Employee Safety

Puncture Injuries: How to Protect Against This Hidden Hazard

Matt Morgan | May 01, 2025

Employers are required to *furnish a safe workplace* and *provide personal protective equipment* needed for the hazards of the job. In many manufacturing environments, gloves are key pieces of PPE to protect workers from cuts and lacerations.

The hands are "everyone's first and favorite go-to tool," says Derek Warneke, senior director of laboratory services at Mechanix Wear. And because of this, hand injuries are common, unfortunately.

There were 116,370 ***DART cases*** (for missed work) from hand injuries in manufacturing in 2021-22, according to the ***National Safety Council***. The ***average workers' compensation claim*** for hand, finger and wrist injuries was $27,072.

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> Mechanix Wear

Given the potential for injuries and costly claims, hand protection is a focus throughout the industry. And yet even the most safety-conscious employers might lose sight of a hidden hazard: puncture wounds.

"People know when they're cutting. They know when they're handling abrasive goods. If I'm expecting a hazard, I'll get my gloves and put them on," Warneke explains. "But I just can't think of a lot of jobs where you're intending to grab a sharp point. If I reach in and grab something in a bin and didn't know there was a sharp object in there, all of a sudden I'm punctured."

Puncture Protection Plus Productivity

Historically, glove manufacturers "were able to accomplish higher levels of puncture resistance and cut protection by stacking materials inside the product. When you do that, you're innately taking away the

dexterity of the glove," says Paul Harris, vice president of research and development at Mechanix Wear.

Safety is first, but ***comfort***, dexterity and productivity are vitally important, too, Warneke adds.

"You wear gloves because you need the safety, but you won't wear them if they're not comfortable," he says. "And even if they're safe and comfortable, you won't wear them if they prevent you from doing your job, from being productive."

Warneke shares an example: "If you are assembling cars and you could assemble 10 dashboards an hour, and then I put bulky gloves on you, you'd be like, 'I can't even assemble one in an hour.' Yes, you're safe, but you're nonproductive."

Mechanix Wear has worked hard to create products that offer extreme cut protection and needlestick (puncture) resistance while maintaining or improving worker productivity.

"That's really an overarching goal for us as a company: How do we equal or better the protection level while at the same time increasing dexterity and flexibility in the glove?" Harris says.

"So, we worked with DuPont and one of our material houses to develop a single-layer material that can be used internally in our products to provide a really high level of cut protection," he adds. "We also worked with the same people to develop a single-layer needlestick-resistant material. When you go to a single layer, the dexterity automatically increases. The trick was to do that and maintain or go up in protection level."

The result is Mechanix Wear's ArmorCore technology, found in several of the manufacturer's gloves. The Max Cut Leather Utility ***F9-360***, for instance, meets the ***ANSI/ISEA 105-2024*** puncture 4 standard for needlestick and puncture resistance.

"Mechanix Wear has taken probably the world's best material science approach to the solution," Warneke says. "You put on our F9-360, it's actually usable and wearable without being cumbersome and obtrusive."

Thanks to this material science approach, the company is confident in the protective qualities of its products, as it tests and validates their performance in-house. "We also monitor as we go on," Harris says, "and keep a history of performance to make sure a product continues to be in spec."

Mechanix Wear is also confident in its products' usability and durability because "we field-test every single product we develop," Harris says.

While levels of protection (abrasion, cut, puncture) are standardized by ANSI/ISEA, comfort and productivity levels are often better judged by the customers, which is why user trials are vital to Mechanix Wear's process.

"We can get the product to 90 percent completion, but that last 10 percent is so critical from the end users who are going to be using the product to really push it over the finish line and have a fantastic product," he says. "It's basically proven before it even hits the shelf."

How to Know the Protection You Need

It's the responsibility of the employer to ensure that workers have the right protection, according to the Occupational Safety and Health Administration (OSHA).

But with a hidden hazard such as punctures, it can be difficult to know what kind of PPE is needed, and

when. That's where a ***workplace hazard assessment*** can be beneficial. Not only are these types of assessments required by OSHA, but employers must also provide written certification to verify that they've been done.

Read more: Understanding the Cut Standards for Hand Protection: A Practical Guide

Warneke recommends conducting a failure mode and effects analysis, or risk analysis. Start by listing all of the injuries that could happen in your workplace. One of them could be punctures. Next to each potential injury, list the probability of it happening—high, medium or low. Then, list the severity of the injury.

"Take the probability times the severity, and that tells you which hazards to prioritize," Warneke says.

"That's what OSHA would want to see if they came into your site," he says. "Do you understand the hazards that you're looking at? And did you provide protection that would be expected to prevent them?"

Employers that need help understanding their risks can bring in a safety expert.

TRACK—short for trial research and collaboration kit—is a free service from Mechanix Wear that guides employers in assessing and defining the right protection.

Through this type of consultation, safety managers will begin to recognize the value of premium PPE, even if they've been tasked with cutting costs. Mechanix Wear products frequently last three to four times longer than other products in testing, which drives cost savings.

"Safety managers understand that hand injuries are usually $25,000 or more and they're also losing production when that employee can't work," Harris says. "If management gives them a message of 'save me 10 percent,' and they understand the wear ratio and total cost of ownership, they'll more than save that when converting to our products."

If you have puncture hazards in your workplace, how do you protect against them? Let us know in the comments.