

**CUT
RISK:**
**WHY IT
MATTERS
AND HOW
TO PROTECT
WORKERS'
HANDS
AGAINST IT.**

Whitepaper

Honeywell

TABLE OF CONTENTS

- 1 Introduction**
- 2 The Extent of the Problem**
- 3 Causes of Cut-Related Hand Injuries**
- 4 The Consequences for Workers and Businesses**
- 5 Assessing the Risks**
- 6 Keeping the Risk at Bay**
- 7 Conclusions**

INTRODUCTION

1

Cut-related hand injuries remain a major risk to workers in most industries and can have life-changing consequences. This whitepaper helps health and safety professionals gain better understanding of cut risks in order to plan for hand protection and protect their workers more effectively.

Getting to grips with cut risks is now especially important in light of recent regulatory changes. It is key to understand: (i) how cut risk levels vary from one application to another; and (ii) selecting adequate cut protection accordingly, in line with the new EN388:2016 ISO 13997 (for Europe)¹ and ANSI-105 2016 (for North America)² cut level classifications.

From the extent of the problem, to the consequences for workers and businesses, this paper examines the most pertinent aspects of risks posed by cuts. In addition, an attempt has been made to scrutinize some of the most common applications and types of work that can lead to cuts, with closer analysis of the key hazards. The whitepaper also offers an overview of how to assess the risk and keep it at bay.



THE EXTENT OF THE PROBLEM

2

Cut-related hand injuries remain an omnipresent issue in industrial workplaces. In the European Union (EU) over 600,000 accidents at work involving the use of machinery or tools are reported every year in the manufacturing sector alone, adding to some 370,000 in the construction industry and around 170,000 in agriculture, forestry and fishing³.

By association, many of these are likely to be hand-related. Other statistics also suggest that hand injuries, including those caused by cuts, are a widespread occupational risk in Europe:

- Nearly 1 in 5 workplace accidents is linked to the handling of objects
- 15.6% of accidents are due to contact with a sharp/pointed or rough/coarse object⁴

The story is not dissimilar in North America. According to the Bureau of Labor Statistics (BLS), the hands are the second most vulnerable part of the body, with over 12 injuries every 10,000 workers⁵. Strikingly, out of over 121,000 hand injuries reported in 2017, nearly 50,000 were caused by cuts and lacerations⁶.

Reports from other industrialized countries are just as telling. In Australia, for example, a staggering 93% of organisations (across 17 industries) report injuries to hands, with cuts (64%) and abrasion (44%) the most common⁷.

CAUSES OF CUT-RELATED HAND INJURIES

3

So why are so many cut-related hand injuries still occurring? There are of course many different causes at play that can vary from one workplace to another.

In most cases, however, they all come down to four overarching risk factors:

- **Misreading cut protection levels:** cut injuries quite often happen because workers use an incorrect cut protection level. One reason for this is the difficulty in interpreting standards correctly. The latest EN388:2016 ISO 13997⁸ and ANSI-105 2016⁹ standard updates have been brought in to simplify selection, however choosing the right cut-resistant gloves still remains a challenge.
- **Underestimating cut risks:** cuts can occur when handling objects or materials that might not always be obviously sharp. A good example is sheet metal. Most think that sheet metal is not as sharp as a knife or blade, and not enough to cause a cut. Others assume that, as long as they lift the sheet carefully, they won't be at risk. Both schools of thought are misguided.
- **Removing protective gloves:** it is not unusual for some workers to take off their gloves when handling small parts or tools (which can sometimes be sharp) or when having to tap on a touch screen. Especially when it comes to tasks that require precision, gloves may get in the way of a worker's dexterity.
- **Keeping cost down:** workers across industries may have worked and may continue to work with ordinary (mechanical) gloves that are non-cut resistant, typically because of cost. This situation hasn't been unusual in organizations employing large numbers of people, such as automotive plants or steelworks, where savings add up. However, in recent years cut-resistant gloves have become far more affordable, making any savings against regular gloves minimal. There is also growing awareness of the risk of incurring far higher costs in terms of lost productivity, compensation pay-outs for injuries, and damage to corporate reputation.

There is hardly an industry that does not pose some form of cut risk to hands, so hand protection should never be overlooked. Even if there isn't an immediate and clearly visible threat to workers, a thorough risk assessment will establish whether, how and why cut risks may arise under specific circumstances.

Some industries and tasks, however, are, by definition, prone to cut-related injuries and therefore require special attention when it comes to hand protection. Workers in manufacturing and construction, for example, are particularly susceptible to hand injuries. Elsewhere, metal fabricators are almost constantly at risk, especially those using portable power tools, abrasive machinery or mechanical power transmission devices. To provide another example, many workers in the oil and gas industry handle heavy equipment, pipes, chains and tools day in, day out.

THE CONSEQUENCES FOR WORKERS AND BUSINESSES

4

While the majority of cuts at work are relatively minor and can be treated easily, the outcome is sometimes more serious.

The hand is a complex part of the body featuring veins, arteries, nerves, muscles, tendons and ligaments. As a result, depending on depth, severity and location of a cut, long-term damage can occur.

Severe bleeding from a deep cut can, for example, result in the need for stitches, which may lead to a permanent scar. Some injuries of this type will require immediate treatment in the emergency department or surgical repair. If a large artery is severed, there is the possibility of extensive blood loss, while lacerations that involve tendons may likely need surgical treatment at a later date.

Cuts of this nature may have a long-term effect. A worker may never recover full hand function, rendering them unfit to work. Long-term psychological effects should not be underestimated either. Even after having fully recovered from a physical point of view, a worker may be reluctant to use their hand in any work-related activity that might replicate the situation which led to the original accident.

Equipping workers with cut-protective gloves is key to preventing the negative outcomes described above. Making the wrong choice, however, could cause more problems than it solves. It could not only fail to protect a worker due to an insufficient cut protection level, but also affect their wellbeing. For instance, an insufficient grip level may lead to workers having to apply excessive force when handling tools, which can in turn increase their fatigue. Heavy and cumbersome gloves may lead to similar outcomes. Skin allergies are another major risk and can be caused by materials commonly used in gloves such as glass fibre.

Cut injuries and associated risks can not only affect workers, but also their employers. Hefty fines are one of the most obvious consequences. For example, a UK-based packaging manufacturer was recently fined £50,000 and ordered to pay costs of £8,825 for failing to both identify a cut risk and implement appropriate measures for its elimination¹⁰. The accident occurred while an employee was operating a conversion machine with a heated blade to cut through plastic sheets. During routine cleaning operations, the blade lowered without warning, causing severe and irreversible injuries to three fingers on his right hand.

The Occupational Safety and Health Administration (OSHA) estimates that, on average, a worker suffering a puncture costs their employer over \$53,000 while the cost of a laceration is nearly \$45,000. Dermatitis, which can be caused by an allergic reaction to glove materials, can cost as much as \$ 22,000¹¹.

Another negative consequence for businesses is absences from work, which can in turn lead to downtime and productivity losses. The US BLS reports that an average hand injury leads to five days away from work. Strikingly, nearly 1 in 5 injuries, however, lead to at least one month away from work. BLS's statistics also show that the average absence from work due to 'cuts, lacerations, punctures' was four days in 2017¹².

Poorly chosen gloves can also slow workers down, reducing productivity and compromising bottom-line profits. There are also other ways in which glove selection can affect a business. In applications where oil and dirt are commonplace, for example, if gloves are non-washable they will often need to be disposed of the end of each shift causing additional costs.



In most cases, the first step in the prevention of cut-related hand injuries is to pinpoint and assess sharp or abrasive hazards that a worker may face in the workplace.

Clearly, such risk assessments need to be performed with predetermined frequency so that any hazards introduced as a result of workplace changes do not slip the net.

Certain risks may be quite apparent when it comes to tasks such as replacing blades in machinery, like slitter blades in the paper industry for instance. On occasions, however, cut risks may not be immediately obvious. A good example are sectors such as warehousing and logistics where workers handle cardboard boxes, which are a frequent source of paper cuts.

There are effective tactics that can be adopted by health and safety professionals. For instance, checking back through injury reports can highlight trends and recurring issues. Speaking directly with workers can also yield useful information on potential hazards that need to be reduced or removed.

Once the hazards have been identified, it is essential to assess the associated risks to workers, including:

- The likelihood of an accident occurring
- The potential severity of any resulting injuries
- The number of workers who might be exposed¹³

From this assessment, health and safety professionals can consider the necessary actions to eliminate or reduce each risk, no matter how small.



In the manufacturing sector, cuts or lacerations may occur from a variety of sources, not least unguarded rotary blades, grinders or material with sharp edges. The pulp and paper industry also have hazards, namely cutting tools, paper knives and moving blades. There are many other examples:

- Woodworking (radial arm saws, abrasive surfaces)
- Commercial fishing (knives and hooks)
- Construction (power tools)
- Glass manufacturing (handling sharp edges)
- Automotive (sharp tools)
- Forestry (chainsaws and hand tools)

In addition, there may well be further risks to consider. For instance, along with the potential for cuts, will workers' hands be at risk of exposure to chemicals or heat? Working conditions are a further factor; will sharp objects be handled in oily, vibrating, humid or cold conditions?



Once a risk has been identified, the first step should always be elimination of the hazard where possible.

It is important to bear in mind that no glove, irrespective of its cut-protection level, is 100 percent cut proof. There are situations where any type of cut protection would not only be insufficient to protect a worker's hands, but also cause more problems than it solves. For example, gloves can get caught in machinery with sharp moving parts. Under such circumstances eliminating the risk is a must.

A case in point was published by the Health and Safety Executive (HSE) recently when an engineering company was fined after an employee had two fingers amputated at the first knuckle. The employee's gloves came into contact with a rotating spindle on a horizontal tapping machine and became entangled. The company was fined £14,000 and ordered to pay costs of £1,383. Speaking after the hearing, the HSE inspector said: "This injury was easily preventable and the risk should have been identified. Employers should make sure they properly assess and apply effective control measures to minimize the risk from dangerous parts of machinery."¹⁴

With these thoughts in mind, before choosing a course of action, the hierarchy of control measures must be followed.

- Elimination – physically remove the hazard
- Substitution – replace the hazard
- Engineering controls – isolate people from the hazard
- Administrative controls – change the way people work
- Personal Protective Equipment (PPE) – protect the worker with PPE¹⁵

If PPE is required, gloves of course offer the principal form of hand protection against a range of industrial hazards such as piercing by abrasive, sharp or pointed objects. Cut-resistant safety gloves usually comprise different types of specially engineered yarns mixed to offer different levels of protection in line with various applications and their associated risks.

Assessing the level of cut protection offered by gloves in line with the latest industry standards is clearly paramount. **Comfort** – from lightness down to breathability and the use of hypoallergenic, skin-friendly materials – is also fundamental. It will ultimately determine whether a worker will want to wear a pair of gloves and sometimes influence their productivity. Depending on the application, other points to consider include:

- **Are the gloves touchscreen capacitive?**
- **Are they washable?**
- **Do they offer thumb reinforcement?**
- **Do the gloves protect both hand and wrist sufficiently long enough to prevent fatigue?**
- **Do they offer suitable durability and abrasion resistance?**
- **Do they provide high grip performance?**

A further factor is **comprehensive training for employees**, which is vital for those looking to improve the safety of their workplace. A strategy such as scheduling monthly safety talks will help keep this important issue at the forefront of workers' minds. It may even pay dividends to ask different staff members to run the training sessions, thus promoting engagement and ownership.

Another effective measure that safety managers can put in place is displaying posters with illustrations or images of the gloves that workers need to wear in a specific area when undertaking certain tasks.



Clearly, cut risk levels vary greatly from one application/task to another, so understanding them is key to selecting the most appropriate safety measures. A full risk assessment is always the first step, following the hierarchy of controls to ensure the adoption of inherently safer systems and thus minimizing any risk of injury.

If it is deemed necessary to adopt cut-resistant gloves, then a number of important factors must be considered to achieve optimum selection in line with the updated EN388:2016 ISO 13997¹⁶ and ANSI-105 2016¹⁷ standards. Only by working in this way can health and safety professionals be sure that workers are protected against physical injury and businesses are protected against any associated costs.

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