



Hand Safety Program

—
human energy®



How important are your hands?

- The hand is one of the most complex parts of your body. The movement of the tendons, bones, tissues and nerves allows you to grip and do a wide variety of complex jobs.
- Without your hands it would be extremely difficult to do routine simple tasks, such as opening doors, using a fork, or tying your shoes.
- Your hands make you a skilled, valuable worker.
- The improper use or misuse of hand tools cause minor to serious hand injuries.
- Hand injuries are likely to occur when the wrong tool is used or the right tool is used improperly.

**Protect
Your Hands**



**Some Tools are
IRREPLACEABLE**



Hand injuries and complications

- Hand injuries can be associated with working with machinery or equipment.
- The materials being used or the job process might be hazardous.
- Hand tools or powered hand tools may be faulty or improperly used.
- Follow proper ergonomics to avoid repetitive strain injuries and other musculoskeletal disorders, which can develop over time and lead to long-term disability.
- Hand injuries are difficult to repair because of the complexity of them.
- After an injury, the hand may not function as it did before the injury due to loss of:
 - Ability to complete the simplest of tasks
 - Motion
 - Dexterity
 - Grip



Hand injury Requirements

This standard has been established to ensure employees and contractors eliminate or mitigate as many hazards as possible. Employees and Contractors shall wear the appropriate hand safety personal protective equipment to protect their hands while performing work. Examples include but are not limited to:

- Making general inspection rounds
- Gauging a tank
- Performing sample analysis
- Operating valves
- Cleaning dispensers
- Emptying trash
- Performing mechanical activities
- Performing any activity that your LPSA indicates the use of proper hand protection is necessary



To avoid hand injuries:

Know the hazards and dangers of the job to be done and plan your work activities. Use LPSA and JLAs. What's the worst thing that can happen? Mitigate or eliminate as many hazards as possible before starting work.

Consider areas with pinch points or impact points.


Be aware of obstacles and equipment that pose hand contact hazards (push and pull).

Wear proper gloves for each and every task (more than one glove may be required). Layer gloves with chemical protection as the outermost layer when applicable.

Change gloves as necessary to avoid chemical contact (Permeation-Penetration-Degradation).

Use the proper tools and mechanical aids for the task (holders, extensions etc.).

LOSS **P**REVENTION **S**ELF-**A**SSessment



ASSESS the risk!
ANALYZE how to reduce the risk!
ACT to ensure loss-free operations!

DO NOT PROCEED UNLESS ALL RISKS HAVE BEEN ADDRESSED!



WARNING
Pinch point.
Keep hands clear during operation.



To avoid hand injuries: (cont.)

Protect yourself from hot and cold surfaces.

Avoid vibration, over use and overexertion.

Keep eyes on task.

Be conscious of rotating or moving surfaces.

Automated machinery may be controlled by remote control, or delayed timing devices that cause the machine to start automatically (Lockout/Tagout).

Loose clothing and jewelry (*rings and watch bands*) may be caught up in moving machinery.

Never remove machine safeguards or operate machinery with safeguards removed.



When to use Hand Protection

Assess the risk: Consider the task you're about to perform.

Analyze your safeguards: When reviewing hand protection for the task, analyze which gloves would be appropriate to reduce the risk of injury.

Act: Choose and wear the proper hand protection for the task.






Use appropriate hand protection when your hands are exposed to hazards such as:

- Skin absorption of harmful or toxic substances (Bloodborne pathogens)
- Severe cuts or lacerations
- Severe scratches or abrasions
- Punctures
- Chemical burns and exposures
- Harmful temperature extremes (Thermal burns - Frostbite)
- Impact (contact) hazards






Hand Protection

Task	Hazard	Glove / Safeguard
<p>General purpose (non-chemical) work such as valve operation, climbing ladders, etc.; Working at Marine Terminals; Sharp edges, tools and knives</p>	<p>Scrapes, cuts, scratches and light / moderate burns Wet slippery surfaces / pinch points</p>	<p>Dipped nylon, leather palm, leather driving, or gloves with equal or improved protection. Always look for ANSI cut resistant gloves at Level 3 or higher when selecting a glove in this category.</p> 
<p>Incidental chemical exposure potential such as lab work, etc.</p>	<p>Incidental contact to chemical and hydrocarbon exposure potential/skin contact</p>	<p>Disposable Vinyl, Latex, Nitrile or PVC Disposable Gloves offer limited protection for incidental contacts. Change immediately when contaminated product contacts gloves (offer very little protection; get a new pair often).</p> 
<p>When there is potential for elevated chemical exposure such as draining, cleaning, leaking of chemical and/or process equipment, tank sampling, tank reel gauging activities</p>	<p>Moderate to high chemical and hydrocarbon exposure potential (use proper arm and body protection)</p>	<p>Industrial grade, chemical resistant gloves rated by the manufacturer sufficient for the chemical and time of the exposure. Materials used can be Neoprene, Nitrile, Butyl and PVC materials. Remember gloves are chemical resistant and shall be changed when exposed.</p> 



Hand Protection (cont.)

Task	Hazard	Glove / Safeguard	
Welding, cutting and brazing	Cuts and scrapes	Welding Grade Gloves for the type of welding	
High voltage electrical work (racking in/out, testing, etc.)	Electrocution/Burns	Voltage rated gloves with seamless protectors as outlined in Electrical Safe Work Practice ESH 550. When selecting a glove, ensure it is rated for the voltage it will be exposed to.	
Hammering, rigging, scaffolding, pipefitting and task with potential impact hazards	Pinch, Smash, Crush, Fracture, etc.	Impact Resistant Gloves (back of the hand protection, knuckle and finger reinforcements)	



How chemicals get in

- **Permeation** – Diffusion of a chemical through a material on a molecular basis
- **Penetration** – Chemical enters through zippers, punctures or seams
- **Degradation** – Chemical causes a change in the physical properties of the material



Glove Care



- ✓ Chemical Gloves are chemical-resistant, *not chemical-proof*. Change gloves whenever contact with chemicals occurs.
- ✓ Discard gloves if they become saturated with oil.
- ✓ Inspect gloves before use for tears, excessive wear, and punctures.
- ✓ Store in a clean, dry location.
- ✓ Use caution while removing contaminated gloves.
- ✓ Leak test chemical gloves by sealing the wrist and filling the glove with air.
 - Use a clean plastic tube or low pressure airline – not your mouth!

Hand Care



- ✓ Avoid washing your hands with solvents, harsh soaps, or abrasives.
- ✓ Clean and bandage all cuts and abrasions.
- ✓ Immediately remove any imbedded foreign materials and seek medical attention. (*Follow the Early Injury Management (EIM) Program.*)
- ✓ Wash immediately after using any chemical – Even if you did not detect leakage.
- ✓ Pay attention to skin rashes - get an immediate medical evaluation. (*Follow the EIM Program.*)
- ✓ Wear cotton gloves under rubber gloves to reduce sweating.

Ergonomics in the field and office

- Hand injury can also occur as a Repetitive Stress Injury (RSI) -- a potentially disabling illness that can be caused by prolonged repetitive hand movements, such as those involved in computer use as well as out in the field.
- RSI symptoms tend to develop gradually. At first, symptoms may only occur while doing the repetitive task and ease off when you rest. In time, the symptoms can be present all the time, but tend to be made worse by doing the repetitive task. Symptoms can range from mild to severe. If these RSI symptoms are ignored, the injury may become long-term and possibly irreversible.
- Symptoms indicate the need for rest and recovery of the tissues.

Most common symptoms:

- Tingling, burning, itching
- Stiffness
- Muscle fatigue
- Increasing discomfort

Other symptoms include:

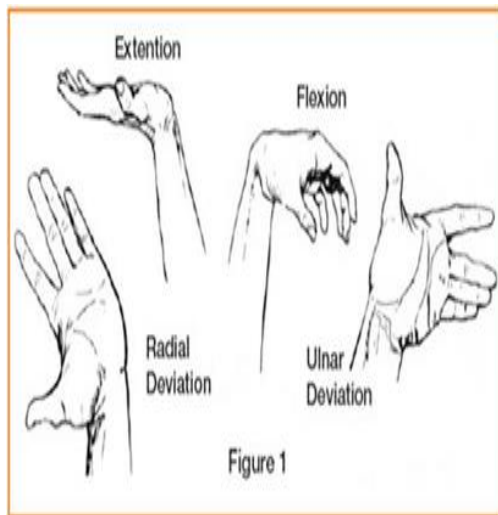
- Mild swelling
- Muscle weakness
- Loss of range of motion
- Guarding or protecting the affected body part(s)



Risk Factors for RSIs

1. Awkward or Static Posture

- An awkward body posture is any change of all or part of the body from the neutral position.
- Examples of awkward body positions for your hands and wrists:
 - twisting
 - bending the wrist forward, backward or side to side
- When muscles stay contracted for too long, blood flow can be affected. The longer or more often a static or awkward body position is used the more likely the person will be injured.



2. Repetition

- Repetitive movements are especially hazardous when they involve the same joints and muscle groups over and over and when we do the same motion too often, too quickly and for too long. This type of work is very tiring because the worker cannot fully recover in the short periods of time between movements. Eventually, it takes more effort to perform the same repetitive movements.
- A general rule, jobs or tasks are considered repetitive when:
 - A task has a cycle time of less than 30 seconds. For example, packing a box of jars every 20 seconds.
 - A task that requires repeating the activity more than 50% of the time. For example, a computer operator who enters data more than 50% of the day.



Risk Factors for RSIs (cont.)

3. Force

- Force is the amount of effort our bodies must do to lift objects, to use tools, or to move. All work requires us to exert some force. If the force required to perform the work overloads the muscles, joints, tendons and other soft tissues, it is considered to be excessive force.
- Excessive forces can be created by:
 - The weight of the object and how it is handled – any amount of weight can create excessive force if it is difficult or awkward to handle.
 - Awkward or improper hand grips.



4. Vibration

- Hand/Arm Vibration can affect those who operate power driven hand tool such as jack hammers, air guns and chain saws.
- Vibration is a problem because more force than normally needed may have to be used to control a vibrating hand tool or hold onto a vibrating steering wheel.



Prevent Injury

- Know the hazards and dangers of the job to be done.
- Plan your work activities. Remember to refer to the ***Preventing Serious Injury and Fatalities Field Guide*** when planning work.
- Use LPSA and JLAs. What's the worst thing that can happen? Mitigate or eliminate as many hazards as possible before starting work.
- Follow the AP Hand Safety & Injury Prevention Safety Standard and Glove Ordering Information [add links from Tony]

Questions? Contact your local HES Specialist (TESH/RESH) or Safety Specialist.

