

## 16 HAND/SKIN PROTECTION

In construction, exposed hands and skin are susceptible to physical, chemical, and radiation hazards. Personal hand/skin protection is often the only practical means of preventing injury from

- physical hazards—sharp or jagged edges on materials and tools; heat; vibration
- corrosive or toxic chemicals
- ultraviolet radiation.

### Physical Hazards

For physical hazards such as sharp edges, splinters, and heat, leather gloves are the preferred protection. Cotton or other materials do not stand up well and are recommended only for light-duty jobs.

Vibration transferred from tools and equipment can affect hands and arms. One result may be hand/arm vibration syndrome (HAVS). This disease causes the following changes in fingers and hands:

- circulation problems such as whitening or bluish discoloration, especially after exposure to cold
- sensory problems such as numbness and tingling
- musculoskeletal problems such as difficulty with fine motor movements—for instance, picking up small objects.

Workers who use vibrating tools such as jackhammers, grinders, riveters, and compactors on a daily basis may develop HAVS. Preventing this disease requires cooperation between employers and workers.

#### Employers

- Provide power tools with built-in vibration-reducing components.
- Review exposure times and allow rest breaks away from vibrating tools.
- Ensure proper tool maintenance (worn grinding wheels or tool bearings can lead to higher vibration levels).
- Train exposed workers in prevention techniques.
- Provide anti-vibration gloves.

#### Workers

- Wear appropriate clothing in cooler weather to maintain core body temperature.
- Wear gloves whenever possible.
- Wear anti-vibration gloves when using power tools and equipment.
- Avoid smoking (smoking contributes to circulatory problems).
- Report any poorly functioning tools immediately.

### Chemical Hazards

For protection against chemical hazards, the material safety data sheet (MSDS) for the product being used should identify whether gloves are needed and what they should be made of. MSDSs must be available on site for all controlled products being used.

Table 8: Glove Selection Chart

Chemical Name	Glove Selection
Acetone	Butyl Rubber
Cellosolve	PVA, PVC, Neoprene
Cellosolve Acetate	PVA, PVC
Cyclohexane	NBR, Viton®
Hexane	Neoprene, NBR, PVA
Methyl Alcohol	Neoprene, Rubber, NBR
Methyl Chloroform	PVA, Viton
Methylene Chloride	PVA, Viton
Methyl Ethyl Ketone	Butyl Rubber
Methyl Isobutyl Ketone	Butyl Rubber, PVA
Mineral Spirits	Neoprene
Naphtha	NBR, PVA
Perchloroethylene	NBR, PVA, Viton
Stoddard Solvent	PVA, NBR, Rubber
Toluene	PVA, Viton
Turpentine	PVA, NBR
Trichloroethylene	PVA, Viton
1, 1, 1 Trichloroethane	PVA, Viton
1, 1, 2 Trichloroethane	PVA, Viton
Xylene	PVA, Viton

PVA – Polyvinyl Alcohol  
 PVC – Polyvinyl Chloride  
 NBR – Nitrite Butyl Rubber  
 Viton® – Dupont tradename product

Table 8 identifies glove materials to be worn for protection against chemicals that may injure the skin. This information can be used when the MSDS does not specify the type of glove to be worn.

**CAUTION:** Common glove materials have limited protective properties and do not protect against all hazards. Some solvents, degreasers, and other liquids can penetrate and/or dissolve rubber, neoprene, or PVC.

### Ultraviolet Radiation

In recent years there has been growing concern over the health risks of exposure to the sun's ultraviolet (UV) radiation. Construction workers are particularly at risk because they often work outdoors.

Long-term health risks of UV exposure include skin cancer. Every year there has been an alarming increase in the incidence of skin cancer. Sunlight is the main source of UV radiation known to damage the skin and cause skin cancer. Exposure to the sun's UV radiation is widely recognized as a *highly preventable* cause of skin cancer.

Melanoma is the least common but most dangerous type of skin cancer. The incidence of melanoma in men is rising faster than all other cancers. According to the Canadian Dermatology Association (CDA), the mortality rate from malignant melanoma is increasing, particularly in middle-aged males.

Melanomas most often appear on the upper back, head, and neck. The CDA also notes that there is generally a lag time of 10 to 30 years for the clinical appearance of skin cancer to occur. Consequently, it is critical for young workers to beware of the cumulative effect of unprotected

sun exposure. The more time they spend unprotected in the sun, the higher the risk of developing skin cancer.

Although most construction workers generally cover up their arms, legs, and torso on site, their faces and necks are still exposed to the sun's harmful rays. In addition, areas like the tips of the ears and the lips are often overlooked when it comes to sun protection.

The type of skin cancer that develops on the ear or the lip has a high chance of spreading to other parts of the body and causing death. Melanoma may also occur on the sun-exposed parts of the head and neck.

In fact the majority of skin cancers (2 out of 3) occur on the head and neck, followed by the forearm and back of the hand. Workers too often leave these critical areas exposed to the harmful effects of UV radiation.

Individual risk factors for developing skin cancer include

- fair skin that burns easily
- blistering sunburns in childhood and adolescence
- family history of melanoma
- many freckles and moles.

In addition to the harmful effects of the sun's direct rays, some workers may be exposed to indirect UV radiation. Workers can receive additional radiation if they are on or near a surface that reflects sunlight. Reflective surfaces such as concrete, water, unpainted corrugated steel, building glass, and aluminum can increase the amount of ultraviolet radiation to which a worker is exposed.

Another source of indirect UV radiation is from the hard hat itself. UV rays can reflect off the hard hat onto a worker's face, magnifying the amount of UV exposure.

Although all construction workers are at risk, those who don't have ready access to shade and/or work at heights are at a higher risk for UV overexposure. These trades include

- concrete finishing workers
- roofers
- rodworkers
- formworkers on high-rise and residential sites
- roadworkers
- traffic signallers
- ironworkers.

In addition, working at sites with southern exposure decreases the daytime shade available and increases UV exposure.

Remember—even on cloudy or hazy days, UV radiation can penetrate the atmosphere and burn your skin.

### What Workers Can Do

- ✓ Apply a broad-spectrum sunscreen with a sun protection factor (SPF) of 15 or greater to all exposed skin areas. Be sure to cover your ears and the back of your neck. Apply sunscreen 20 to 30 minutes before you go out in the sun. Reapply sunscreen every 2 hours.
- ✓ Use an SPF 15 or higher sunscreen lip balm and reapply every two hours. Skin cancers can develop on lips.

- ✓ You may add UV protection to the back of your neck by using fabric to block the sun's rays. Neck protectors that clip onto your hardhat are available.
- ✓ Wear UV-absorbent safety glasses (CSA-approved polycarbonate glasses incorporate this feature).
- ✓ Wear clothing that covers as much of the skin as possible. Tightly woven material will offer greater protection as a physical block to UV rays.
- ✓ If you sweat heavily, you may need to reapply sunscreen more often. Additionally, when clothing is wet, it loses some of its ability to block out the sun's rays. Ensure you have additional dry clothing if necessary.
- ✓ Try to find a shaded area for your breaks and lunch.
- ✓ Wear a wide-brim hard hat designed to protect your face and neck from the sun. Adding a glare guard under the peak of your hard hat will help reduce reflective UV rays.
- ✓ Examine your skin regularly for any unusual changes. The most important warning sign for skin cancer is a spot on the skin that is changing in size, shape, or colour. The danger signs include any wound or skin patch that doesn't heal properly or scales. Be particularly attentive to any mole that grows or becomes irregular in shape, especially if it is multi-coloured. If anything looks unusual, see your doctor as soon as possible. **Skin cancers detected early can almost always be cured.**

### What Employers Can Do

- ✓ Supply workers with a broad-spectrum sunscreen with an SPF of 15 or higher.
- ✓ Ensure adequate shaded areas for workers on breaks and lunch.
- ✓ If possible, rotate workers to shaded areas of the jobsite.
- ✓ Educate workers on the hazards of UV radiation.
- ✓ Ensure that workers use UV-absorbent safety glasses.

The majority of skin cancers are preventable. Taking basic precautions can significantly reduce the health effects of chronic sun exposure.

## 17 HIGH-VISIBILITY CLOTHING

The construction regulation (O. Reg. 213/91) requires that any worker who may be endangered by vehicular traffic on a project must wear a garment that provides a high level of visibility.

There are two distinct features to high-visibility clothing.

### Background Material

This is the fabric from which the garment is made. It must be fluorescent orange or bright orange in colour and afford increased daytime visibility to the wearer. Fluorescent orange provides a higher level of daytime visibility and is recommended.

### Retroreflective Stripes or Bands

The stripes or bands must be fluorescent and retroreflective and be arranged on the garment with two vertical stripes down the front and forming an X on the back. The stripes must be yellow and 50 mm wide. Retroreflective stripes are to afford the worker both low-light and night-time visibility.



For night-time work, additional stripes or bands are required on the arms and legs. One way to meet this requirement is to dress workers in fluorescent orange coveralls with retroreflective bands or stripes attached.

### Risk Assessment

Before selecting high-visibility garments, assess the risks to be controlled. Workers who require greater visibility, such as roadway construction workers, should wear clothing that is highly conspicuous under the conditions expected.

For further recommendations on high-visibility clothing, consult CSA's standard Z96-02.