



# Health and Safety Resources

## Caution to Users

Many of the resources in this archive were originally prepared by WSN's predecessor organizations for use by industry clients. While much of the information and many of the forms included with them are still valuable, users should recognize that examples, contact information and data such as legislative references may be out of date. The resources are offered as free tools for companies to use in an effort to continuously improve their health and safety systems. But users of these resources also need to ensure that they are aware of the most recent legislation, equipment and processes, as well as current practices.



# Hand Injuries - Keeping Your Hands Safe

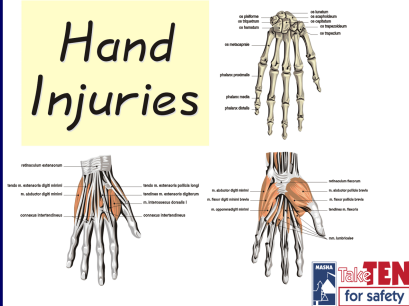
September 2003

## Participant's Notes - Keeping Your Hands Safe

Your hands are complex pieces of engineering that combine strength and sensitivity with intricate dexterity. MASHA member companies participating in this short program will come away with an awareness of the work place hazards associated with hand injuries and what precautions can be taken to lower the risk of acquiring a hand injury. Think about the safekeeping of your hands - you only have one set, meant to last a lifetime.



### Hand Injuries



There are 27 bones, 20 muscles and dozens of tendons and ligaments in the human hand. Add blood vessels and nerves to feed and control the moving parts, and you have one of the more intricate and important parts of your body. Controlled by 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.



### Topics

- Hand injury statistics
- Workplace hazards
- Types of injuries incurred
- Repetitive Strain Injuries (R.S.I.)
- Preventive actions

Workplace injuries are generally not life-threatening but they can seriously impede your day-to-day activities. We'll discuss workplace hazards, resulting injuries and preventative actions as well as examine the more common hand injuries caused by repetitive strain.



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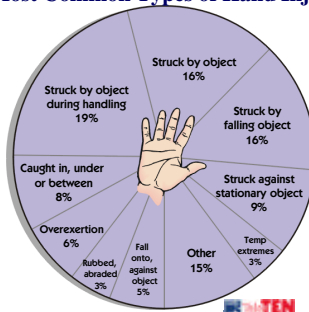
Hands have high risk of injury



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.

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### Most Common Types of Hand Injuries



All Firms 1993 to 2002 YTD

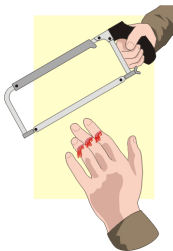


MASHA statistics for the last nine years indicate that 51% of injuries are caused by being struck by an object during handling, being struck by an object, or being struck by a falling object. Nine percent are caused by being struck against a stationary object, while 8% are caused by being caught in, under or between an object. The remainder of injuries involve overexertion, rubs and abrasions, temperature extremes and vehicle accidents.

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

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### Traumatic Injuries



- Traumatic injuries can occur as the result of the use of tools or machinery.
- To reduce injuries, use safety precautions and keep your hands, jewelry and clothing away from any moving parts.



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.

Safety precautions include using guards, shields, gloves or safety locks. Handle sharp objects with care and keep hands, jewelry and clothing away from any moving mechanical parts.

## Contact Injuries



- Contact injuries can occur from contact with substances that burn or injure tissue.
- Safety precautions include reading product labels and Material Safety Data Sheets and using protective coverings on your hands. Develop and follow job procedures and use suitable handling equipment.



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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.

## Repetitive Strain Injuries

Injury	Description	Symptoms	Treatment
Tendinitis	Inflammation of muscle / tendon junctions and adjacent muscles, caused by repetitive motion, infection or sudden injury.	Pain, swelling in wrist, hands, fingers or forearm	Rest, splints, physiotherapy, drugs or surgery.
Tenosynovitis	Swelling of a tendon and its protective sheath, similar to tendinitis but is more painful.	Pain, stiffness and swelling in wrist, elbow, etc.	Rest, drugs, splints, physiotherapy or surgery.
Carpal Tunnel Syndrome	Tendons and sheaths swell due to repetitive motion and put pressure on the median nerve. The median nerve runs through a passage in the wrist (carpal tunnel) up to the hand.	Numbness in fingers (often at night), tingling or burning sensation, pain, weakened grip, dry or shiny palm or clumsiness.	Rest, drugs, splints, physiotherapy or surgery.
White Finger / White Hand	Damaged blood circulation and nerve function in the hands and fingers.	Numbness, pale skin, sensitive to cold, tingling sensation, loss of muscle control, reduced grip strength.	Avoid vibrating equipment; keep hands warm if exposed to cold or vibration.

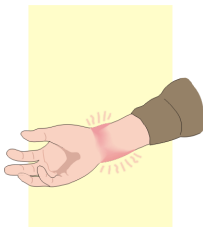


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When tasks require repeated, rapid hand movements for long periods of time, repetitive motion injuries can occur. These injuries often disable the soft tissue and joints of the body. Examples of repetitive motion injuries include tendinitis, tenosynovitis, “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.

## Repetitive Strain Injury Early Symptoms



- stiffness or pain in the wrist, hand or fingers
- numbness in the hand
- swelling in the wrist
- tingling or burning sensation in the wrist, hand or fingers
- clumsiness or reduced manual dexterity and sensitivity
- reduced grip strength



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Common early symptoms of Repetitive Strain Injuries include:

- stiffness or pain in the wrist, hand or fingers
- numbness in the hand
- swelling in the wrist
- tingling or burning sensation in the wrist, hand or fingers
- weakness of grip

## More about White Finger

Hand injury, CTS, skeletal deformities, and a number of diseases can cause the same symptoms.

### Causes:

- Vibration
- Exposure to cold

### Effects:

- Impaired blood circulation
- Impaired nerve function

### Precautions:

- Avoidance of hand-arm vibration
- Protect hands from damage and temperature extremes
- Consult a physician if hands are tingling, numb or fingers turn white
- Avoid nicotine (it may cause poor blood circulation)
- Wear protective clothing in cold weather



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White Finger is also known as Raynaud's phenomenon due to Hand-Arm 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.

## Hand Protection



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By following basic safety rules, you can protect yourself from hand injuries:

- avoid shortcuts
- stay alert and anticipate hazards
- follow safety rules and safe working procedures
- analyze each job before you do it
- wear the right gloves for the job
- practice good housekeeping

## Common Workplace Hazards

There are four types of workplace hazards:



Mechanical Hazards



Personal Hazards



Contact Hazards



Housekeeping Hazards



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Statistics show that 25% of all workplace injuries happen to our hands and fingers. Hazards can be broken down into four categories.

**Mechanical Hazards** include cutting surfaces, sharp points, pinch points, moving parts and vibrating equipment.

**Personal Hazards** include jewelry, loose fitting clothing and improper or defective personal protective equipment.

**Contact Hazards** are hot or cold surfaces, chemicals, solvents or liquids and electrical current.

**Housekeeping Hazards** include the improper storage of equipment and materials and slippery conditions.

## Additional Resources

- [www.scif.com/news-info](http://www.scif.com/news-info)
- [www.ccohs.ca/oshanswers/diseases](http://www.ccohs.ca/oshanswers/diseases)
- [www.whitefinger.co.uk](http://www.whitefinger.co.uk)
- [www.indianahandcenter.com/handsafe.html](http://www.indianahandcenter.com/handsafe.html)
- [www.rmis.com](http://www.rmis.com)
- [www.risksm.co.uk/services.htm](http://www.risksm.co.uk/services.htm)
- [www.osha.gov/SLTC/handpowertools/index.html](http://www.osha.gov/SLTC/handpowertools/index.html)
- [www.fvamic.com/LossControl/32\\_hand\\_safety.shtml](http://www.fvamic.com/LossControl/32_hand_safety.shtml)

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You only have one pair of hands. By recognizing potential hazards and dangerous situations and following basic safety rules, you can keep your hands healthy and active for your lifetime.

There are numerous websites that can provide more information on hand safety and diseases. Check them out, and remember to keep your hands safe.

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# Legislation for Hand Injuries

## Occupational Health and Safety Act

The provision and use of personal protective equipment such as safety gloves is prescribed in the Occupational Health and Safety Act:

- 25(1) An employer shall ensure that,
- (a) the equipment, materials and protective devices as prescribed are provided;
  - (b) the equipment, materials and protective devices provided by the employer are maintained in good condition;
  - (c) the measures and procedures prescribed are carried out in the workplace;
  - (d) the equipment, materials and protective devices provided by the employer are used as prescribed.
- 27(1) A supervisor shall ensure that a worker,
- (a) works in the manner and with the protective devices, measures and procedures required by this Act and the regulations; and
  - (b) uses or wears the equipment, protective devices or clothing that the worker's employer requires to be used or worn.
- 28(1) A worker shall,
- (a) work in compliance with the provisions of this Act and the regulations;
  - (b) use or wear the equipment, protective devices or clothing that the worker's employer requires to be used or worn;
  - (c) report to his or her employer or supervisor the absence of or defect in any equipment or protective device of which the worker is aware and which may endanger himself, herself or another worker
- 28(2) No worker shall,
- (a) remove or make ineffective any protective device required by the regulations or by his or her employer, without providing an adequate temporary protective device and when the need for removing or making ineffective the protective device has ceased, the protective device shall be replaced immediately.

**Regulation 854 - Mines and Mining Plants** also contains sections relating to hand protection.

12(3) An employer shall require a worker to wear or use such personal protective equipment, clothing or devices as are necessary to protect the worker from the particular hazard to which the worker may be exposed.

12(4) Every worker shall be properly fitted with personal protective clothing or equipment by a competent person or persons.

Section 95.

95.(1) An employer, shall provide personal protective equipment, shield, appliance or other device where a worker is exposed to the hazard of being burned by molten materials.

95.(2) An employer shall require a worker to use or wear personal protective equipment, shield, appliance or other device provided by the employer where the worker is exposed to the hazard of being burned by molten material.

Section 255.

255.(3) Before a competent person examines the (unventilated) underground area he shall be provided with instructions in writing setting out,

- (a) the hazard involved;
- (b) the use of testing equipment required;
- (c) the personal protective devices he is required to use or wear; and
- (d) any other precautions and procedures to be taken for his protection.

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## References

For more information on Hand Protection contact your MASHA Representative and/or visit the following web sites:

CCOHS (Canadian Centre for Occupational Health and Safety) web site offers specific information about different types of hand and wrist injuries including Carpal Tunnel and Raynaud's syndromes and other hand-specific topics.

<http://www.ccohs.ca>

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MASHA recognizes that individual companies must develop health and safety policies and programs which apply to their workplaces and comply with appropriate legislation. The information contained in this reference material is distributed as a guide only to assist in developing those policies and programs.

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