

Machine safety technologies gain momentum

Seatbelts took awhile to catch on when introduced to the market but have become an acknowledged, life-saving device for drivers. Workers in industrial plants, too, have come to accept safety devices as a necessary part of their routine. In some cases, they use them as automatically as seatbelts.

Safety has gone a step further. Continuing with the car analogy, Dave Shanahan says today's industrial machinery is more parallel with airbags. "The safety is there, almost invisible, but passive, a cushion when a mistake is made," says the OSH standards project manager with the Canadian Standards Association.

"If somebody does trip and fall into a machine, the machine will make itself safe before the person's body enters the danger zone." As with the airbag, this all happens in milliseconds.

Such technology holds great promise. New machines feature redundant control systems "where if one aspect fails, another kicks in to continue the safeguarding. And today's more passive safety systems prevent the sort of injury that happens when someone reaches into a machine to clear a jam. [Watch market experts demonstrate machine safety technologies]

"The designers are taking away the temptation entirely and saying, physically, you can't get your hand in there unless you have the proper key or code to open the machine up to get inside," says Shanahan.

Sensory devices are increasingly common, as are interlocking systems to shut down the machine if someone gets too close. Creators of these advanced technologies have gone to great lengths to prevent workers from coming near dangerous parts.

Sadly, the workplace simply hasn't caught up with these advances. Machines killed 223 Canadian workers from 2002 to 2006 across several sectors, including manufacturing, agriculture, fishing, trapping, logging, forestry, mining, retail, construction and transportation. During that time there were 90,059 machine-related injuries, 36,066 of them in manufacturing alone. Besides surface wounds and bruises, statistics from the Association of Workers Compensation Boards of Canada (AWCBC) list open wounds, intracranial injuries, traumatic injuries to bones, nerves, spinal cord, muscles, tendons, ligaments and joints among the injuries.

Despite advanced safety technology, industry has failed to protect workers from the very machines that cut, bend, roll, shape, bore, drill, plane, extrude, inject, form, mould, grind or press metal "and other materials that are much tougher than the human body parts that too often get in the way.

What are the factors that continue to cause machine-related injuries and deaths?

No machine guard

Eighteen-year-old David Ellis suffered a fatal accident on his second day of work at a bakery. The commercial dough mixer he was working on had no safety guard, and David became entangled in the machine's large blades. Later that year, an almost identical incident caused the death of 20-year-old Steve MacDonald. Despite strict laws and standards, many employers continue to put workers at risk with unguarded equipment.

The wrong guard

Companies that invest in new machines and safety devices don't always have the resources or internal know-how to apply the technology. "There can be as much issue with applying as misapplying it," says Michael Wilson, machine guarding specialist, Industrial Accident Prevention Association (IAPA). He recommends that people check the CSA "Safeguarding for Machinery" standard Z432-04, which outlines how to integrate a particular safety device into the workplace. "Be aware of the requirements of a given device before you purchase it. Certain types of interlock switches, for example, might be better for a dusty environment than one that needs to withstand washdown."

Poorly installed or adjusted guards

Just as a car needs a bit of distance to come to a full stop, so does a machine. People have died because of light curtains or other life-saving devices installed in the wrong position.

Removed or bypassed guard

While there's no valid excuse for compromising safety, there are workplace realities to consider. Workers have tight work schedules. Machine-paced work creates time pressures. Workers might also fear job loss, harassment from their supervisor, or taunting by other workers for taking precautions, even though the law says they have every right to refuse dangerous work.

The Canadian Auto Workers Union believes it's up to the employer to insist that workers take the time to work safely, use safeguards and lock out their equipment. "It might take a minute to lock out, a minute to start it back, and only 10 seconds to unjam something," says Paul Goggan, a CAW machine guarding specialist. "Workers will use a million excuses, but management has to instill that safety comes first."

Besides, says Wilson, the law doesn't abide overriding a guard for any reason. "It's flat-out illegal, I don't care v

Broken guard

Joel Murray, a GM employee, died instantly of suffocation when an automatic lathe slit his throat. The safety switch that could have stopped the machine when he was thrown into it by another moving part was bent and therefore useless. GM was fined \$325,000 for failing to maintain machine guards in working order.

This is one of too many cases where companies buy safety devices but fail to maintain them in working order.

Failure to lock out machinery

Rick Adam, a CN Rail employee, was hooking up a line of rail cars. Because he hadn't put up the required blue lockout flag to alert other rail cars not to approach, another car slammed into the one Adam was working on. The wheel of the loaded 270,000-lb car severed both his legs. Despite CN safety procedures, no one at his workplace was in the habit of using the lockout flags.

In many industrial applications, lockout is the surest way to protect against inadvertent dangerous actions or unconscious split-second decisions. Nobody gets hurt on purpose. CAW's Goggan knows what it's like to work on a line and become a bit hypnotized by the repetitive work.

"You shouldn't have tools in your hand when you're troubleshooting a machine," he says. "If you're on a line and you're looking to see why the boxes of cereal keep falling off the line, and you've got a wrench in your hand, you're likely to tweak something while the line is running rather than disable all energy first. You need to take it all away so you can't get injured regardless of what happens. Turn it off. Completely."

Lack of training

Statistics overwhelmingly show that new and young workers have a higher risk of getting injured. Experienced workers shouldn't teach them unsafe habits. "You could reach your hand in to unjam something and get away with it 1000 times but 1001 takes your hand off," says Goggan.

CSA machinery standards now emphasize the training and qualifications of both operators and maintenance personnel. Even with new machines that have built-in safeguards, people can still get hurt if they don't know what they're doing.

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