



Safety Smarts - Equipment and services to help you avoid injuries

April 2003

Author: **Peter Fretty**

According to the Washington, DC-based National Institute for Occupational Safety and Health (NIOSH), approximately 9,750 people are injured daily in the U.S. due to workplace-related accidents. These numbers are astonishing, but there are many reasons for hope. According to industry experts, measures can be taken by maintenance and engineering professionals to lessen the seriousness and reduce the frequency of costly plant accidents.

Safety planning pays off

Woodland Hills, CA-based Zenith Insurance Co. says the most important aspect of implementing a health and safety plan deals with leadership. This can be accomplished by providing resources for the program, visible participation in activities and by implementing accountability measures for all levels of supervision and management. In this respect, it's crucial for a company to consistently build a workplace culture that doesn't tolerate risks.

"Management must commit to manage this issue as rigorously as it would any other business element. Also, management can't be seen as being disengaged from the process. Ways to show personal commitment have to be found," says Dan Hair, Zenith's senior vice-president and national director of safety and health. "Loss control starts with exposure and management should take a searching look at hazards within the workplace. When workers see that management will spend time and money on making the workplace safer, good things happen."

According to Belinda Sutton, spokesperson for the Toronto-based Ontario Ministry of Labour, in addition to creating and enforcing regulations, the government is committed to developing education and awareness programs aimed to lessen the number and frequency of workplace incidents.

"The goal is to develop workers that are highly skilled, smarter and safer. For example, we now teach occupation health and safety as part of the secondary school curriculum," says Sutton. "As well, the Ministry has a Web site specifically geared to young and new workers. It [Ministry] has also recently implemented a number of campaigns to shape attitudes towards health and safety." According to Sutton, the Ministry has spent considerable time improving its confined spaces regulations, as well as construction regulations focused on scaffolds, platforms, electrical safety, cranes and hoisting devices. Regarding workplace exposure to hazardous materials, the Ministry is also working to update its education-related materials. Currently, the database has been revamped to comply with more than 200 substances. The Ministry is further developing a permanent process for keeping occupational exposure limits timely.

Consider predictive technology

While maintenance professionals have come to rely on software programs to avoid unanticipated equipment failures, similar technology can prove beneficial in the war against plant injuries. Chicago, IL-based InStep Software LLC offers eDNA, which behaves as a "real-time" historian. The customizable software allows maintenance personnel and supervisors to monitor and control critical plant systems.

According to Anthony Maurer, InStep's vice-president and co-founder, eDNA provides the current operating status of all controlled equipment in a manufacturing or process facility. The current status from multiple systems can be combined together and viewed in a single display. The operating history of plant components is also stored in a permanent archive.

"By using this baseline information, long-term trends can be spotted and identified before component or system failures occur, resulting in potential health risks and lost revenue," says Maurer. "Also, eDNA has an automated alarming feature that provides audible, visual, email and paging capability for abnormal conditions."

The software works by linking existing plant control systems and monitoring devices using their native protocols. All information can be collected from these distributed systems and then accessed from any computer networked to the eDNA foundation.

"Information that was trapped in the control room with operators is now available to everyone in the plant. This enables better and more informed decision-making," explains Maurer. "It also empowers plant staff with the knowledge they need to succeed and improve efficiencies."

Protect workers from falling hazards

According to NIOSH spokesperson Fred Blosser, falling hazards are one of the most common causes of workplace injuries that can easily be avoided by taking precautionary measures. This includes the integration of railings and clearly marking potential hazards.

Concord, ON-based Kee Industrial Products Inc. has introduced an enhanced design of its KeeGuard fall prevention railing system for flat roofs. The enhanced design eliminates the original T-cross and places the counterbalances in line. This streamlines the assembly to provide greater flexibility in system layout and design, while making installation easier.

Raking capability has also been added, which means the railings can now be installed to tilt up to 11 degrees inward. According to the company, inclined railings are often the preferred safety choice over perpendicular railings on rooftops and in other hazardous fall areas. This also allows KeeGuard to be configured, so the profile of the guardrail system can remain unseen from street level in certain installations.

In compliance with Ontario Occupational Health and Safety Act regulations for construction projects, the KeeGuard system was designed to ensure safe and efficient rooftop maintenance and construction activity. The system is a freestanding, counterbalanced modular guardrail system that can be installed—all without drilling or penetrating the roof membrane. The enhanced KeeGuard system offers four pre-fabricated modular components that feature easy assembly, accommodating a wide range of rooftop configurations.

Designed for use with 1-1/2-inch schedule 40 standard pipe, the guardrail system is completely galvanized to be corrosion-resistant and virtually maintenance-free. The system can be disassembled and re-erected and is adaptable to most roofing profiles. The enhanced KeeGuard system also features Kee Klamp slip-on structural pipefitting. It connects the railing pipe and counterbalance assembly, eliminating any need for welding, drilling or threading. This can reduce installation costs up to 50 percent or more compared to installing welded railings, according to Kee's spokesperson Kenneth Boos.

Guarding the skin

Atlanta, GA-based Kimberly-Clark Safety Division has an assortment of new products designed to ensure employee health, especially in hazardous situations. KleenGuard Ultra protective garments include a three-layer laminate construction, with a microporous film interior layer for breathability and outer layers made of polypropylene and polyethylene for strength and abrasion-resistance.

The microporous film's inner layer allows heat and sweat-related vapour to escape. At the same time, the product protects against sprays from non-hazardous liquids and small particles. The garments' fabric construction also passes ASTM F1670/1671 testing for penetration of blood, body fluids and blood-borne pathogens.

Kimberly-Clark also offers KleenGuard Extra Coveralls, which it says are 25 times more breathable than garments made with the DuPont material New Tyvek. They also provide particle barrier equal to New Tyvek for particles down to 2.0 micrometers in size, according to the company. The garments are suited for use in mould remediation, maintenance and general clean-

up operations, as well as working with oil and grease, manufacturing and assembly operations or dusty environments.

According to Kim Dennis, Kimberly-Clark's research scientist, the most ignored criteria in selecting coveralls is overall fit, comfort and compliance.

"With a proper fit, you have less rip-out and fewer people struggling to get in and out of coveralls. While there's a need to protect employees, don't overbuy," she says. "Understand the application and buy the appropriate garments to obtain adequate protection and optimum productivity."

Improving machine safety

According to Guerrino Suffi, Toronto-based Omron Canada Inc.'s safety products manager, when dealing with automated machinery, there's a need for risk reduction through the safeguarding of workers. By eliminating plant-related risks, the machine operator and hazards will never meet, explains Suffi. Examples include moveable interlocked guards (i.e. slide or hinged safety guard doors with switches that detect the door's current position) and presence-sensing devices that can be used to determine operator position/location.

Omron offers a wide range of safety products, including Type 2 and Type 4 safety light curtains and 16- and 22-millimetre (.6299 and .8661 inches) E-Stop Switches designed for "no-tools" installation. Also available from Omron are compact track-mount safety relay units and interlock safety door switches that are suitable for use with safety doors, gates and guards.

Peter Fretty is a freelance writer and frequent contributor to PEM Plant Engineering and Maintenance. He can be reached at petefretty@aol.com.

Tips for improved safety success

Michael Abromeit, executive director of field operations for the Toronto, ON-based Industrial Accident Prevention Association (IAPA), says companies must build a solid foundation and have a clear safety vision. As a result, they'll be able to strengthen injury and illness prevention performance.

"The process incorporates a healthy corporate culture that's based on positive and respectful values, principles and beliefs towards safety, health and interaction with the environment," he says. "In a successful organization, this culture is evidenced throughout all of its business strategies, reflecting an integrated approach and philosophy."

According to Sheldon Weatherby, project manager for Environmental Health Professionals Ltd., a member of the Golder Group of companies in Edmonton, AB, companies must take the time to identify key factors. Before a company can take necessary control, it has to be aware of safety hazards, he explains.

"This can be done by speaking with frontline workers, looking at past incidents and bringing in experts with experience and knowledge," says Weatherby. "They may be able to identify hazards, which the typical plant person wouldn't recognize as a potential hazard."

It's also important for companies to lead by example. If workers on the production floor require steel-toe shoes and safety glasses, then supervisors and management shouldn't cut corners. They have to also comply with company safety standards, whether they're on the floor for 10 seconds or two hours.

Companies must also understand applicable government safety regulations. According to Golder Associates' Weatherby, this should serve as a starting point or minimum for each plant to build upon. "It's great to be above, but you need to make sure that you're not below," he says. "It's also essential the safety program involves total ownership versus management telling employees what to do."

According to the IAPA's Abromeit, successful companies stress the full commitment and active participation of all workplace stakeholders. He explains this is required for the continued success and development of effective workplace safety programs. "Stakeholders should include workers, union, management, clients, suppliers, government and the community," says Abromeit.

Lastly, Zenith Insurance's Hair says that companies need to dedicate themselves to improve safety performance. "Building an effective health and safety program is a task that doesn't have an endpoint. In this business, human behaviour is complex and you never arrive at completion," he says. "Sound OH&S programs preserve a company's financial resources and enhance

competitiveness. More importantly, they protect the most precious of resources—human life."

For more product and service information:

- National Institute of Occupational Safety and Health - www.cdc.gov/niosh
- Zenith Insurance Co. — www.thezenith.com
- Ontario Ministry of Labour — www.gov.on.ca/LAB
- InStep Software — www.instepsw.com
- Kee Industrial — www.keeguard.com/cn
- Kimberly-Clark Safety Division — www.kc-safety.com
- Omron Safety Products — www.omron.ca
- Industrial Accident Prevention Association — www.iapa.on.ca
- Environmental Health Professionals Ltd., a member of the Golder Group of companies — www.ehp.ca