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The Safety Zone

By Lisa H. Harrington

Increased warehouse worker productivity. Fewer safety claims. Lower workers' comp costs. Soaring employee morale. You have just entered ... The Safety Zone

Warehousing can be dangerous business.

In 2004, the warehousing and storage industry suffered 21 fatalities and 14,620 injuries and illnesses, according to the U.S. Bureau of Labor Statistics. Eight workers died and 450 were injured as a result of falls, while 1,110 workers were injured from slips and trips.

Five workers died from incidents involving trucks or forklifts in 2004; another 2,390 were injured by these vehicles. Overturns are the leading cause of fatalities involving forklifts, representing about 25 percent of all forklift-related deaths, cites the National Institute for Occupational Safety and Health (NIOSH). In the United States, 1,021 workers died from traumatic injuries suffered in forklift-related incidents between 1980 and 1994.

In 2004, some 3,700 workers were injured from overexertion in lifting -- by far the biggest category of warehouse injury type. In addition, 1,570 workers were struck by an object, and 5,030 workers were hurt by containers of some sort.

The cost of these injuries -- in both human and monetary terms -- is staggering. The only way to improve these statistics is to implement and enforce an effective safety program, which should be an essential part of any warehouse operation.

Manual Material Handling

Back and shoulder are the most frequent types of injuries in the warehouse, representing 40 to 50 percent of all injury claims, according to Wayne Maynard, product director, ergonomics and tribology (slips and falls), at the Liberty Mutual Insurance Company, Boston.

For this reason, any warehouse safety program should focus considerable attention on improving manual materials handling techniques and practices, such as lifting, lowering, pushing, pulling, and carrying.

"Most manual handling claims are filed by operations that rely heavily on manual order picking," explains Ted Braun, product director, manufacturing technology, Liberty Mutual. "This includes pallet handling and broken case picking -- activities that require a lot of human involvement with workers moving up and down warehouse aisles on powered lift trucks, scanning bins, grasping items, and moving them to pallets."

"When workers handle too much weight, perform a task too often or outside the optimum mid-level range, move an object too far, or perform any combination of those activities, the risk of low back pain rises," Maynard adds.

Warehouses can reduce low back injuries by redesigning the workplace and manual tasks performed to minimize bending, reaching and twisting; weights and forces; and frequency of handling and rehandling. Additionally, good workplace design permits employees with low back pain to remain on the job or to return to work sooner.



Reaching for Ergonomics

Such workplace and task redesign falls under the heading of ergonomics. "The point of ergonomics in the warehouse is to minimize bending and reaching," notes Maynard. "Doing so reduces the risk of back injuries, and at the same time improves pick rates."

Locating fast-moving products between knuckle and shoulder height, for example, eliminates bending, and allows workers to get close to the product and transfer it to the

pallet in less time, with less strain on the back.

"Ergonomics is poorly understood," Braun insists. "The controversy surrounding the Occupational Safety & Health Administration's (OSHA) development of ergonomics standards and guidelines, unveiled in 2002, gave ergonomics a bad name.

"Warehouses sometimes define ergonomics as a huge black hole into which they pour money. That's just false. Good ergonomics can prevent injuries in the first place, and can facilitate return to work after an injury."

Mechanical Handling

The second most important warehousing activity to address in a safety program is mechanical material handling. Although the frequency of being struck or injured by industrial lift trucks or other handling equipment is significantly less than overexertion, the severity of injury is much greater.

"An accident can be life changing or even fatal," Braun says.

OSHA maintains a scoring system for warehouse injury incident rates. According to this rating system, a facility with an average safety record receives a score of 10.

"Best-in-class companies have an injury incidence score of less than 2," says Patrick Byrnes, president, Supply Chain Partners, Alpharetta, Ga. "This means that the average warehouse has 10 times the incident rate of the best companies."

But having a low OSHA injury score can be deceiving. "One major U.S. corporation, for example, had an injury reporting score of 1.7," Byrnes says. "While this score is outstanding, it still means that eight people died in its warehouses. So don't let the numbers fool you."

Many companies believe if they conform to the OSHA requirements for training and certifying lift truck operators, all will be fine. OSHA's industrial truck operator training rule [29 CFR 1910.178(l)], which took effect March 1, 1999, requires operator training and licensing, as well as periodic evaluations of operator performance.

The standard also addresses specific training requirements for truck operation, loading, seat belts, overhead protective structures, alarms, and maintenance of industrial trucks. It mandates refresher training for operators if they are observed operating the truck in an unsafe manner, are involved in an accident or near-miss, or are assigned a different type of truck.

Companies should view the OSHA requirement as a minimum standard, Braun and Maynard argue. "We recommend at least an annual training audit, where a trainer follows employees, observes their work habits, identifies what they're doing right and wrong, then works with them to improve their methods."

When it comes to mechanical material handling safety, warehouses should pay special attention to the loading dock area.

"The loading dock area can be the most hazardous part of a warehouse operation, considering the combination of hazards and activity volume that occurs in this area," says Dave Piasecki of Inventory Operations Consulting LLC, Kenosha, Wisc.

"For the lift truck operator, ramps and inclines, overhead obstructions, dissimilar surfaces often wet and slippery, poor lighting in trailers, other vehicular traffic, pedestrian traffic, restricted views, sheer drops, trailer creep, congested staging areas, and accumulations of empty containers, pallets, and debris are hazards that can all be present at the same time within a confined area," he says.

"Many operations fail to provide detailed hazard assessment, operational procedures, and day-to-day enforcement of safety issues," Piasecki asserts. "Also, employees who do not operate lift trucks are rarely trained on dock safety issues, even though they share many of the same risks as lift truck drivers."

Lock Up The Dock

Piasecki recommends the following ideas for improving dock area safety:

- Make sure lift trucks used to load and unload trailers are equipped with spotlights. Use dock-mounted lights to supplement lift truck lights or when manually loading and unloading trailers.
- Maintain all equipment in accordance with manufacturers' recommendations.
- Visually inspect the trailer prior to driving a lift truck into it. "Damaged and rotting floorboards are common in older trailers, and may cause a lift truck wheel to break through," Piasecki says. "But that's probably not as dangerous as the execution of the ingenious plan warehouse personnel will devise to try to free the lift truck."
- Use paint or tape to designate staging areas, through aisles, and loading lanes. Make sure employees recognize the designations.
- Keep dock areas free of debris.
- Designate areas for storage of used pallets, containers, and trash. Limit the stacked height of used pallets and containers.
- Limit the stacked height of materials in staging areas, especially if pedestrians will be working around the material. Leave sufficient access aisles between rows of staged material if employees may be required to inspect or otherwise access the material.
- Train all employees that work in dock areas on the hazards.

Appropriate Response

Once an injury occurs in the warehouse, the supervisor's response is critical. "In too many cases," Maynard says, "when a worker complains of back pain, the supervisor responds, 'it's your own fault,' or 'you didn't do it here.' That sends a bad message to the employee."

"That kind of response to an injury indicates a company is in denial," he continues. "By denying a problem exists, the company fails to take steps to correct the condition so that others don't incur the same injury. Denial hurts the entire safety management process. It's the warehouse supervisor's responsibility to respond appropriately and help the employee return to work healthy, as soon as possible."

In fact, improving the way supervisors respond to employees' work-related health and safety concerns can produce significant and sustainable reductions in future injury claims and disability costs, according to a new study from the Liberty Mutual Research Institute for Safety.

Supervisors trained to properly respond, communicate, and problem-solve with employees reduced new disability claims by 47 percent and active lost-time claims by 18 percent.

An effective warehouse safety program generates a number of benefits, both tangible and intangible. One of the biggest tangible impacts is lower workers' compensation insurance costs.

For many companies, workers' compensation insurance can be a significant expense. "The number of claims, and their dollar amounts, drive insurance premiums," notes Craig Kershaw, chief financial officer of The Terminal Corporation, a third-party logistics service provider located in Baltimore.

"Companies that have implemented a good safety program tend to have fewer claims in costs, volume, and severity. Insurance companies reward these firms with lower premiums," he says. "The difference can be substantial -- on the order of 10 percent of the payroll. Safety can be a competitive advantage in terms of operating cost structure.

"Insurance companies issue classes and rates for workers' compensation in every state," Kershaw adds. "The more dangerous the work, the higher the base tariff."

Insurance companies use several mechanisms to adjust rates above or below the base rate. This is called the experience modification factor. The experience modification factor is a multiplier number applied to a base premium rate. Companies with average safety records receive a modification factor of one. Companies with poor safety records and poor loss histories could receive a modification factor of 1.6.

Numbers in Safety

"Say your company's base premium rate is 10 percent of your payroll," Kershaw explains. "Apply the experience modification factor of 1.6, and the new premium rate becomes 16 percent of payroll rather than 10 percent. In this example, you pay a 60-percent surcharge for not being safe.

"On the flip side," he says, "if you have an outstanding safety program and your claims are under control, you could have an experience modification of 0.6, which means you get a 40-percent discount on the published insurance rate."

When insurance companies underwrite an account, they look at a company's loss experience and safety program, and conduct an in-person safety inspection. If they like what they see, that's reflected in the rates. If they don't like what they see, they may decline to even quote the business, or indicate their dissatisfaction by offering an excessively high rate.

"Having a poor safety record could put a company with tight margins out of business," Kershaw notes. "If payroll is 30 to 40 percent of cost, and a company has to pay 20 percent of payroll on top of that for insurance, that can hurt."

Lower insurance rates aren't the only benefit of a good safety program. Clearly, it improves employee morale. "No one wants to go to work and get hurt," Kershaw notes. "Having a good safety program shows a company cares about its workers. It's hard to put a dollar amount on that, but it's crucial."

Ingrained in the Culture

"Safety has to come from the people in the warehouse," says Chip Newhart, quality and safety manager, Baltimore Forest Products Terminals (Balterm). "Warehouse workers are independent creatures. No one directly supervises them as they go about their work, so a safety culture has to be ingrained in them. That takes a long time."

Balterm has spent the last few years creating just such a safety culture. The company operates in two terminals at the Port of Baltimore, with five warehouses at the Dundalk Marine Terminal and four at the Locust Point Marine Terminal.

"Every month, I hold a safety committee meeting with the supervisors from each warehouse and our management staff," says Newhart. "We review all the accidents that occurred during the month, and try to determine their root cause. It's amazing what we find out."

Newhart recalls an episode when a long-time employee ran a forklift into a building support column. He was driving forward and couldn't see around the cargo -- large bales of wood pulp. But that's not why he hit the column. As it turned out, a manager had parked his car in

the route the forklift operator normally took, so he had to use an unfamiliar, alternate route and didn't know a column was there.

"Every Friday morning," Newhart continues, "I walk all nine of our warehouses. I look at safety activity and housekeeping issues, observe lift truck driving habits, and monitor trailer and railcar loading practices for unsafe activities. If a worker is driving a lift truck one-handed, talking on the cell phone, for example, that's unsafe.

"I also look at whether drivers are wearing personal protective equipment. The warehouse is a dangerous place for pedestrians, so when drivers step off the lift truck, they have to be clearly visible," he adds.

Newhart never mention names in his safety audit report, and always tries to ask employees whether they have any safety concerns.

"Even if I find a violation, I don't write the employee up for disciplinary action unless it's flagrant," he says. "But I report trends to senior management.

"I also score each warehouse on six major safety categories -- such as personal protection equipment, safe lift truck driving, safe railcar loading -- and post the results next to the time clock at all locations. This lets workers know every week how they're doing on those aspects of safety that are within their control."

Newhart also posts a running tabulation on number of days since the last lost-time injury/accident. "This has been very successful in encouraging safety," he reports. "A few weeks ago, we exceeded 100 days without a lost-time injury, so we celebrated with a barbecue lunch, and presented safety reflective T-shirts to all warehouse workers."

If an accident does occur, Newhart immediately sends a flash report to all first-line warehouse managers. "The purpose of the report is to prevent subsequent repeats of the same kind of accident," Newhart explains. Senior management receives notification of accidents as well.

What impact has Balterm's safety program had on the company?

"Several years ago, we had a poor accident record," Newhart acknowledges. "Then we got serious about improving safety. We told our warehouse workers that if we could lower our insurance premiums, we would share one-third of the savings with them. We've done just that and have been able to pay bonuses to our employees for the last two years. And we've saved a few hundred thousand dollars in premiums."

No Silver Bullet

From a safety standpoint, warehousing is a tough industry. "Companies look for the silver bullet, but it doesn't exist," says Braun. "How well they do depends on understanding the hazards, and acting on them."

Safety performance also depends on how well a company enforces compliance to all safety procedures. "Warehouse safety is directly related to the enforcement of safety procedures," notes Piasecki. "If safety is not enforced, it won't happen."

Companies that are not as advanced in their safety efforts incur a competitive disadvantage. "They may not be aware that their competition has a leg up," Braun says. "The reason is simple. In a safe warehouse, employees spend their time working rather than recovering from injuries."

Basic Safety Guidelines

The National Institute for Occupational Safety and Health recommends adhering to the following safety policies in the warehouse.

Worker Training

- Make sure workers do not operate a forklift unless they have been trained and licensed.
- Develop, implement, and enforce a comprehensive written safety program that includes worker training, operator licensing, and a timetable for reviewing and revising the program. Operator training should address factors that affect the stability of a forklift, such as the weight and symmetry of the load, the speed at which the forklift is traveling, operating surface, tire pressure, and driving behavior.
- Operators of sit-down forklifts can be crushed by the overhead guard or another part of the truck after jumping from the overturning vehicle. The operator of a sit-down forklift should stay with the truck if lateral or longitudinal tipover occurs. The operator should hold on firmly and lean away from the point of impact.
- Train operators of stand-up forklifts with rear-entry access to exit from the truck by stepping backward if a lateral tipover occurs.
- Ensure that operator restraint systems are used on sit-down forklifts.
- Require lift truck operators to complete a safety inspection of their vehicle prior to starting work.

Workers on Foot

- Separate forklift traffic and other workers where possible.
- Restrict the use of forklifts near time clocks, break rooms, cafeterias, and main exits, particularly when the flow of workers on foot is at a peak -- such as at the end of a shift or during breaks.
- Install physical barriers where practical to ensure that workstations are isolated from aisles traveled by forklifts.
- Evaluate intersections and other blind corners to determine whether overhead dome mirrors could improve the visibility of forklift operators or workers on foot.
- Make every effort to alert workers when a forklift is nearby. Use horns, audible backup alarms, and flashing lights to warn workers and other forklift operators in the area. Flashing lights are especially important in areas where ambient noise levels are high.
- Require employees and visitors to wear bright-colored safety vests.
- Announce warehouse visitors over the PA system.
- Require pedestrians to make acknowledged visual eye contact with a nearby lift truck driver before walking in an area.

Work Environment

- Ensure that workplace safety inspections are routinely conducted by a person who can identify hazards and conditions that are dangerous to workers. The person who conducts the inspections should have the authority to implement prompt corrective measures.

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