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# UNDERSTANDING NON-COMPLIANCE

Why workers shun hand protection  
and what can be done to break bad habits

HyFlex®

# UNDERSTANDING NON-COMPLIANCE

Statistics on hand injuries can paint an interesting, if incomplete picture. When considering risks in the industrial workplace, non-compliance is among the most common and dangerous. Too many workers either don't wear gloves or wear the wrong gloves for the job, and there are three common reasons: (1) Comfort, or more accurately, discomfort; (2) poor performance – the gloves don't provide the grip or dexterity needed to do the job well; and (3) ingrained habits.

These are powerful disincentives. Whether it's an uncomfortable chair or a pair of shoes that doesn't fit quite right, discomfort leads to change – new shoes, a different chair or, more relevant to this discussion, removing or choosing a different pair of gloves. Now imagine trying to work with tiny nuts and bolts while wearing thick, stiff gloves. Even if those gloves protect the hands from cuts, mounting frustration from dropped bolts could eventually lead even the most safety-conscious workers to doff their gloves in exasperation.

**HABITS HAVE A POWERFUL EFFECT ON BEHAVIOR AND CAN LEAD TO DANGEROUS PRACTICE, ESPECIALLY IN INDUSTRIAL ENVIRONMENTS.**

And then there's habit. It's an innocent word, but the power of habit on behavior is strong. Science tells us habits form because our brain looks for ways to reduce effort.<sup>1</sup> Every time the brain converts some routine into a habit, it

allows our mind to downshift – to basically shut off some conscious activity. That can be a dangerous practice, especially in industrial environments – how many serious accidents have been the result of workers repeating tasks? For the purpose of this conversation, how ingrained are the habits related to hand protection?

This all matters because workers make these sorts of choices every day. They decide either to wear gloves or remove the gloves for some reason or another. Their comfort zone when it comes to Personal Protective Equipment (PPE) is formed over time and determined by familiarity and habit as much as objective data around performance and safety. The challenge for PPE manufacturers introducing new, technologically and demonstrably better gloves is significant. To drive meaningful change in behavior, they must not only provide a better glove, they must educate workers and gatekeepers who manage PPE selection.

**TO DRIVE MEANINGFUL CHANGES IN BEHAVIOR, PPE MANUFACTURERS NEED TO EDUCATE AROUND PROPER WORKPLACE HABITS.**

This has happened in the past. Today's gloves bear little resemblance to those used 30 years ago. Understanding what triggered past changes is a good place to start as we try to evaluate how to enact change today.



<sup>1</sup> Duhigg, Charles. (2012) The Power of Habit: Why We Do What We Do in Life and Business. New York: Random House.

# THE EVOLUTION OF HAND PROTECTION

There was a time when hand protection was an afterthought at best. Eventually, spurred on perhaps by frequent burns or scrapes or maybe a desire to keep their hands clean, workers started wearing simple chore gloves – think cotton, canvas or leather. For decades, that was the standard in most industrial environments – and there are workers, who continue to choose these gloves. They provide little protection and their performance typically is noticeably poorer than more advanced gloves but, as discussed earlier, old habits are hard to break.

But there have been changes, and today's workplaces are filled with men and women wearing more advanced gloves designed for improved performance and protection. What prompted those changes?

As we look back on purchasing patterns, significant modifications align with advances in materials and design. Sales of traditional, leather cut-and-sew gloves started to decline shortly after the introduction of knitted coated gloves. It wasn't immediate, but eventually workers and PPE gatekeepers recognized the improved fit, performance and protection of the coated gloves. More recently, we've seen the same technology-driven shifts in the market trailing the introduction of new materials incorporating Kevlar®, Kevlar-wrapped steel and high-performance polyethylene. These advances dramatically improve cut resistance and the market responded over time.

## **SIGNIFICANT MODIFICATIONS ALIGN WITH ADVANCES IN MATERIALS AND DESIGN – AND ALLOW FOR IMPROVED PERFORMANCE AND PROTECTION.**

Is the answer as simple as “materials drive change”? Not exactly. High-performance materials applied in ways that enhance performance without compromising comfort certainly contribute to change. But attributing widespread behavioral changes to improvements in glove materials is a little simplistic. We also must consider changes to industrial environments.

We know there has been a decrease in traditional manufacturing over the past 30 years<sup>2</sup> but, just as importantly, manufacturing environments – think advanced fabrication – and the tasks required of workers have changed. We've seen an evolution from laborer to

technician, and advanced manufacturers have engineered much of the physical labor out of the process. Workers who previously spent their days moving sheet metal and operating heavy equipment have become technical experts and skilled craftsmen working with tools requiring a high degree of precision. This is true for everything from televisions to pickup trucks.

## **OVER THE PAST 30 YEARS, ADVANCED FABRICATION PROCESSES HAVE REPLACED TRADITIONAL ROUTINE WORK, CHANGING THE PPE NEEDS OF WORKERS.**

Understanding that, of course the PPE needs of those workers have changed. Dexterity and small muscle movement are more important than ever. Advances in glove materials and design certainly have improved worker safety, but they've also tracked closely with the needs of an evolving workforce. Was one more important than the other? And would either advantage have moved the market needle if adequate comfort were not part of the package? Most importantly, have any of these advances significantly changed worker behavior when it comes to compliance?

## **70% OF WORKERS WHO SUFFERED HAND INJURIES WERE NOT WEARING GLOVES AT THE TIME OF THE INJURY.**

The answer to that last question appears to be “no.” Or, at minimum, “not much.” According to data from the U.S. Bureau of Labor Statistics (Occupational Safety and Health Administration/OSHA), “70 percent of workers who suffered hand injuries were not wearing gloves when they suffered the injury. The other 30 percent were wearing gloves that were inadequate, damaged or the wrong type of glove for the hazard.”<sup>3</sup> That's a frustrating statistic not just for glove manufacturers, but for anyone who cares about workplace safety.

That brings us back to questions about habits. So let's take a closer look.

<sup>2</sup> cnsnews.com. 7,231,000 Lost Jobs: Manufacturing Employment Down 37% From 1979 Peak, May 12, 2015. Available online at: [www.cnsnews.com/news/article/terence-p-jeffrey/7231000-lost-jobs-manufacturing-employment-down-37-1979-peak](http://www.cnsnews.com/news/article/terence-p-jeffrey/7231000-lost-jobs-manufacturing-employment-down-37-1979-peak)

<sup>3</sup> United States Department of Labor. Occupational Safety and Health Administration, 59 FR 16339 April 6, 1994 (preamble). Available online at: [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=PREAMBLES&p\\_id=1021](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=PREAMBLES&p_id=1021)

# UNDERSTANDING HABITS

We tend to notice bad habits – nail-biting is an obvious one, and cell phone obsession is a more recent example – but there are good habits as well. Brushing your teeth or checking the locks before you go to bed are examples of good habits. In all of these cases – bad habits or good – the task typically is performed without thinking. How many times have you pulled out of the driveway, only to ask yourself if you closed the garage door? It's tough to remember because it's a habitual task performed unconsciously.

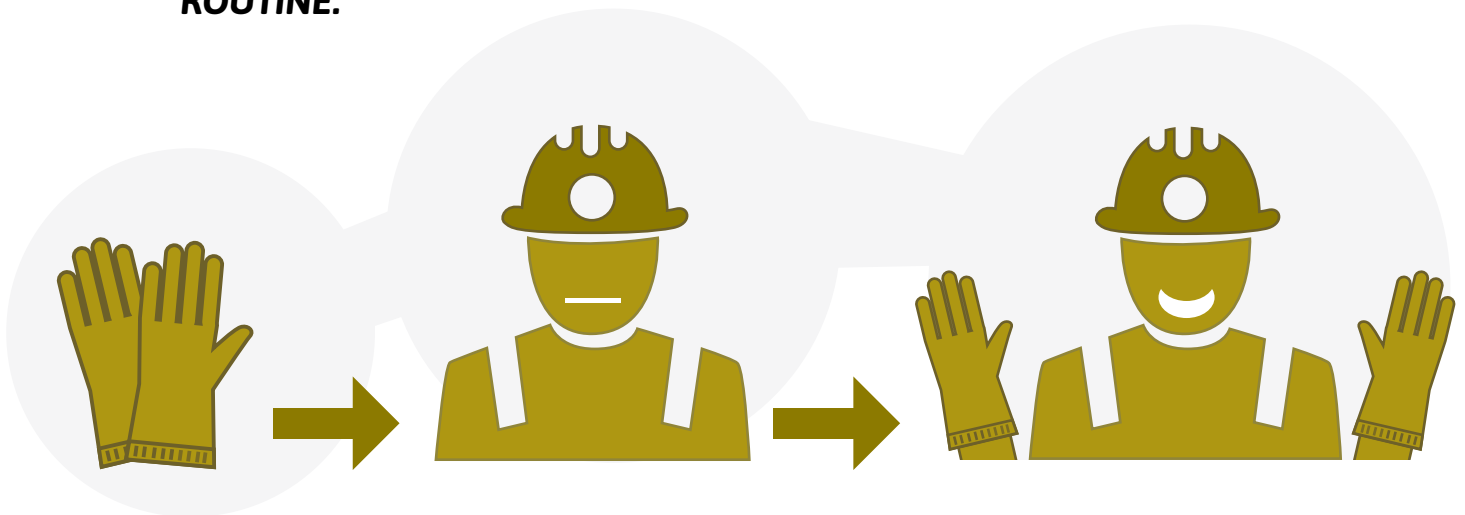
This is normal brain function. Habits are formed when the brain engages the basal ganglia, an area of the brain in the prefrontal cortex that controls movement and emotions.<sup>4</sup> Charles Duhigg, a reporter for The New York Times, studied the physiology and psychology of habit and wrote a book about it, called "The Power of Habit: Why We Do What We Do in Life and Business." He identified what he calls a "habit loop" that starts with a cue signaling the brain to turn a behavior into an automatic routine. That's followed by the routine of the behavior, and finally the reward – a positive stimulus that tells the brain the routine works and should be followed. When this loop is completed, the brain can shut down and let the body complete the task more or less on autopilot.<sup>5</sup>

**A HABIT IS A BEHAVIOR TURNED INTO AN AUTOMATIC ROUTINE, CONFIRMED BY THE SUCCESSFUL IMPLEMENTATION OF THE ROUTINE.**

Habits are powerful things. In his book, Duhigg told the story of Eugene Pauly, a man who lost the medial temporal lobe of his brain to disease, completely eliminating his capacity for short-term memory. He could retain nothing for more than a minute, meaning he was constantly repeating his words and actions. He couldn't tell you where he lived or even where the kitchen was in his house.

At roughly the same time every day, Pauly's wife would take him on a walk around the block. One day, she prepared for the walk later than usual and found Pauly was missing. After 15 frantic minutes, he walked into the house alone after taking the walk around the block himself. He was completely incapable of drawing any sort of crude map of the block or remembering where his house was, but that walk around the block had become habit. His walk that day proved that habits form and operate entirely separate from the part of the brain responsible for memory.<sup>6</sup>

That's important because we have to understand that behavior can become habitual outside of any active, rational thought process. For our purposes, the brain may know a glove provides protection, but if removing the glove has become a habit – for whatever reason – that knowledge may not matter.



<sup>4</sup> MIT News. How the brain controls our habits Oct. 29, 2012. Available online at: <http://news.mit.edu/2012/understanding-how-brains-control-our-habits-1029>  
<sup>5, 6</sup> Duhigg, Charles. (2012) The Power of Habit: Why We Do What We Do in Life and Business. New York: Random House.

# SUCCESSFULLY CHANGING HABITS:

Another example of habit formation is recounted in Duhigg's book, "The Power of Habit: Why We Do What We Do in Life and Business", from an experience at Alcoa Inc. In October of 1987, Alcoa was a struggling company. Widely criticized for poor quality and a slow workforce, the company's earlier efforts to mandate quality improvements led to a strike among its 15,000 employees. Alcoa needed sweeping changes, something new CEO Paul O'Neill understood well. That's why it seemed so curious when, during his first speech to investors, O'Neill focused on worker safety. He talked about making Alcoa a zero-injury workplace, and he drove home the point by pointing out the fire exits in the room and giving instructions on how to exit the building in case of an emergency. It seemed to everyone to be an odd direction for his first major address as CEO.

O'Neill, however, understood the difficulty of changing behavior – especially behavior that had become habit. Instead of focusing on big changes, he decided to zero in on one area, believing a change in habits around something small could trigger more substantial changes. The strategy targeted what experts call a "keystone habit." This is a habit that causes a chain reaction, eventually disrupting multiple habits.

At Alcoa, this started with an improved habit loop around employee injuries. O'Neill changed the response requirements in the event of an injury. He asked unit presidents to deliver injury reports and preventive action plans within 24 hours after the injury, and he made promotion dependent upon compliance with this requirement.

These changes transformed Alcoa's safety record, moving from roughly an accident per week at each plant when O'Neill started as CEO to an injury rate around 5 percent of the national average by the time he retired 11 years later. If that were the only outcome, the changes would have been an immense success. But while the safety record improved, so did the company's financial performance. Alcoa's income rose 500 percent and its market capitalization increased by \$27 billion over the same time. Why?

## IMPROVED SAFETY PROMOTES INCREASED WORK QUALITY AND COST PERFORMANCE.

By changing the keystone habit, O'Neill triggered significant changes in other employee behaviors. In order to meet O'Neill's 24-hour rule on injury reporting, unit presidents needed to hear from their vice presidents almost immediately after the injury happened. This meant the VP needed to be in constant communication with floor managers. Those floor managers, prodded by more engaged VPs, increasingly collaborated with workers on improved safety practices. This active communication across all levels not only improved Alcoa's safety record, it resulted in improved work quality and efficiency. It all started with changing a few habits.



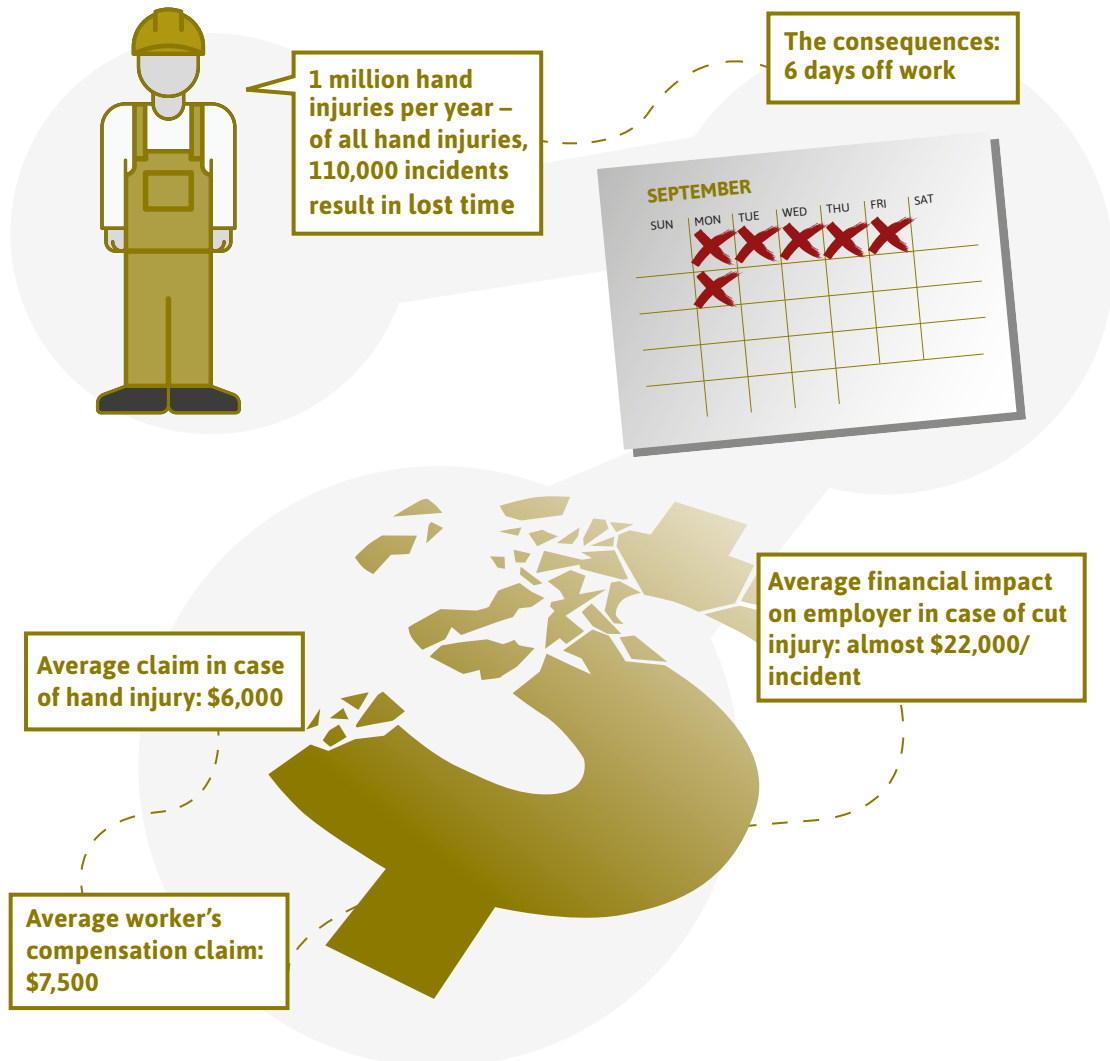
7 Duhigg, Charles. (2012) The Power of Habit: Why We Do What We Do in Life and Business. New York: Random House.

# NON-COMPLIANCE AND HAND INJURIES

Every moment a worker's hands are exposed, they are at risk. There are some two dozen bones in each hand, along with muscles, tendons, ligaments, arteries, veins and nerves – simply put, a lot can go wrong, and it can be serious. According to the U.S. Bureau of Labor Statistics, more than one million workers go to the emergency room with hand injuries each year, and about 110,000 hand injuries result in lost time.<sup>8</sup> The average hand injury results in six days off work, the average claim is about \$6,000, and the average worker's compensation claim is \$7,500. Big picture, the hands incur 13 percent of all industrial injuries, and cuts, in particular, can be costly – hitting employers with an average financial impact of almost \$22,000 per incident. More specifically, the National Safety Council reports the direct cost of a laceration to the hand is \$10,000 and a severed tendon more than \$70,000.<sup>9</sup>

## EVERY MOMENT A WORKER'S HANDS ARE EXPOSED, THEY ARE AT RISK.

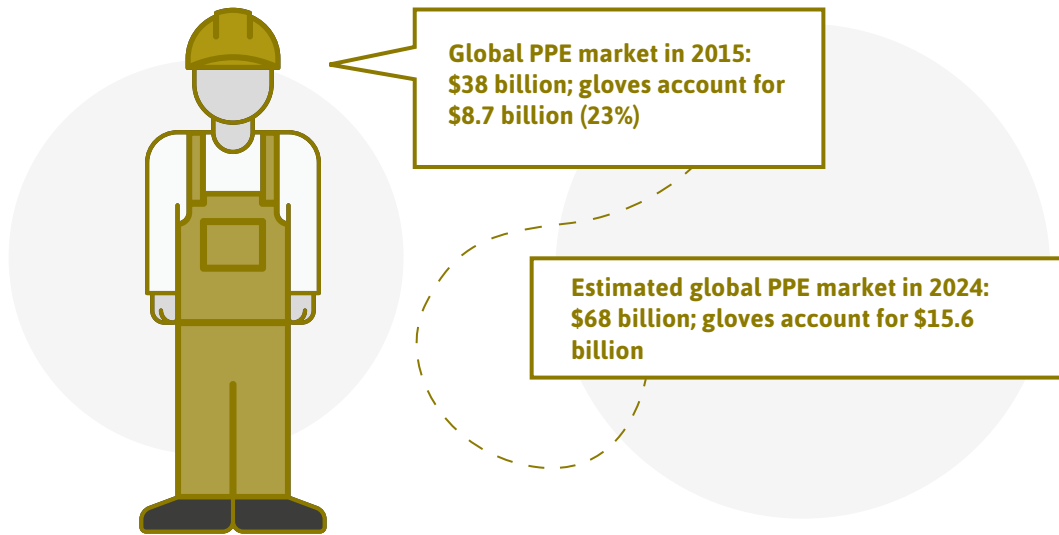
That information is not lost on PPE gatekeepers – those responsible for specifying and selecting the protective equipment for workers. The global PPE market was about \$38 billion in 2015, with gloves accounting for 23 percent, or about \$8.7 billion. The market is projected to exceed \$68 billion by 2024.<sup>10</sup> And yet, we know from the previously cited Bureau of Labor Statistics data that 70 percent of on-the-job hand injuries happen to workers not wearing gloves.



<sup>8</sup> US Bureau of Labor Statistics; <https://www.bls.gov/iif/>

<sup>9</sup> 2014 USA National Safety Council. 2014 injury data.

<sup>10</sup> <https://www.grandviewresearch.com/press-release/global-personal-protective-equipment-ppe-market>



So, where's the disconnect?

Here's a common misperception about non-compliance: it's not that 70 percent of workers never wear gloves (OSHA puts that number at about 36 percent, still unacceptably high). No, the more significant issue is workers removing gloves at critical points throughout the workday. And that behavior can be tied to habit.

Workers may wear gloves for carrying large pieces of equipment or materials, then remove them without thinking to pick up tools or hardware. That's a holdover behavior from a time when bulky work gloves made more precise movements difficult or impossible. It's not unusual to see workers remove gloves to sign invoices or tracking documents or to check their phone, and all of those behaviors can become habitual.

## **STANDARDS AROUND HAND PROTECTION ARE IMPERFECT AND OFTEN OPEN TO INTERPRETATION.**

These are difficult things to legislate, and standards and regulations around hand protection are imperfect and often open to interpretation. Consider these fundamental OSHA standards:

### **1910.138(a)**

General requirements. Employers shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.

### **1910.138(b)**

Selection. Employers shall 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.<sup>11</sup>

The intent is good, but there are clear gaps – from the definition of “appropriate hand protection” to the broad description of when hand protection should be required. Perspective on those questions may depend on the gatekeeper's priorities – minimizing risk, reducing costs or employee safety among the many potential considerations.

Therefore, across the globe, it's in the employer's interest to carry out evaluations and determine which hand protection solutions are most appropriate for their needs. Of course, manufacturers can help by providing education around and data from the various test methods to help with glove selection. As such, both employers and manufacturers are supporting the important focus on worker safety.

<sup>11</sup> United States Department of Labor. Occupational Safety and Health Administration, 59 FR 16362, April 6, 1994. Available online at: [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9788](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9788)

# WHERE WE STAND – AND WHERE WE GO NEXT

Ansell research tells us 43 percent of workers aren't sure if the gloves they're wearing adequately protect their hands.<sup>12</sup> Whether those workers are choosing their gloves themselves or wearing employee-provided hand protection, that lack of awareness is a problem. If they aren't even sure if the gloves they're wearing are working, it wouldn't take much to push them to remove the gloves entirely. That's an educational problem – for employers and employees alike.

## **43% OF WORKERS AREN'T SURE IF THEIR GLOVES ADEQUATELY PROTECT THEIR HANDS.**

At times, non-compliance can be traced to gaps in glove technologies or performance. Workers in environments where chemicals are present may prioritize chemical protection over cut protection or vice versa. It's not uncommon to see workers wearing thin chemical gloves under thicker cut-resistant gloves, but that creates separate issues. The hands typically get hot and sweaty, and that leads the worker to remove the gloves altogether. That was a technology problem – one that's being addressed with new materials and glove designs.

## **NON-COMPLIANCE CAN BE CAUSED BY TECHNOLOGY OR PERFORMANCE FLAWS IN GLOVES – AND ADDRESSED WITH NEW MATERIALS AND DESIGNS.**

New glove technologies are providing multi-level protection without compromising comfort or performance. Today's more advanced materials and designs can deliver effective cut and chemical protection while maintaining the grip and dexterity needed to perform heavy or light-duty tasks. There are more multi-purpose gloves on the market than ever before, eliminating the need for workers to remove gloves to perform different tasks, but making proper glove selection even more important. Recent innovations in materials and design have resulted in thinner gloves with cut resistance consistent with much thicker models. Increasingly, ergonomic designs are leading to gloves that improve performance and even reduce hand fatigue. And new materials and designs are improving grip and dexterity even in oily environments.

We know significant advances in technology can drive behavioral changes, so this is a positive step toward improved compliance. But better gloves are only part of the solution. To break the "habit loop" identified by Charles Duhigg, employers must identify and focus on keystone habits, uncovering the cues that lead workers to remove their gloves, and where possible, instilling practices that encourage higher levels of compliance.

## **TO INCREASE COMPLIANCE AND BREAK THE "HABIT LOOP", EMPLOYERS MUST IDENTIFY AND FOCUS ON KEYSTONE HABITS**

If we are going to truly redefine the comfort zone of today's worker, it will require technological advances to gloves along with improved education around safety practices and a far more thoughtful, proactive approach to changing behavior and breaking counter productive "habit loops".

## redefine your **COMFORT ZONE™**



<sup>12</sup> 2014 Ansell HyFlex research study.

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