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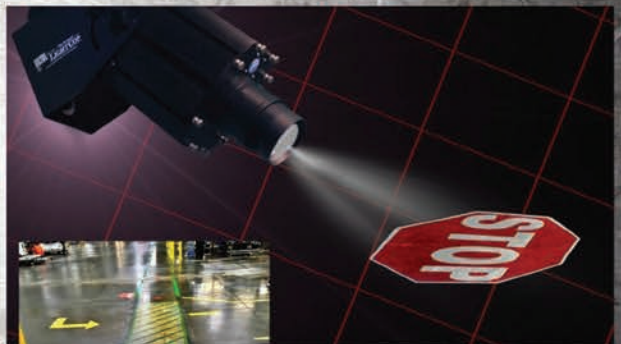
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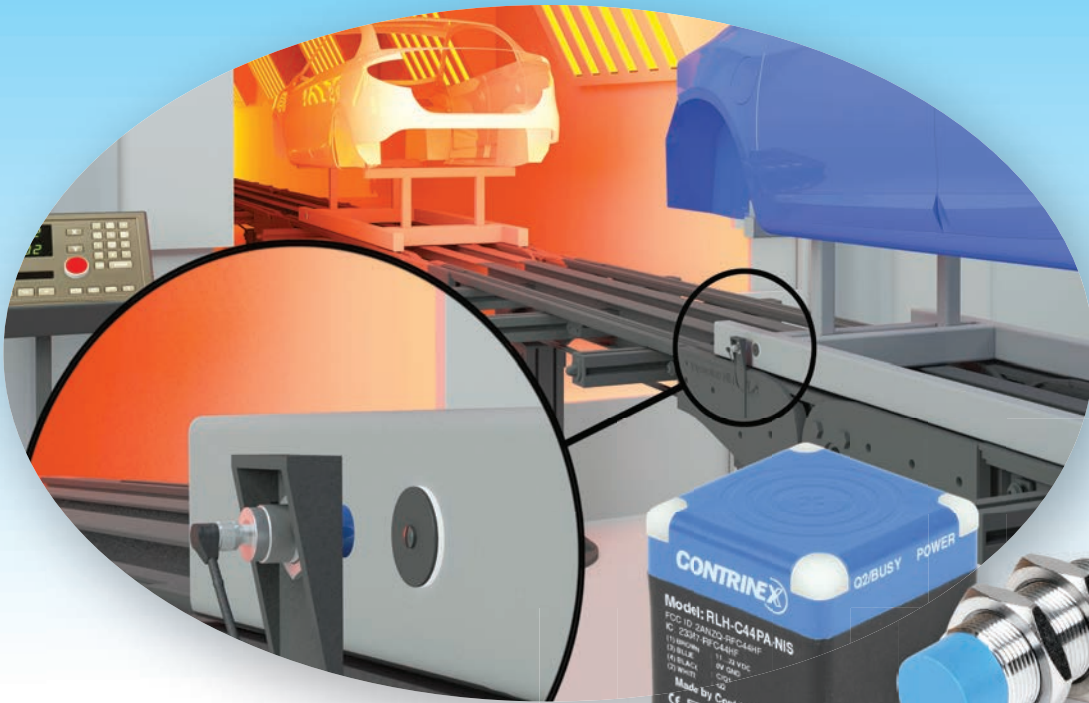


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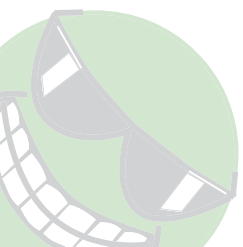


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**TOUCH
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2022 has been a turbulent year, to say the least. It's easy to focus on the negative because there was a lot of negative. Russia's invasion of Ukraine. Inflation. Climate change worsening. Severe weather events. Divisive politics. An upswing in violent crime. It's enough to make you want to go into hibernation until spring, like a bear, hoping that when you emerge from your cave, the world will be in a better place. Or at least, in a better mood.

But remember, media outlets tend to focus on the negative. It garners more attention and, for online news sources, serves as better click bait. However, there were good things that happened in 2022. They tended to get overlooked because they don't lend themselves to sensational headlines.

A website called Good Good Good has compiled a list of good news that happened this year. Here are a few of them:

- New bipartisan legislation went into effect that protects people from unexpected medical bills. The "No Surprises Act" prevents Americans who have a medical emergency from getting bills from out-of-network doctors they did not choose and who did not accept their insurance.
- The UN-backed COVAX global vaccination program reached the milestone of delivering its 1 billionth COVID-19 vaccine to poorer nations around the world.
- Thanks to conservation efforts, humpback whales —almost entirely wiped out by commercial whaling in the 19th and 20th century —rebounded to nearly 80,000 in 2022.
- The U.K. approved the world's largest floating wind farm, which will generate enough power for 927,400 homes when completed.
- The Irwin family celebrated the milestone of saving their 90,000th animal at the Australia Zoo Wildlife Hospital — many of them vulnerable species rescued from wildfires.
- After the Super Bowl, Cincinnati Bengals fans donated nearly 26,000 meals to a Kansas City food bank. Bengals' quarterback Joe Burrow has helped highlight the problem of food insecurity and the need to address hunger.
- The White House announced a 5-year, \$5 billion investment in electric vehicle charging stations around the country.
- Due to its success, Denver decided to expand its Support Team Assisted Response (STAR) program, which dispatches licensed mental health professionals instead of police for certain 911 calls.
- A team of engineers at Stanford developed solar panels that can generate electricity at night, too. The solar cell uses a thermoelectric generator that can pull electricity from the small difference in temperature between the air outside and the solar cell itself.
- A landmark agreement was reached that will pay U.S. men's and women's soccer teams equally. The settlement stems from lawsuits filed in 2016 and 2019 by the U.S. women's national team.
- After seeing both the news stories surrounding the national baby formula shortage, and his neighbors struggling to find food for their babies, Benji Arslanovski, the owner of Our Place Restaurant in Texas, purchased Gerber baby formula through his restaurant supplier and handed it out for free to people who needed it.
- Justice Ketanji Brown Jackson was sworn in, making history as the first Black woman ever to serve on the U.S. Supreme Court.
- Mattel introduced the Jane Goodall Barbie, the first in its inspiring Women Series made with recycled ocean-bound plastics. Jane Goodall is one of the world's most celebrated primatologists and conservationists, known for her groundbreaking research on chimpanzees and her lifelong commitment to chimpanzee protection and animal conservation.
- The number of independent bookstores is at its highest in years. The American Booksellers Association (ABA), the trade group for independent bookstore owners, says it now has 2,010 members at 2,547 locations — 300 more than it had in spring 2021.
- A promising new Lyme disease vaccine entered the final phase of its clinical trial.
- Scientists discovered a new way to break down some types of PFAS, the "forever chemicals" linked to an array of serious health problems. PFAS are used in food packaging, nonstick cookware, furniture, cosmetics and firefighting foam. They've been found in water, soil, air and even human blood.

If you'd like to read more good news, visit the Good Good Good website at: www.goodgood.co/articles/good-news-2022

Maureen Paraventi Chief Editor, WMHS | Maureenp@rdgmedia.net



A RDG Media, Inc. Publication

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Product Innovations of 2022

SMALL STACKERS THAT MOVE BIG LOADS

Manual push stackers from Presto Lifts are ideal for a wide variety of light industrial, warehousing and retail back-room applications. M-Series units have either a foot or hand actuated pump to raise and lower loads with no electrical power. B-Series models utilize onboard battery power for lifting and lowering. Both styles are lightweight, compact, highly maneuverable and simple to operate. Customers can opt for adjustable, solid steel forks for use with pallets or skids, or a flat steel platform for use with single boxes or other individual items like dies, molds, etc. M-Series manual lift models are available in 1,000- or 2,000-pound capacities with up to an 18" load center and lifting heights up to

76". B-Series powered lift units have 1,000-, 1,500- or 2,000-pound capacities at a 15" load center with lifting heights up to 78". www.prestolifts.com

NEW PROTECTOR LIGHT CURTAIN LINE HAS REFLECTOR MIRRORS

Rockford Systems, LLC. has introduced a new economical line of light curtain mirrors that leverage the long scanning range of the company's PROTECTOR Series Light Curtains to help control access near industrial machinery where there is the potential for injury. The new mirrors enable safety professionals to guard multiple sides of a work cell using only one PROTECTOR emitter/receiver pair. By reflecting the sensing field from the emitter around the perimeter's corners to the receiver, the mirrors eliminate the need to use more than one safety light curtain. Simple to mount on a standard protective column, the mirrors are available in several sizes ranging from 18.7" to 74.8" to fit virtually any safeguarding requirement, from robotic work cells to factory automation. www.rockfordsystems.com.



NEW SAFETY GATE DESIGN CONTROLS CLOSURES

A new safety gate from Mezzanine Safeti-Gates, Inc. ensures that at least one gate is fully closed at all times, even as the opposite gate moves into position. The operation of the Roly® Total Control Access (TCA) safety gate means that an elevated ledge is never left unprotected, providing employees with failsafe fall protection in distribution



centers, warehouses and manufacturing, and other material handling facilities. The new TCA design takes the original dual-gate Roly safety gate system a step further, by making sure a gate is prevented from opening until the opposite open gate is fully into the closed position. TCA gate operations are automatic and solely done through the technology within the system, so employees no longer are required to operate or touch the devices. Roly safety gates can be purchased in a variety of formats: manual operation, power operated with push button stations or remote control, and TCA. All models fully comply with OSHA's Walking Working Surface Fall Protection Standard as well as ANSI fall protection guidelines. www.mezzgate.com.

CUSTOM FABRIC COMPACTOR ENCLOSURE KEEPS WEATHER OUT

A flexible, customizable enclosure for compactors and dumpsters at the loading dock is designed to maintain a productive and comfortable indoor environment. Zoneworks by Rite-Hite's CE Series



Compactor Enclosure is aimed at improving energy efficiency by helping to maintain consistent temperature and humidity levels inside a facility, while also keeping wind and inclement weather outside, ensuring a safe, comfortable environment for employees inside. With a strong steel framework and a corrugated steel roof and Zoneworks' insulated curtain wall panels, the design is durable, cost effective, low maintenance and easy to install. Exterior access to the compactor or dumpster is possible through quick, magnetic access openings on both sides of the Compactor Enclosure. www.ritehite.com.

NEW DIMENSIONING SYSTEM FOR OVER-LENGTH FREIGHT

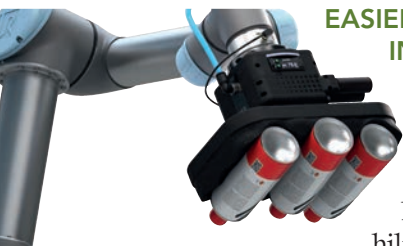
Rice Lake Weighing Systems has launched a new pallet dimensioning system specifically designed for over-length freight. The iDimension LTL XL uses advanced sensing technology to capture Legal for Trade measurements in seconds. It accurately measures freight up to 12 feet long, 8 feet wide and 8 feet tall, helping shippers avoid fees and expensive chargebacks for extra-long freight that may be misclassified with improper dimensions. Optional



high-resolution cameras provide images for freight identification, damage assessment and shipment tracking.

The operator display on the iDimension LTL

XL provides immediate feedback to forklift or pallet jack operators, indicating freight dimensions and system status. www.ricelake.com.



EASIER LIFTING WITH INNOVATIVE VACUUM PUMP UNIT

Piab's new piCOBOT®L vacuum pump unit allows workers to lift more with less. With its lifting capability of up to 35 pounds, the

piCOBOT®L is particularly attractive for e-commerce, logistics and warehouse applications as well as for assisting with lifting of heavier items in production. The vacuum pump unit is scalable and can be equipped with a varying number of the newest powerful COAX® cartridge. Offering a significantly higher vacuum performance, it enables fast movement when lifting heavier items for high productivity in packaging and palletizing, part assembly or machine tending. Its high vacuum flow further facilitates the deployment of large Kenos® foam grippers that can lift a broad variety of objects, from single large/ heavy items to a multitude of small ones simultaneously. There is an optional gripper unit as well. Thanks to the vacuum connection at the bottom of the pump no extra cabling is required when attaching a different gripper unit. www.piab.com.

MEDIUM DUTY CONVEYOR ADDS LOAD CAPACITY

For applications that need a little extra boost in load capacity, the new 2700 Medium Duty Conveyor from Dorner has the strength to carry heavier products for a variety of industrial automation and packaging applications including palletizers, multi-lane processing, case and tray handling and end-of-line packaging. The 2700 Medium Duty is engineered to safely convey up to 150 pounds. With extended widths between 26" and 36", available in 2" increments, this conveyor is ideal for warehouses and industrial facilities undergoing automation upgrades. The growing popularity of autonomous mobile robots (AMR), robotic palletizing and other technologies, all of which can handle heavier loads, pair nicely with the wider widths and increased carrying capacity of the 2700 Medium Duty. Furthermore, the conveyor



can be wider than it is long, which enables an AMR to dock sideways, allowing for more efficient and faster loading and unloading. www.dornerconveyors.com.

HIGH PERFORMANCE LITHIUM-IRON FORKLIFTS ENGINEERED TO BE TOUGH

NOBLELIFT® North America has introduced the new FE4P50Q (5,000-lb capacity), FE4P60Q (6,000-lb capacity) and FE4P70Q (7,000-lb capacity) four-wheel forklifts designed for indoor and outdoor applications.

The mast system, front/rear axles and chassis are engineered to be tough like an Internal Combustion forklift, but with all the advantages of Lithium-iron. AC drive technology is used to achieve high performance with low operating and maintenance costs. The FE4P50-60-70Q Series offers a large, ergonomic cab and user-friendly design to ensure operator comfort throughout the entire work shift. A deluxe suspension, fully adjustable seat reduces vibration to the driver to effectively reduce driver fatigue for all sizes of operators. The ergonomic U-shaped steering wheel with knob, together with hydraulic controls, provide comfortable and effortless operation. www.nobleliftna.com **WMHS**



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How Technology Can Give Lift Truck Operators A Hand

Operator assist systems help reinforce best practices.

By: **Kevin Paramore**, Contributor

Today's warehouses face constant pressure to do more – fulfilling greater volumes of orders at an increasingly fast pace. Meeting these intense throughput targets depends on lift truck operators performing at their best, day in and day out. As operations work to maximize productivity at every turn, maintaining a strict focus on lift truck best practices and facility-specific traffic rules can be a challenge. In the event errors do happen, businesses risk compromising equipment, facility infrastructure and even the safety of personnel, while accumulating financial costs and unplanned downtime they simply cannot afford.

With so much riding on the performance of lift truck operators, it's imperative to build and support safe, effective habits through proper, comprehensive training. And just as technology has optimized other aspects of warehouse operation, it can also elevate lift truck operator training, from virtual reality simulators that can supplement OSHA-mandated instruction to modernized training videos and instructional formats that can support engagement and comprehension in adult learners.

But what if you could go a step further, with technology that offers alerts and automated assistance to operators in real time on the warehouse floor? This article introduces operator assist systems (OAS), breaking down the advanced capabilities they offer on the warehouse floor and the technologies that power them.

WHAT IS OPERATOR ASSIST TECHNOLOGY?

While some may be familiar with systems that consider equipment status or load stability to provide a visual alert or even performance intervention in limited circumstances, a more advanced OAS delivers real value by going several steps further. Leveraging information related to the operating environment, including precise, real-time location and proximity data, can enable automatic performance adjustments for a range of scenarios tailored to warehouse operations.

Some of these capabilities include:

- Hydraulic arrest to prevent lifting and carrying loads that exceed weight limits

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- Automatic speed reduction when cornering for stability
- Prevent equipment from entering designated pedestrian-only zones
- Blind spot monitoring to help reinforce operator awareness
- Anti-tailgating speed reduction to help maintain proper following distance to equipment ahead
- Location-based lift height restriction to help avoid low-hanging beams or other obstacles
- Automatic slowdown when approaching the end of an aisle or intersection
- Limited speed and acceleration when moving in pedestrian-heavy areas



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Proximity detection uses ultra-wideband tags to alert the operator that equipment, personnel or facility infrastructure is nearby.

Together, this unique suite of four key technologies works to adjust truck performance based on real-time information.

- **Proximity detection:** Uses ultra-wideband tags connected to equipment, personnel and facility infrastructure to provide real-time proximity information

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that alerts the operator and informs proactive performance adjustments.

- **Real-time location sensing:** Uses the same network of ultra-wideband proximity tags together with beacons set up throughout the facility to determine location within sub-meter accuracy and enable location-based rules like equipment exclusion zones and end-of-aisle slowdown.
- **Object detection:** Leverages LiDAR detection to monitor the surrounding environment by sensing objects in the path of travel – even pedestrians or equipment not connected to the tag-to-tag mesh network and other obstructions, like a stray box or debris.
- **Advanced dynamic stability:** The core, proprietary technology that continuously gathers inputs from the three detection technologies to implement performance adjustments to travel speed, acceleration and hydraulic functions based on site-specific rules, while supporting optimal truck stability.

THE USER EXPERIENCE

From the perspective of end users, what do alerts and automated performance intervention look like in practice?

In many warehouse settings, employees are accustomed to wearing a lanyard with an access card or ID badge. Wearable electronic tags with proximity sensors look very similar. In the work environment, when pedestrians

wearing proximity tags come within a pre-defined distance of a piece of connected equipment, their tag vibrates to help make them aware of the situation. For lift truck operators, the system tracks the distances between their trucks, other connected equipment and tag-wearing pedestrians. If a proximity threshold is breached, operators receive both a visual alert from the truck-mounted OAS display and a performance alert, as the lift truck automatically slows down to provide the operator with clear notice of the issue and with additional reaction time.

While the system limits performance based on real-time equipment status, location and operating conditions, the operator always remains in control of the lift truck. With the truck slow-down functionality, the system activates automatic speed reduction based on rules specific to certain areas of the facility, like ends of aisles or heavy pedestrian zones. The truck speed will proactively slow down to reinforce adherence to location-specific rules, but the operator maintains control of steering and braking to enable the operator to steer away from a hazard or bring the truck to a complete stop.

The system behaves similarly with hydraulic functions such as lift, lower and tilt. When the system senses an attempt to lift a load that is too heavy, truck performance is automatically limited to prevent the operator from



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attempting to move such a load. The OAS display also informs the operator that exceeding the designated load weight threshold is the cause for performance adjustment. Because of this additional layer of feedback that communicates why the system intervenes, OAS can be a helpful tool to reinforce proper lift truck operation already established during operator training.

A SOLUTION FOR A CHALLENGING LABOR MARKET

According to industry research¹, best-in-class warehouse operations experience less than 5 % annual workforce turnover. But for most, that's far from reality, as industry-wide turnover² has averaged over 40 % for five straight years, and some businesses experience even higher rates.

With such high turnover, businesses are challenged to cope with the revolving door and must prioritize training and constantly reinforce operating best practices. Investing in OAS technology like Yale Reliant can help warehouses get the most out of mission-critical labor resources and keep pace with demand. **WMHS**



Kevin Paramore is the Emerging Technology Commercialization Manager, Yale Materials Handling Corporation. He works as part of Yale's emerging technology team to provide solutions that leverage telematics, robotics and the latest motive power options and match customers with the best-fit technologies to drive efficiency and cost savings. Paramore has over 15 years of sales leadership experience and an MBA from East Carolina University (www.yale.com).

¹ <https://werc.org/page/DCMeasures>

² <https://www.bls.gov/news.release/jolts.t16.htm>

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Selecting a Conveyor to Minimize Dust Explosion Risk in Food Processing

For processes involving static-sensitive powders in certain concentrations, controlling potential dust ignition, escape and buildup is critical

By: **Del Williams**, *Contributor*

On conveyor systems in the food processing industry, some powdered and bulk solid materials are ignition sensitive in specific concentrations (i.e., grains, sugar, creamer, etc.), particularly when exposed to static electricity discharge. A key point of concern is conveyor system connection points such as inlets, outlets and storage bins. Here, the concentration of dust can become sufficiently high for a deflagration to occur with accidental exposure to an ignition source, such as static electricity, a spark, flame or even high heat or friction.

So, the characteristics of the material conveyed and the type of conveyor along with its associated component parts and connection points should be considered in the system's design to avoid a serious risk of dust combustion and explosion. By carefully selecting and integrating the conveyor system and its components, food processors can minimize the risk of dust explosions while safely conveying materials in a hygienic and energy efficient manner.

"When conveying powders, understanding the requirements is critical because an explosion can injure people, as well as destroy essential equipment, causing lengthy downtime. So, any conveyor system that handles such material must be designed and engineered to comply with all safety codes and have dust mitigation procedures in place," says Gary Schliebs, a Process Engineer and Director of Plus One Percent...Engineered Solutions, a consulting firm that works in the food industry and globally markets food industry conveyor equipment.

IGNITION SENSITIVITY

In food processing, a range of powder or bulk solid products can combust, including grains, flour and sugar. One of the key factors in determining the risk for dust explosion is the product's sensitivity to static electricity discharge in specific concentrations and fuel-to-air ratios, as well as its sensitivity to ignition in ambient air or processing conditions.

In general, static electricity can ignite a combustible dust cloud inside a food processing conveyor system if the minimum ignition energy of the dust is very low. Powder and dust conveyed at high velocity speeds through metal pipe or ducting can build up an electrostatic charge in the dust and potentially ignite. Because static charge can accumulate at different points in the system, the equipment should be fully grounded to earth so it does not discharge into the line.

In any food processing conveyor system, the dust explosion hazard is greater at connection points such as inlets, outlets and ducts. Here, the powdered product is transferred into bins, hoppers, vessels and containers, potentially causing a dust cloud to form. For this reason, all connection points between conveyors and storage vessels should be bonded and grounded so no component is at a different static discharge potential from another, which could ignite the powder.

Conventional open mechanical conveying systems, which utilize many moving parts, can become an ignition source. Bearings and out-of-alignment belt conveyors can be problem areas if they cause sparks or generate heat from friction.

Although some conveyor systems, such as pneumatic powered equipment, are enclosed, the use of high-velocity air can also potentially lead to the creation of a "dust cloud" inside the tube, as well as outside on its exit, although dust collectors and filter receivers can reduce this effect.

One solution is selecting a conveyor, such as a tubular drag conveyor, that conveys powdered material more slowly and gently. Tubular drag conveyors are enclosed systems that utilize a coated, flexible stainless-steel drag cable pulled through on a loop.

Because tubular cable conveyors do not suspend transported powders within high-velocity airstreams like pneumatic conveyors, this imparts "less energy" into the conveyance, which reduces the risk of a dust explosion. Unlike other conveyor systems, tubular cable conveyors

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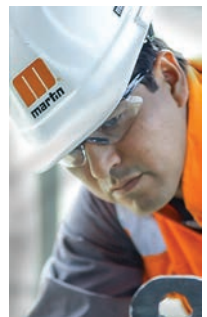
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“Compared to pneumatic systems, tubular cable conveyors use about a quarter of the energy to move product,” says Schliebs.

With tubular cable conveyors, solid circular discs (flights) are attached to a cable, which pushes the product at low speed through the tube without the use of air, reducing the potential for dust cloud formation and preserving product integrity. The systems can convey up to 2,000 cubic feet per hour (56m³/hr.) of powders, granules, etc. with numerous layouts using multiple inlets and outlets.

“Tubular conveyors generate minimal dust due to the gentle, low velocity so there is often no requirement for a dust handling system at the end, such as a bag station used to filter and clean the air,” adds Schliebs.

Without high-speed contact or scraping, the lower speed, lower energy motors of tubular drag conveyors also reduce sparking risk. In addition, the slower velocity reduces any friction and heat

generated to well below an ignition point, limiting it about 10 to 20 °F above ambient temperature.



Grains, flour and sugar are among the products that can combust during the food processing process. © Nander - stock.adobe.com

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PREVENTING POWDER ESCAPE

When it comes to minimizing the risk of dust explosion, another challenge is preventing loose powder from escaping into the surrounding environment where it can accumulate and present a combustion hazard when exposed to a spark, flame, high heat or static electricity.

For this reason, it can be a disadvantage to use open conveyors, such as bucket elevators or flat-belt conveyors.

“Bucket elevator drop zones where the bucket is tipped, or product goes down a chute will always generate dust at those points. Anywhere product enters or exits a conveyor belt also tends to create dust,” says Schliebs.

With pneumatic conveyors, since the air is usually above or below atmospheric pressure, this means powders can escape if there is an unexpected breach in the equipment or ducting.

“When powdery product is mixed with air under pressure, it can become a greater combustion hazard, particularly if you get a line break and it discharges out of the system,” says Schliebs. “Once, I witnessed a situation where a coupling came loose [in a pneumatic conveyor line] and it blew powder into the factory. Fortunately, there was no dust combustion, but the integrity of the whole system is paramount, so connections cannot be loose in pressurized systems.”

MINIMIZING DUST ACCUMULATION

According to Schliebs, when it comes to minimizing the risk of dust explosions in food processing, even gentler enclosed tubular conveyor systems are not all the same given the two options: chain or cable.

For example, with tubular drag chain conveyors, the entire chain is directly immersed within the powders conveyed so dust and food particles can remain trapped after cleaning. With tubular cable conveyors, the cable has about 80 % less area exposed than the surface area of the chain. Further, the cable is nylon sealed, preventing debris and dust accumulation within the cable strands.

Another way to mitigate dust accumulation is through sufficient cleaning to remove any potential powdered debris between batches. For this, Schliebs says tubular cable conveyor systems typically offer more options for dry and wet tube cleaning to remove accumulations of dust and food residue. These include brush boxes, urethane wipers, air knives, in-line sponges, in-line bristle brushes and multi-step, fully automated CIP wet cleaning.

A tubular drag cable conveyor that eliminates potential ignition sources and conveys materials with less force - like those manufactured by Oskaloosa, Iowa based-Cablevey

Conveyors – can be a good choice for certain applications in food manufacturing facilities. These conveyors are engineered in conformance with EHEDG (European Hygienic Engineering and Design Group) hygienic standards, so that it is completely free of crevices, ledges and dead spots where dust and food particles can reside. Surfaces are designed to be convex, rounded or inclined to 45 degrees to prevent powder and dust residue.

Given the variety of conveyor choices and powdered ingredients that must be conveyed during processing, the potential risks warrant a careful examination of the available equipment options and system design in consultation with experts. Reducing the risk of dust explosion can help food processors protect their employees, production and the brand. **WMHS**

ABOUT THE CONTRIBUTOR

Del Williams is a technical writer based in Torrance, California. Cablevey Conveyors is a premium, specialty material moving, mechanical conveyor company that has been designing, engineering and servicing enclosed cable and disc tube conveyors for almost 50 years (<https://cablevey.com>).

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How to Prevent Manual Handling Injuries in the Workplace

By: **Richard J. Perkins**, Contributor

Manual handling is often associated with a variety of physical activities like pushing, pulling, lifting, lowering, carrying or moving a load of objects. However, it's not only limited to heavy industry. Even workers in office environments also engage in manual handling like typing, sorting, writing and putting boxes on the shelves - anything that requires repetitive movements of arms, legs and backs. There are some forms of manual handling in every workplace that can lead to fatigue and injuries when performed frequently or incorrectly.

To control such risks, employers should have adequate health and safety measures in place. The following guide will help prevent manual handling injuries in the workplace.



Lifting and moving heavy objects can cause injuries when not done correctly. © WavebreakmediaMicro - stock.adobe.com

DETERMINE POTENTIAL RISKS

Workers can be exposed to physical risks when performing manual handling tasks repeatedly or over extended periods. But it's worth noting that not all of them are hazardous. Thus, the first step to prevention is determining the potential risks involved in a particular activity.

As an employer, you should take the time to observe employees' daily work processes and environment. The following are some of the risk factors that can make manual handling injuries more likely in the workplace:

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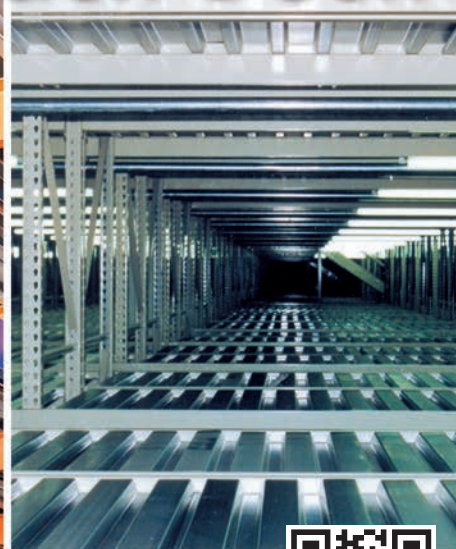
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- **Repetitive actions:** These consist of repeated movements like grasping, stacking and lifting, executed more than twice a minute.
- **Awkward and static postures:** Manual handling activities put the body in fixed and unnatural positions like bending and twisting for long periods.
- **Forceful exertion:** This involves forceful exertion on physically demanding tasks, such as heavy lifting.
- **Exposure To vibration:** It indicates the duration and amplitude of work-related vibration like extended use of hand power tools or driving on rough roads.

Frequent exposure to one or more of the above factors may cause injury to the back, shoulders, hands, wrists or other vulnerable parts of the body. Additionally, a poorly designed workspace, extreme environmental conditions and heavy workload can increase the likelihood of manual handling injuries. Being aware of them is an essential part of finding efficient solutions in eliminating or reducing such risks.

UTILIZE PROPER ERGONOMIC TOOLS

Once you've identified the risk factors in the workplace, the next important step is to improve the fit between the demands of the manual handling tasks and the capabilities of the workers. To do this effectively, you should utilize proper ergonomic tools that can make tasks less stressful for workers.

Ergonomic tools are typically designed to allow the human body to work in repetitive motions more comfortably and productively with minimal fatigue and risk of injury. As a result, they can be a real game-changer that can make employees healthier and safer while performing manual handling.

Make sure to pay attention to the types of tools and equipment they use on a daily basis. It's also best to provide them with a range of options to accomplish the tasks within the normal range joint of motion.

CHANGE WORKPLACE DESIGN

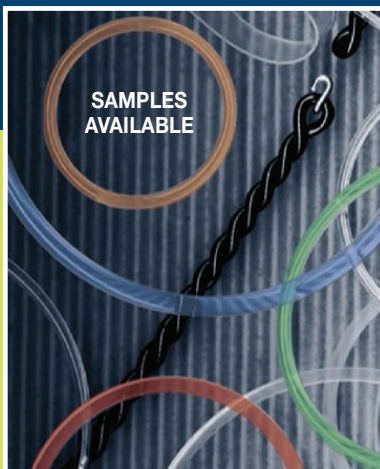
A well-designed workplace is a crucial factor in worker performance and safety while performing manual handling tasks. It should fit the workers' needs instead of forcing them to fit into the design. Remember that the workplace design must be accessible to current and future employees.

Every business must meet some level of accessibility compliance. Employers must aim to meet the highest possible standard of accessibility. Doing so will optimize the company's safety culture and provide a transformative experience to a diverse workforce.

IMPLEMENT ADMINISTRATIVE CONTROLS

Injuries in manual handling can also be prevented by implementing administrative controls. Note that establishing

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processes and procedures that can lessen the risks of manual handling injuries to workers is a critical component of ergonomic modifications.

Below are some of the administrative controls you should consider as an employer:

Conduct Adequate Training

Employees should receive adequate training in operating new tools and equipment. They must be knowledgeable and skilled in doing the tasks without causing excessive stress to their bodies. Organize small group discussions that allow employees to offer suggestions in solving a particular problem.

It's also essential to equip employees to report when any accidents or injuries occur in the workplace. Also, ensure that the sessions and training are specifically designed for their work environment and tasks.

Increase Variety in Tasks

Increasing variety in jobs can help eliminate or reduce repetition. You can do this by rotating workers through diverse tasks that use different muscles and postures. But it's essential to note that not all jobs and departments are a good fit for a job rotation program.

Provide Sufficient Breaks

Workers also need to recover from repetitive work positions. Therefore, providing them with sufficient breaks is extremely important. With a recovery time, they can avoid overusing their muscles and other body parts.

Modify Work Practices

Manual handling should be workable and safe for employees. As necessary, modify work practices within their power zones, meaning the tasks are scaled based on their fitness level. That said, it's also crucial for employees to undergo medical assessments to ensure that they are physically fit to perform the job.

DEVELOP A SAFE SYSTEM OF WORK PLANS

Manual handling activities have contributed to a number of injuries and ill health in the workplace. That's why employers must develop a safe system of work plans, from the work layout to procedures and practices. In addition, it's important to keep in mind that overall productivity and work quality can increase when employees work in a healthy and safe environment. **WMHS**

Richard J. Perkins is a content specialist with a background in behavioral analysis, marketing, and human resource. As an advocate of mental health in the workplace, his work mainly focuses on promoting corporate wellness in diverse settings.

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in safety flash mode. Highly reflective strips add to visibility and a slip-resistant design keeps the LED band in place on a standard or wide brim helmet or hard hat. www.princetonotec.com.

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Milwaukee® Tool has added ANSI/EN388-rated Cut Level 5 Protective Sleeves and Cut Level 3 Protective Sleeves to its PPE line that are designed for demolition work, overhead work in unfinished spaces, service work in metal buildings and sheet metal handling. The sleeves have a secure tapered fit and a band that prevents sliding and reduces sagging. They have a moisture-wicking fabric that helps users stay cool in hot conditions, and comfortable four-way stretch material that allows a greater range of motion. Color-coded wristbands allow cut levels to be easily identified: red for Cut Level 5 and black for Cut Level 3. Cut Level 5 Protective Sleeves are constructed of a 13-gauge knit, while the Cut Level 3 Protective Sleeves are a 15-gauge knit that is lightweight and breathable. www.milwaukeekeetool.com/ppe.



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resistance and tear resistance. A soft, cozy-feeling polyester seamless knit liner and tapered and curved fingers make the gloves comfortable to wear for long periods of time. They are manufactured to the highest tolerances to ensure flex points match up to the wearer's knuckles. Although not recommended for oily applications, this glove is an excellent dry or wet gripper virtually anywhere else. www.brassknuckleprotection.com.

ARC-RATED FACE SHIELD ALLOWS LIGHT, LESS DISTORTION

A face shield – with a hard hat – introduced by Cementex this year has features intended to help the wearer see better while remaining protect from arc blasts. The arc-rated AFS-180 face shield included in the Category 2 Contractor, UltraLite and Feature Series PPE kits features a molded shape to provide minimal distortion with exceptional Visible Light Transfer (VLT). The AFS-180 face shields are made of durable polycarbonate with anti-fog and scratch resistant coatings. The long length, chin cup and sides provide superior coverage and protection around energized equipment. The brow shield deflects arc blast impact and the translucent sides and chin cup provide improved peripheral vision. The face shield meets the requirements of: NFPA 70E, CSA Z462, ASTM F2178, ANSI Z87.1, ANSI Z89.1 and CSA Z94.1. www.cementexusa.com



INDUSTRIAL WORK GLOVES WITH SUSTAINABLE INSULATION

Watson Gloves, a leading supplier of hand protection across North America, has partnered with 3M™ Thinsulate™ to release a new line of industrial gloves made with sustainable insulation. Available in 15 styles, the new line features 3M Thinsulate Type EC, containing 78 % fibers made from post-consumer recycled plastic water bottles. The insulation is Global Recycled Standard certified and produced in mills that are Bluesign and Oeko-Tex certified. 3M Thinsulate EC adds to Watson Gloves' growing portfolio of sustainable gloves, which began with the successful 2019 release of biodegradable disposable gloves, Green Monkey™ and WasteNot™ eco polyester, found in the company's industrial and lifestyle gloves.



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Exposure Assessments Can Be Comprehensive & Cost Effective

By: **Tom Burgess**, *Contributor*

As an industrial hygienist, I work with companies to ensure employees are not exposed to dangerous conditions at work. These conditions can include anything from chemical vapors to noise or heat. An exposure assessment process is used to understand worker exposures and potential health risks.

For some companies, the phrase “exposure assessment” might conjure a very technical and expensive procedure that involves taking air samples or performing other measurements and analysis. There can be very technical aspects to this process. But there are techniques in exposure assessment that take a simpler approach; they can be very practical and cost effective.

FROM THE BEGINNING: SURVEY

The process for exposure assessment recommended by the American Industrial Hygiene Association begins with a general, or qualitative, survey of the workplace, the workforce and the general environment of the site and tasks. This involves observation of the workplace; sources of exposure and controls; as well as interviewing workers, supervisors and managers about conditions, workflow and any safety procedures currently in place.

Some questions that are asked in an initial survey include:

- What are the types and sources of exposure?
- What are the potential health risks?
- Are there exposure limits to help understand acceptable levels of exposure?
- When are workers exposed—to how much—and for how long?
- Can you use odor or other observations to help you understand the exposures?
- What controls are in place, and how well are they working?

- What exposures occur during maintenance, cleaning or non-routine tasks?

Quite often, you can gain a good understanding of the nature of worker exposures and begin to sort out those that are a concern; the ones that are not a concern; and which need more assessment. Frequently, I get requests to do air monitoring before the initial assessment has been done. Without this initial qualitative part of the assessment, we may end up wasting time and money doing air monitoring in areas, or for tasks where an initial observation would have already told us exposures are acceptable.

A more technical and expensive analysis could, in fact, be necessary, but that time and effort can be targeted to areas where it can be the most beneficial.

PRACTICAL IMPROVEMENTS

The survey detailed above can often directly lead to practical and cost-effective improvements. In some cases, we may observe that a hazard can simply be eliminated or physically removed from a work area. In other cases, we might be able to keep workers out of a hazardous location, or limit the time they are exposed. We may also find that controls or PPE are not being used or are not effective. Making these improvements might not involve significant cost or require additional analyses.

Other effective solutions might involve building in physical safeguards; establishing new procedures to work more safely around hazards; or even providing personal protective equipment to workers. If workers are unnecessarily exposed to vapors when taking samples, for example, a company might consider investing in a sampling port for this procedure.

photo courtesy Getty Images



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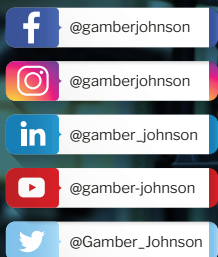
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The exposure assessment process recommended by the American Industrial Hygiene Association begins with a qualitative survey of the workplace, the workforce and the general environment of the site and tasks. (photo courtesy Getty Images)

The exposure assessment procedure also helps to identify hazards that may be overlooked. One client was concerned about workers being overexposed to chemicals when loading chemicals into tanks during a chemical batching process.

Observation of the process found that good controls were in place, including local exhaust ventilation and use of PPE. However, after watching the entire process from start to finish, it was clear that during cleanup following the loading of the tanks, workers were more exposed than during the original work.

With these observations, we were able to focus our improvements on the tasks which were resulting in the higher exposures. Full shift air samples alone would not have identified the specific tasks within the overall batch-making process that were causing the highest exposures.

TECHNICAL EXPERTISE FOR EXPOSURE ASSESSMENTS

In some cases, exposure assessment does reveal the need for a more detailed, technical analysis to understand exposures and health risks before new controls or improvements can be implemented. In such cases, it's vital that companies involve the right expertise in toxicology, engineering, ergonomics or chemistry for the job. It is also important to have employee involvement, as this will typically help with the implementation of controls.

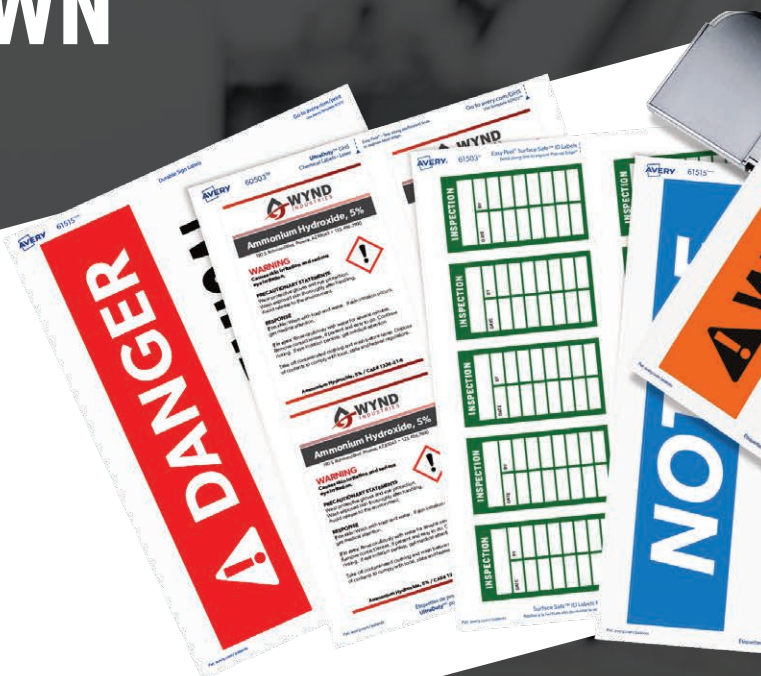
While odors, visible dust or other indicators can help us observe the nature of some exposures, there are times that this will not be effective, and air monitoring or sampling

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Effective exposure assessments are comprehensive, holistic and consider a wide range of factors, but they need not be the most expensive ones. (photo courtesy Getty Images)

may be needed. One equipment manufacturer was concerned with the many solvents with which they worked and, in particular, one substance that had a strong odor. When we reviewed the types of solvents they were using, it was actually a type with a low odor, (i.e., poor warning properties) that presented the greatest health risk. For the process that used that solvent, the initial survey found enough exposure potential that air samples were needed.

MOVING FORWARD: PERIODIC RE-EVALUATION

It is critical that exposure assessments, and any controls implemented in response to these assessments, be periodically re-evaluated. Workflows and work conditions could change, for a variety of reasons, and these in turn could impact the types of dangers to which employees are exposed. A management of change process can be used to assess the potential health and safety impact of changes to equipment or processes before they occur. It is usually much more cost effective to integrate health and safety controls into a change than to try and add them on after the change has occurred.

Another manufacturer with whom I've worked wanted to bring in a new process that included a type of chemical they had not used previously. During the process design, they reviewed the process and hazards and found that there was the potential to generate potential hazardous vapors. Since this was identified early in the process, a lot of decisions could be made about the design—in order to minimize potential risk before design and installation was complete.

In this case, the client decided that industrial hygiene technical support was needed, and I was brought in to assist their team. We developed effective controls with a minimal cost impact. If the problem was found after the process was started, the same changes would have been costly and

disruptive and, even worse, workers could have been overexposed.

While effective controls were implemented for this new process, this will still need to be re-assessed. The same type of qualitative assessments we discussed earlier should be done periodically. We may see that a control is not working or that some change has occurred.

Employee safety should be the top priority of any company, and many companies are willing to invest considerable resources to ensure their workers are not exposed to workplace hazards. But effective exposure assessments are not necessarily the most expensive ones.

Effective exposure assessments are comprehensive, holistic and consider a wide range of factors. **WMHS**

Tom Burgess is a Client Manager at T&M Associates, a leading national consulting, engineering, environmental, technical services and construction management company (www.tandmassociates.com).

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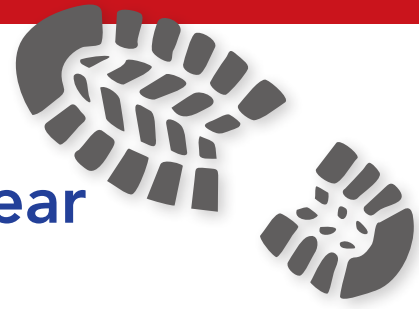
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Four Key Steps When Selecting Slip-Resistant Footwear

By: **Nick Larkins**, Contributor



Designing a safety footwear program and selecting appropriate safety footwear to reduce accidents can seem overwhelming. You may be asking yourself, ‘Why should footwear be prioritized as part of my safety program?’ The answer: nearly one third of all non-fatal workplace accidents are slip, trip or fall related. Introducing or revising a footwear solution as part of your safety program may be your single best opportunity to reduce total accident rates.

We know how important it is to design workplaces to enable workers to complete their daily work in a safe and healthy environment. We know that we need to keep workspaces free from clutter and debris and to quickly identify and remediate any liquid or material spills. However, one of the most common and important control measures for reducing slips, trips and falls has nothing to do with the design of the workplace. It is the footwear workers walk around in. A footwear program tailored to the working environment and tasks to be performed is one of the best tools to reduce slips, trips and falls. Standardizing the safety features your employees need to get the job done safely and setting these features as requirements for approved footwear will help you to keep employees safe and productive. This will also help you compare different footwear options that will meet your needs.

1. IDENTIFY AND REMOVE HAZARDS

The first task is to identify and remove hazards. This is done through a process known as ‘hazard assessment.’ The

hazard assessment begins with a walkthrough and survey of your facility to develop a list of potential hazards.

First, note the basic layout of the facility and note any history of occupational illnesses or injuries. Potential hazards are sources of electricity, harmful dust and extreme temperatures; sources of movement from machines or processes where impact is possible, chemicals, sources of light radiation like welding areas, the potential for falling objects, areas with sharp objects and biologic hazards. It is best to group any identified hazards into categories, such as impact, penetration, compression (roll-over), chemical, heat/cold, harmful dust, light (optical) radiation, biologic.

Once you have identified potential hazards, the next step is to eliminate or mitigate all hazards to the greatest extent possible. Remember: OSHA regulations require employers to ensure each affected employee uses protective footwear when working in areas where there is the danger of foot injury due to risks that cannot be avoided or limited.¹

Next, investigate footwear features and solutions that protect wearers from the dangers identified during the hazard assessment. These may include a protective toe cap, protective midsole or chemical resistance, to name a few.

2. SELECT FOR SLIP RESISTANCE

Slip resistance is one of the most important considerations. Slip-resistance comes from the sole and heel of the footwear and is measured as a coefficient of friction. Many footwear options carry a slip resistance certification, but not all “safety” footwear is slip resistant. Be sure to check the markings on the boots you are considering.

There are multiple global standards for slip resistance— the most common are EN and ASTM. While both standards are considered robust there are some differences. The ASTM standard is a single test protocol and standard with a forward and backward motion. The EN standards require the coefficient of friction to be measured using forward direction in two different conditions (flooring and contamination) and multiple contact angles (three certifications can be granted).

- EN - Footwear tested to EN ISO 20344:2004 (A1: 2007) may be marked: SRA (tested on ceramic tile with diluted soap), SRB (tested on smooth steel with glycerol), or SRC (tested under both conditions).



Understanding work environment, application and exposure is important when selecting the best slip-resistant footwear for your workers. Image courtesy of Dunlop Protective Footwear.

¹ <https://tinyurl.com/bdxzfzbz7>

- ASTM – Footwear tested to ASTM-3445-21 may be marked - SR

You will also need to select footwear with a sole that aligns with your work and environment. For example:

- Wet environments: choose a close-packed well-defined pattern in softer material on a flexible flat sole
- Environments with mixed or loose solids: choose a more open tread pattern with wider channels and deeper cleats
- Icy environments: these may require spikes or studs to 'bite' into the ice. Note, however, these additions may be slippery on other hard surfaces.

Slip resistance is not the only consideration. The company that manufactures the footwear can also have an impact on your footwear program. No one wants to go through the work of designing a robust footwear program only to discover that the manufacturer cannot keep up with demand, does not have a consistent offering or worse. When comparing manufacturers, consider the time a company has been in business. For example, a manufacturer with a long history provides confidence in expertise and ongoing product availability. A manufacturer with a strong new-product or innovation pipeline provides assurance that investments are being made in new technologies that can enhance product features and benefits over time. Lastly as environmental, social and governance initiatives continue to become even more important to customers and consumers. Identifying a manufacturer that invests in ESG platforms can help you to achieve your own internal, or downstream customer and consumer, ESG goals.

3. ENGAGE EMPLOYEES

Consult with employees throughout the process of choosing slip-resistant footwear whenever possible. If you are replacing an existing footwear program, be sure to ask employees what they like and dislike about the current footwear, so these preferences can be considered.

It is a best practice to test new prospective footwear in the workplace where it is to be used and by the employees required to wear it. Commonly referred to as a 'wear trial,' this step significantly enhances understanding of the performance and lifespan of the footwear in your specific conditions. Your distributor or manufacturer's representative may be able to help you facilitate a wear trial at reduced or no cost.

Common questions to ask wearers:

- Does the footwear feel slippery underfoot?
- Is it comfortable?
- Is the wearer able to move freely as needed to complete assigned tasks?



A Dunlop Protective Footwear Product Development Engineer prepares a slip resistance test sample in Dunlop's Slip, Trip and Fall innovation center. Image courtesy of Dunlop Protective Footwear.

Involving users in choosing footwear will increase its acceptability, adoption and daily use.

4. INSTILL THE PROGRAM

Training, maintenance and storage should all be considered key elements of making your new footwear program part of your and your team's daily work. Information, instruction and training should be provided to ensure PPE is properly worn, maintained and replaced as necessary. Some protective footwear will include features such as tread wear indicators on the sole as a simple way to identify when slip resistance is no longer optimal and replacement is needed. **WMHS**



Nick Larkins is Director of Trade Marketing for Dunlop Protective Footwear. Dunlop's innovative protective footwear offers the safety, comfort and durability workers deserve while helping them get home safe every day. Its proprietary high-pressure PU material,

Purofort, delivers industry-leading comfort and durability. Dunlop products are engineered to exceed ASTM and EN safety standards, to ensure that global specifications are met or exceeded for enterprise-scale users (www.dunlopboots.com).



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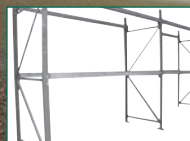
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