

Our Hands at Work!



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— **Our Hands at Work!**

The hand is the part of the body most often injured and these injuries are sometimes difficult to heal. Hand injuries are preventable. By identifying hazards and developing safety measures, you and your employer can prevent your hands from being among the 500,000 injured in Canada every year.

— **Think of your hands as...**

Valuable

Your hands are superbly designed tools of amazing strength and dexterity. They can pinch, grasp, twist, lift, hold and manipulate while doing a wide variety of other specific tasks.

Vulnerable

Your hands and wrists are a complex system of bones, muscles and tendons, ligaments, blood vessels and nerves protected by layers of skin. A total of 27 hand and wrist bones are connected to the muscles by tendons. Ligaments join bones together and hold the joints in place. Blood vessels supply nourishment to all these parts. Nerves convey sensations and help to control hand and finger movements.

The skin provides a barrier against chemicals, heat and cold. Skin on the back of the hand is thin and elastic and, on the palm, it is thick to provide traction, cushioning and insulation.

Remember! Your hands are valuable but also vulnerable! If even a small cut makes it difficult and painful to work or play, imagine if you had a serious injury.

— **Workplace hazards and injury prevention**

A hazard is any energy that can cause harm. Injuries can be immediate or may happen over time. In the workplace, your hands are subjected to many hazards.

— **Mechanical hazards**

There are numerous mechanical hazards from tools, equipment, machines, structures and vehicles:

- chains, gears, rollers, wheels and transmission belts;
- spiked or jagged tools;
- edges that catch and tear;
- cutting, chopping and grinding mechanisms;
- cutting tools such as knives and presses;
- falling objects, etc.

A few prevention tips

- Work at your own pace. The frequency of hand injuries is proportional to how quickly you work.
- Stay alert! Always watch what your hands are doing.
- Use a push stick to feed a circular saw or other power tools such as jointers and shapers.
- Know how to handle the tools and equipment you work with. Don't take shortcuts.
- Wrenches should properly fit nuts and bolts.
- Use long magnetic poles for retrieving items from places where it is dangerous for hands to go.
- Presses and other machines should be designed to keep hands away from the work area.

- Control panels should be designed, installed and guarded to reduce the risk of accidents as much as possible.
- Use different colours, shapes or sizes to distinguish safety shut-off controls from all other controls.
- Never start repair work on power tools or machinery without first checking that the power is shut off and the machine is locked out.
- If you are taking any drugs or medication, consult your doctor. Some drugs and medication impair your faculties, prevent you from thinking clearly and slow your reflexes.

NOTE:

It is dangerous to wear rings at work. Even a ring that fits your finger perfectly poses a hazard. If the ring is forced off or breaks, it may pull the flesh from the finger or amputate it. Remember, too, that long hair, loose clothing, dangling accessories, jewellery and similar items can get caught in machinery. If these are worn, they must be tied, covered or otherwise secured to prevent them from becoming a safety hazard.

— Heat and cold

Burns to the hands can be caused by exhaust pipes, sparks, steam, hot pipes, hot liquids, welding and molten metals. Even extreme cold can cause burns. Your hands and fingers turn numb at minus 15°C, which can increase the risk of accidents.

A few prevention tips

- Use gloves appropriate for the job and temperature.
- Insulate tool handles.
- Let hot surfaces cool before working on them.
- Before hands become too cold, take time to warm them up.

— **Chemical hazards**

Chemical substances may irritate the skin, causing redness, itching, eczema, inflammation, dryness and serious burns. Some chemical products are doubly dangerous: in addition to being irritants, they are toxic when absorbed by the body through the skin. Degreasers, metals, plant and animal oils, dyes, inks, cleaning solutions and many other chemical products can damage the skin and subcutaneous tissues of your hands.

A few prevention tips

- Keep containers correctly labelled and be sure to always read, understand and follow the manufacturer's directions.
- Protect your skin by wearing proper gloves for the substances being handled.
- Report any problem with a substance or protective clothing.
- Wash your skin well with soap and warm water or use special cleansers, especially after direct contact with a chemical substance and before smoking or eating.
- Don't wipe your hands with chemically contaminated rags.
- Use barrier creams when there is no other way to protect your hands. Since it is important to use the right cream, you should see a specialist. The wrong cream may encourage absorption of certain substances rather than protect you. Barrier creams must be reapplied after you wash your hands.

— **Risk of infection**

Hands exposed to materials contaminated by microbes can become infected. For example, tetanus and hepatitis C are infections that can be transmitted through hand wounds. Check the date of your last tetanus immunization. Hepatitis C immunization is important for health care workers and laboratory workers.

A few prevention tips

- Always wash your hands thoroughly.
- Wear proper gloves to protect your hands.
- Use safe handling techniques.
- Always obtain first aid for every injury, no matter how minor.

Types of injuries and prevention

— Strains and sprains

Strains and sprains occur when the muscles and ligaments that hold the joints in place are bruised, pulled or torn. These injuries often occur when you lift heavy objects or try to break a sudden fall.

A few prevention tips

- Beware of broken floors and torn or curled rugs or mats. Report these hazards for repair.
- Use handrails on stairs.
- Never jump down from a platform, scaffold, loading dock or other height.
- Use ladders properly for climbing.
- When moving heavy or bulky things, use a lifting device or ask for help.

— Fractures

Fractures occur in what are referred to as “hand traps”, such as wheels, pulleys and rollers, or when the hand strikes a hard object.

A few prevention tips

- Keep your hands away from machines in operation.

- Position hands carefully so fingers won't get caught.
- Feed rotary or operating machines with a push stick.

— **Crush injuries**

Crush injuries damage deep tissues and bones. They occur when your hand is caught between two solid parts that strike each other, such as falling objects, drawers and doors.

A few prevention tips

- Always use the protective devices on machines.
- Be sure you can see what you are doing and don't take dangerous shortcuts to get the job done faster.
- When using bench-mounted machines, make sure they are securely fastened in place.
- Make sure that your gloves don't get caught in moving parts.

— **Abrasions**

Abrasions and lacerations occur when skin is rubbed away by friction from belts, sanders, grinders and rough materials. Broken skin allows for easy absorption of toxic or infectious substances by the body.

A few prevention tips

- Do not remove protective devices from machines.
- Wear proper gloves for the job.

— **Cuts**

Cuts can occur when you use dull cutting tools or handle sharp metals and other materials with jagged edges.

A few prevention tips

- Keep your hands and fingers away from cutting tools.
- Pass tools to other workers handle first.
- Store tools safely when not in use and replace worn out or broken tools.
- Use grips, suction cups or magnetic pads to help carry metal or glass sheeting.
- Wear proper gloves, for example, metal mesh gloves when cutting meat.
- Don't hold the workpiece in your hand while using a hand tool. Under pressure, the tool could slip and injure you. The piece should be on a flat surface and firmly secured.

— Puncture wounds

Puncture wounds occur when pointed objects or tools pierce the skin and deep tissues. For example, punctures can result from glass, fish hooks, thorns, animal bites or nails hidden in wood.

NOTE:

Accidental injection of the contents of air guns is a far greater danger than most people realize. Though the injury may seem minor, the victim must be taken immediately to the hospital.

A few prevention tips

- Use adequate hand protection.
- Remove all debris and scrap materials from the work area.
- Watch for nails and other sharp objects when handling used lumber.
- Use the right tool for the job, and use it properly.

- Never use screwdrivers as levers, chisels or reamers, or to perform work for which they are not designed. Never carry screwdrivers in your pocket.
- Files should never be used without a handle because the sharp pointed tang can be driven into your hand.

— **Injuries that happen over time**

When you have completed your work, do you feel tingling or numbness in your hands from holding vibration tools or machines?

Do you get sore hands and wrists from tightening bolts many times a day?

Do you have sore hands when cooking meals or using tools at home?

If your answer to any of these questions is yes, you may have Raynaud's syndrome, carpal tunnel syndrome or tenosynovitis.

— **Raynaud's Syndrome**

Raynaud's syndrome or "white finger" is caused by the vibrations your hands and fingers are subjected to when you work with electric or pneumatic tools. The skin, muscles and other tissues cannot get needed oxygen because of damage to the blood vessels of the hand. The result is a loss of sensation and control; there may be blanching and numbness of the affected areas and you may notice a decreased sensitivity to heat, cold and pain.

All of these problems can seriously interfere with your regular work and recreational activities. If you operate a chain saw, air hammer, air chisel, jack hammer or any other vibration tool, you must be extremely careful.

A few prevention tips

- Eliminate or reduce vibrations by using anti-vibration mounting or other engineering measures.

- Regular maintenance of your tools is very important because they will vibrate less when in good operating condition.
- Find ways to do the job using a different tool or by changing your grip, wrist position or hand movement. Think about how to perform each movement in the simplest way possible and vary tasks to rest your hands.
- Keep hands warm and dry. Cold causes blood vessels to contract, reducing the amount of oxygen carried to the hands by the blood.
- If you smoke, try to stop. Nicotine constricts the blood vessels, decreasing the oxygen supply to the tissues of your hands.

— **Carpal tunnel syndrome**

Carpal tunnel syndrome results from pinching of the median nerve that runs through the carpal tunnel in the wrist. This syndrome is often found in people who work with their wrist bent or twisted, especially when using force. Assemblers, textile workers, computer keyboard users, painters and food processing workers are among those most affected.

The initial symptoms are numbness, tingling, burning, pain and loss of strength. Symptoms are often more acute at night and felt on only one side of the hand, the side of the index finger and thumb.

— **Tenosynovitis**

Tenosynovitis (tendinitis, synovitis, bursitis, trigger finger, de Quervain's disease) is an inflammation of the tendons and tendon-muscle attachments. It is caused by overuse of the hand and arm muscles, especially during rapid, forceful and repetitive movements and excessive arm extension.

The areas of the hand where pain occurs are generally the base of the palm, the palm side of the fingers, the back of the wrist, and the side of the wrist near the palm.

A few prevention tips

- Be aware of the positions and movements of your hands and wrists as you work. Try to alternate or change your movements to reduce repetition and strain.
- Rotate functions and vary tasks.
- Plan the work and work area to suit yourself rather than the machine.
- Tools should be light and balanced, and be the right size for you.
- Tool handles should be bent so that the wrist stays in a comfortable, natural position.
- Whenever possible, work with your forearms close to your body and supported.
- Doctors may advise wrist supports to prevent twisting injuries.

— Hand and arm protection

There are many gloves and sleeves specially designed to protect hands and arms.

Here are some examples:

| Types of gloves | Protect against |
|---|---|
| Neoprene, rubber or vinyl | Most chemicals |
| Thick leather | Welding, rough surfaces |
| Aluminized fabrics of nylon, rayon, asbestos, wool or glass | Heat and cold |
| Rough finish | Handling slippery objects and materials |
| Cotton and terry cloth | Abrasions and cuts |
| Lead-lined | Ionizing radiation |
| Metal mesh | Knife blades and other sharp |
| Insulated gloves, often made of rubber and worn inside leather gloves | Electric shocks and burns |

NOTE:

To protect yourself properly from chemical products, it is a good idea to contact the supplier or manufacturer.

Advice for protecting your hands

- Your hands must be protected against the hazards of the particular job.
- Gloves should not be worn around machines with moving parts that could catch them and pull the hands into danger areas, for example, machines with pulleys or power-driven machines with rotating shafts.
- Protective sleeves should be long enough to leave no gap between the gloves and the sleeves.

- Do not wear gloves with metal parts when working near electrical equipment.

Some situations call for protection other than gloves. Find out if you would be better protected with barrier creams, finger guards or cots, hand protectors or leather products, arm protectors, sleeves or wristlets.

— Things to consider

Too often we forget just how amazing and vulnerable hands really are. Routinely working with a tool or machine can sometimes result in carelessness. Stay alert and work safely.

Remember that an injury can happen in a split second and result in a lifetime of disablement and hardship for you and your family.

Support and work with your employer and your health and safety committee or representative to implement an *effective hand protection program*.

It takes:

- team effort;
- safety training;
- observance of safety rules and proper work practices;
- first aid training;
- hazard recognition;
- safe tools and equipment;
- adequate hand protection; and
- a safe work place.

When someone is injured, treatment must be rendered promptly in order to increase the chances of a full recovery.

