driving them, and revise your safety strategy at least once a

year.

Like all safety goals, achieving zero hand injuries in the workplace takes a commitment. Following the seven steps outlined here, you'll be well on your way and your workforce will be safer, happier and more productive as a result.

Everything else is wrong.