Contributors

Gord Woodward

Gord has worked with more than 1,500 small businesses and has experience working with federal and provincial agencies, non-profit organizations, and private sector firms. He interviews Trevor Williams in "Ask an officer."

Gail Johnson

Gail's guiding principle is "Make the world a better place in your own small way every day." The industry members she interviews in our cover story share similar principles. She writes about preventing bullying and harassment in construction (page 7).

Sarah Ripplinger

Sarah has a passion for storytelling that turns heads, excites, and inspires — such as Shawn Michaels' story of an injury turned into inspiration (page 11).

Kathy Eccles

Kathy is a writer and editor with several years of experience with return-to-work initiatives. She covers this topic in our "Safety spotlight" (page 23).

The risks of aging equipment

Trevor Williams
Occupational hygiene officer

Region: Surrey
Years on the job: 9

The equipment at your site may be working well now, but it could pose a risk of a serious incident as it ages. Decaying railroad ties, for example, were factors in a train derailment on Vancouver Island in which three people lost their lives in 2017. And a curling rink brine chiller operated beyond its intended life expectancy contributed to an ammonia leak in which three people lost their lives the same year. WorkSafeBC occupational hygiene officer Trevor Williams has answers to commonly asked questions about working with aging equipment and infrastructure and how to reduce the risk.

Q. My equipment is old but I haven't had any major problems. If it ain't broke, why should I fix it?

A. It's not just about chronological age. It's about understanding how equipment degrades over time and knowing what can happen to your equipment in various stages of its life cycle.

You have to understand what a failure can look like and the safety risks associated with it. How could your equipment fail? What could happen and how severe could the consequences be? Can you effectively control the hazard if the equipment were to fail?

As time passes, equipment becomes increasingly difficult to maintain in a safe operating condition. You should have provisions for its eventual decommissioning or replacement.

Q. We repair our equipment whenever there's a problem with it. Is there anything else we need to do?

A. You're using a corrective maintenance approach, waiting for something to go wrong. This might not be the best approach. As equipment starts to age, there is typically an uptick in the number of failures due to factors such as corrosion, erosion, deterioration of parts, etc. Some employers may run equipment until there is a minor failure or leak (referred to as a "leak-before-failure" assumption) and then repair or replace accordingly. This practice is only acceptable if there can be a reasonable assurance that this approach doesn't result in a significant risk of harm. Unfortunately, there is a history of this maintenance strategy resulting in serious incidents.

Preferably, employers should follow a rigorous preventive maintenance program, where inspections, repairs, and replacements are scheduled at predetermined intervals. This approach includes knowledge of equipment life cycles, appropriate inspections, and replacement intervals.

Even better, employers can adopt a predictive-maintenance program, in which the condition of equipment is regularly assessed and the inspection, maintenance, and replacement schedule is revised based on these findings. This accounts for the potential of some equipment to degrade faster than expected due to unforeseen operational conditions or other factors.

Q. With a tight budget, how can we afford to replace aging equipment?

A. Safety and risk management has to be part of your decision making. There has to be long-term planning that includes major capital expenditures, and the safety factor has to be brought into the discussion. It's not just about maintaining your equipment in an operating state, it's also about maintaining it in a safe state. If you don't replace it when necessary, you could put workers at risk with a potential for catastrophic failure. You could also be looking at the cost of downtime and potentially jeopardize your entire business.

A maintenance plan that includes equipment end-of-life strategies can help your case when your organization has competing priorities for limited resources.

Q. What do we do if the parts we need are no longer available?

A. Any modifications to hazardous equipment should always be done in accordance with manufacturers' specifications, including selection of appropriate replacement parts. If this is not feasible, this is probably where a professional engineer needs to be consulted to help ensure appropriate and safe equipment modifications. This process often includes a "Management of Change" procedure, in which a proposed change is first evaluated to identify the potential for new risks, and appropriate measures are implemented to control these risks in advance of the change. If you can't provide the assurance that the equipment can run safely, you shouldn't run it.

Q. What often gets overlooked when it comes to maintaining older equipment and infrastructure?

A. There are a lot of different regulations that could apply to different kinds of equipment, including the Occupational Health and Safety Regulation and other industry-specific and equipment-specific regulators. There are also recognized standards for operation and maintenance of some equipment that may be referenced by regulation or serve as a good practice guide. A professional engineer can help with this.

Sometimes, the simplest thing is to remember to follow the manufacturer's instructions for equipment operation, inspection, and maintenance. And it's important to keep all documentation for hazardous equipment up to date. You may have made modifications to equipment to keep it running, so you need to keep track of changes you've made. Having everything in writing keeps that critical knowledge readily available, rather than in the heads of staff who may leave your company.

Looking for answers to your specific health and safety questions? Send them to us at worksafemagazine@worksafebc.com, and we'll consider them for our next "Ask an officer" feature.

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> —**Trevor Williams**, occupational hygiene officer, WorkSafeBC