

The Perfect Match: Hand Protection and the Hazard

By Donna McPherson

The many potential occupational hand injuries make appropriate glove selection a challenge.

Each year, more than one million U.S. workers receive emergency room treatment for acute hand injuries. If that were not enough to demonstrate the need for improving hand protection in the workplace, consider the following:

- **70 percent of workers who experienced hand injuries were not wearing gloves.**
- **The remaining 30 percent of injured workers did wear gloves but experienced injuries because the gloves were inadequate, damaged or wrong for the type of hazard present.**

OSHA's Requirements

To help prevent such workplace injuries, **OSHA's hand protection standard, 29 CFR Part 1910.138, mandates that employers select and require employees to use appropriate hand protection when employees' hands are exposed to the following hazards:**

- **Skin absorption of harmful substances**
- **Severe cuts or lacerations**
- **Severe abrasions or punctures**
- **Chemical burns or thermal burns**
- **Harmful temperature extremes**

The OSHA standard also requires employers to base the selection of the appropriate hand protection on "an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified."

Selecting the Right Glove

A Liberty Mutual Research Institute for Safety study found that wearing gloves reduces hand injury risk by 60 percent. But to get workers to actually wear gloves, employers must first learn how to choose the right glove for the workers' needs. As with any other type of personal protective equipment (PPE), the first step in glove selection should be undertaking a hazard assessment to identify physical and health hazards. Employers should start by identifying the substances (particulates, liquids and gases) present in the work site as well as the risks associated with these substances (e.g., dermal toxicity, reactivity, etc.). A survey of the worksite should also list physical and environmental hazards such as sharp instruments, rough surfaces or machinery. It is also important to make a list of who will be wearing the gloves, the type of equipment that will be used, the specific work that person will perform and the estimated level of dexterity required to perform the job safely.

The variety of potential occupational hand injuries makes selecting the right pair of gloves challenging, according to OSHA, which adds this caution: "It is essential that employees use gloves specifically designed for the hazards and tasks found in their workplace because gloves designed for one function may not protect against a different function even though they may appear to be an appropriate protective device." For protection against chemicals, for instance, glove selection must be based on the chemicals encountered as well as the chemical resistance and physical properties of the glove material, according to OSHA.

One resource for glove selection is the International Safety Equipment Association's glove standard ANSI/ISEA 105-2005, American National Standard for Hand Protection Selection Criteria. It provides a consistent, numeric-scale method for manufacturers to rate their products against certain contaminants and exposures, including puncture and abrasion resistance, chemical permeation and degradation, detection of holes, and heat and flame resistance. The 2005 edition also includes tests and selection criteria for vibration reduction and dexterity.

What about Compliance?

After selecting the right gloves for the task, how does an employer make sure workers will wear them? Training is key. It is essential to provide employees with information on what hand protection to wear for different tasks and how to don, doff and care for gloves, as well as when to replace gloves. Workers should be taught to visually inspect gloves before each use and to discard and replace any gloves with impaired protective ability due to pinholes or material degradation.

Comfort, fit and dexterity are also crucial to improving compliance. A Kimberly-Clark Professional survey of safety personnel at the 2006 National Safety Council Congress found that 57 percent of respondents who observed PPE noncompliance in the workplace said workers attributed this noncompliance to poor fit or discomfort.

Fortunately, because glove materials today have become so advanced, the development of new glove technologies tends to focus not on function alone, but also on issues of fit, comfort and style. Proper fit is critical because it leads to improved productivity. Finger length or the overall length of the glove should not be too long to avoid getting caught in moving equipment. In terms of overall sizing, the hand circumference should not be too small, because this reduces the user's range of motion, or too big so that the gloves are too loose. If a glove is more comfortable to wear, users are more likely to comply with PPE protocols.

For general purpose work gloves, breathable hand protection can extend wearing comfort. Look for features such as ventilated backs and seamless nylon knit backing. Cotton linings or poly-cotton liners provide good absorption of perspiration and improved hand comfort when non-barrier gloves must be worn. In addition, make sure to also select high-dexterity hand protection, especially when fine motor skills are required. The following are glove features that increase dexterity and grip:

- Coated tips
- Textured fingertips
- Dotted palms

Finally, style is becoming increasingly important among workers, and stylish PPE can tip the scale toward improved compliance. Gloves and eyewear tend to be ahead of most other PPE in terms of style. Leading glove manufacturers are taking cues from the retail clothing and performance athletic clothing markets to develop trendy yet functional styles that people want to wear. This is especially important when targeting the Generation Y workforce. Some companies are also beginning to distinguish their products with unconventional signature colors such as purple for nitrile gloves.

It Pays to Protect Workers

In addition to the physical harm that hand injuries pose to workers, these injuries also take a financial toll. The average hand injury claim has now exceeded \$6,000, with each lost-time workers' compensation claim reaching almost \$7,500, according to the Bureau of Labor Statistics and the National Safety Council. The overall drain on employee productivity becomes apparent, especially when you consider that there are about 110,000 estimated lost-time hand

injuries every year. While glove use is not the only way to protect against hand injuries, it is a crucial component of any injury prevention program. Finding ways to help workers comply with glove-wearing protocols will go a long way toward creating a safer and more productive work environment.

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