Great Panther Mining runs a Safety Olympics competition at its Brazilian operation. Every two months, the winning team is presented with the Gold Hat trophy and at the end of the year, the overall winners receive $100,000 Brazilian Reals ($17,500) in safety-initiative funding, to be spent at the team's discretion.

Putting safety into practice

Culture gaps and complacency are contributors to mining safety issues

By Rosalind Stefanac

Now, more than ever before, mining companies across the board are striving to improve safety protocols with the ultimate goal of zero-lost-time injuries and zero fatalities. To that end, mining companies have invested in additional safety training and risk-management assessments while adopting safety performance measures that reward achievements and aim to standardize best practices.

Yet, despite major reductions in injury-frequency rates and a steady decrease in mining fatalities over the decades, tragic incidences at Canadian mining companies continue to take the lives of miners every year. (In 2019, 20 people working in the Canadian mining industry died on the job, while 39 people lost their lives in 2018, according to data supplied by the Association of Workers' Compensation Boards of Canada.) That is not surprising, when, according to one safety expert, Canada's safety performance is still average at best on a global scale.

Corrie Pitzer, CEO of Vancouver-based Safemap International, a specialist in safety transformation and strategic safety management who consults with mining companies in Canada and around the world, formed that conclusion, based on his experiences in the industry and his interactions with mining companies. Additionally, he feels that for all those Canadian companies stepping up to improve their health and safety performance indicators and who already are well ahead of many mining companies in approach and practices, there are others who are still as much as 10 years behind where they should be.

"In some areas of mining, the thought is if you have the controls in place and people comply to them, you should be fine, but it's much more complicated than that," he said. "A lot of catastrophic events still happen when people comply. It's the readiness of people to respond to risk and the focus on risk that differentiates some Canadian organizations from the much more advanced ones."

Mike Parent, vice-president of prevention services at Workplace Safety North (WSN), and a former underground miner himself, said it took him years to really appreciate the number of risks underground workers are exposed to daily – even with a supportive organization and a thorough workplace orientation. "There are hazards such as falling rock and equipment that can crush you, or the things that you don't see that are poisoning you," he said. "Or other major risks growing in a part of a mine that no one is aware of." This could be underground water accumulation that could result in a run of muck that would crush everything in its path, for example.

To identify the top risks in underground mining and determine the root causes and controls needed to prevent future accidents, the Ontario government – in collaboration with the Ontario mining industry – initiated an extensive review in 2014 that Parent said is helping steer Canada in the right direction. The final report identified six key areas – health and safety hazards; new technologies; emergency preparedness and mine rescue; training and labour supply issues; and

internal responsibility systems (IRS) – and provided 18 recommendations being implemented by government and other industry stakeholders to reduce occupational risks. The Ontario Ministry of Labour also completed a surface-mining sector risk assessment workshop in 2016 and released a summary of the findings.

"We're better off to be pre-emptive in understanding where the potential failures can be and what probable controls should be in place before we have a number of incidents to study from," said Parent. "Ongoing, the focus needs to be on the top risks and making sure effective controls are actually in place to protect [workers]." Number one among the risks identified in the underground mine risk assessment is ground control (rock bursts, rock falling underground) followed by mobile equipment involving large or small vehicles and pedestrians.

Culture is crucial in reducing safety risks

Parent said another issue preventing Canada's mining sector from faring better on the safety scale is a disconnect in company culture. In conducting a pilot study of an IRS audit tool – a concept that grew out of the initial 2014 review – in six mines in Ontario, he and his team discovered that the worst-performing mines in application safety had the biggest gap in perception between workers and leadership in terms of what was working and what was not. "What we've come to understand is that the workforce likes to be involved and they want to see a leadership that's actually present to really understand what's going on in the operation," he said. "In my experience, I've found that when leadership truly has its finger on the pulse, they can better address the realities of the workplace – these were by far the best-performing operations."
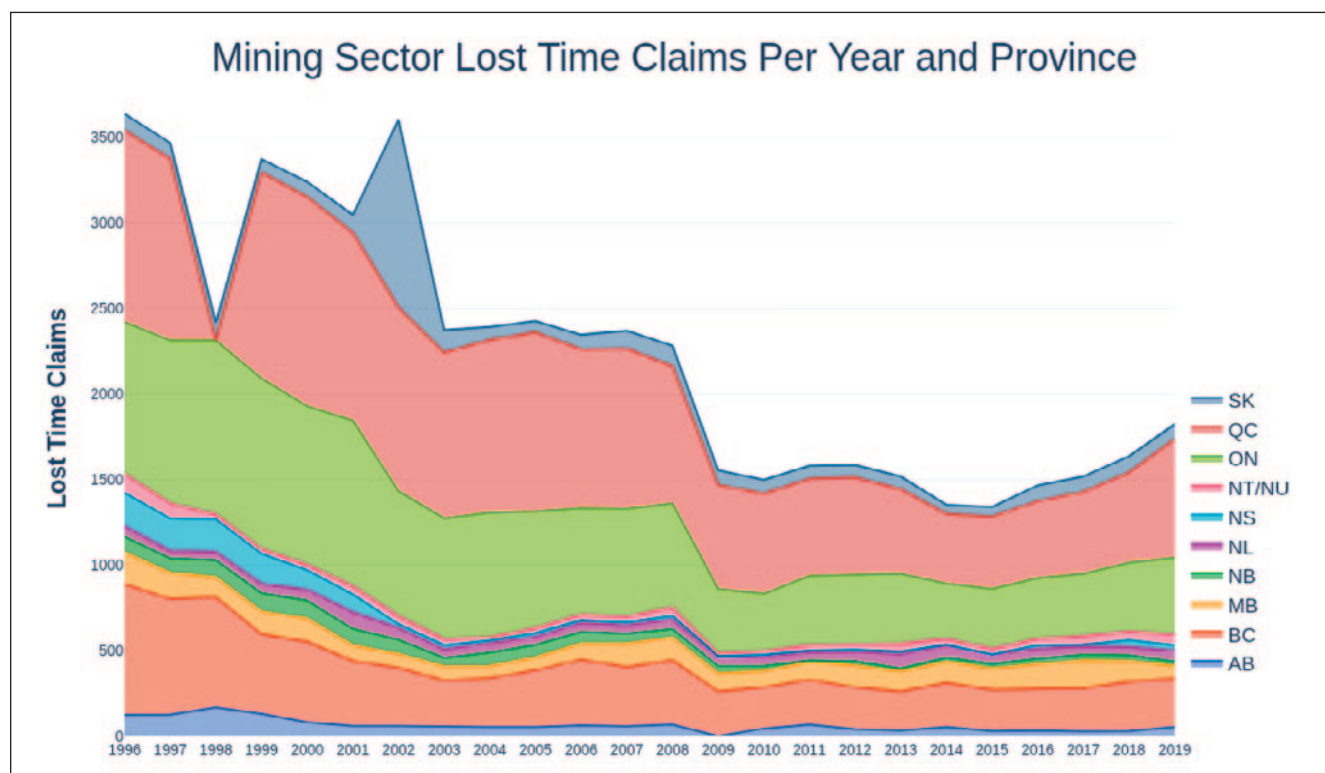
At Great Panther Mining, a gold and silver producer with assets in Mexico, Brazil and Peru, addressing culture issues has meant not only filling communication gaps between leadership and field workers but also customizing safety messages to fit different workplace cultures in the field. The company's chief operating officer Fernando Cornejo said that to promote change that will improve safety behaviour, the leadership team needs to understand the cultural idiosyncrasies of the country and adapt the messaging accordingly. "In our case, the Brazilian culture is very different from the Mexican, so getting [workers] to really understand what we're trying to push in safety will change depending on the country," he said. For example, in Mexico the goal is to empower employees to speak up if they see conditions they deem unsafe, while in Brazil where employees are more outspoken, the aim is to align that energy towards risk assessment using safety tools.
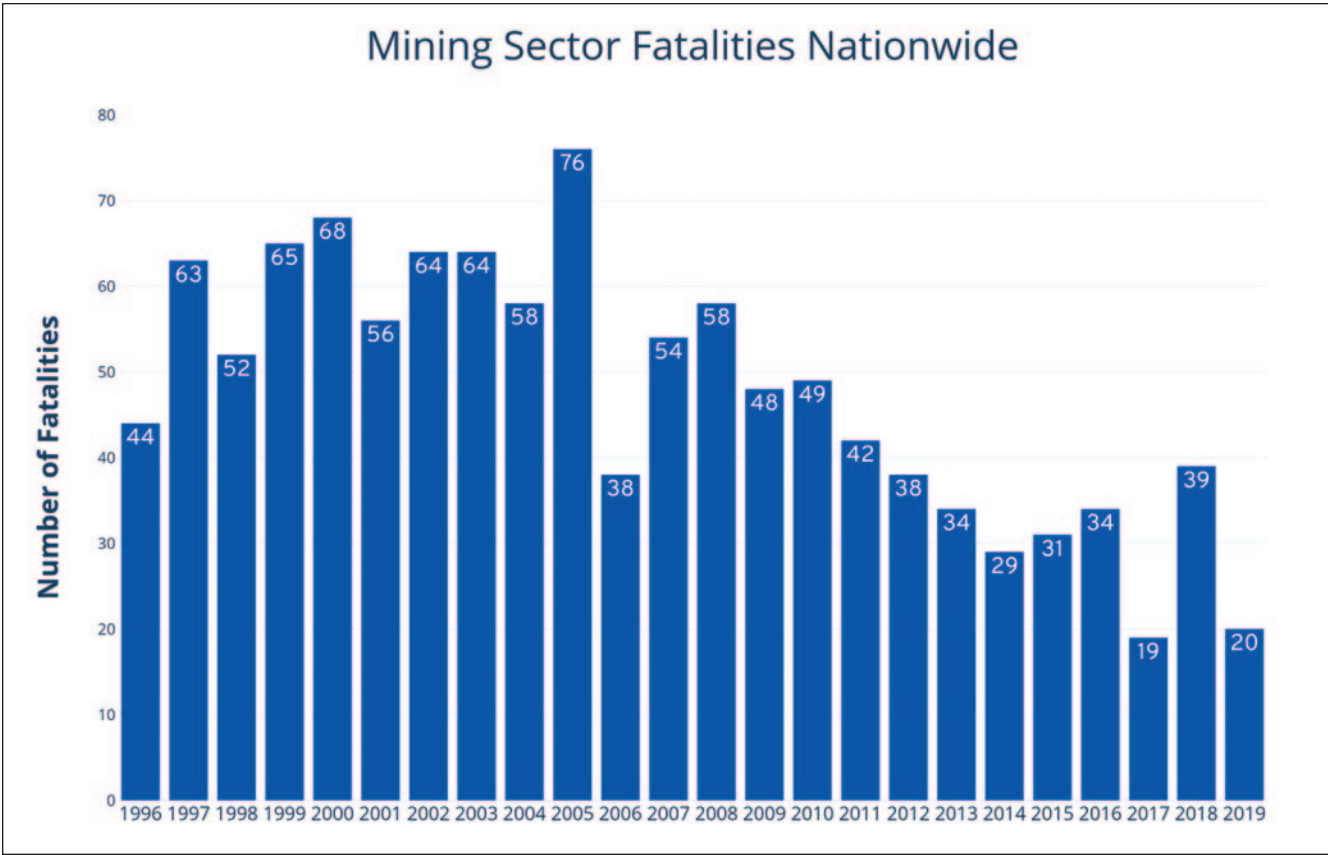
In 2020, Great Panther launched a safety Olympics program in Brazil (that will be expanded to its other operations), which awards points for the use of safety tools and rewards those groups that score highest. The best-scoring group wins a cash incentive that can be invested in its own workplace and site as the workers see fit. The company also encourages each of its mines to nominate three candidates for its annual Kenneth W. Major Award for Safety Excellence. (Major was director of the company and a safety advocate who passed away in 2018.)

"I think part of the evolution of leaders in the mining industry is to recognize that you cannot punish but [should rather] reward people and provide incentives, so this is something they will want to do," said Cornejo. "Being recognized has a powerful effect on employees."

Developing an atmosphere where workers in the field respect each other is another powerful element in building a safety culture. Director of exploration at Treasury Metals, Maura Kolb, has been leading exploration teams for the last 10 years. "If you think about the people you're working with,

Mining Sector Lost Time Claims Per Year and Province

Courtesy of the Association of Workers' Compensation Boards of Canada

Mining Sector Fatalities Nationwide

Number of Fatalities

Year	Fatalities
1996	44
1997	63
1998	52
1999	65
2000	68
2001	56
2002	64
2003	64
2004	58
2005	76
2006	38
2007	54
2008	58
2009	48
2010	49
2011	42
2012	38
2013	34
2014	29
2015	31
2016	34
2017	19
2018	39
2019	20

respect them and watch out for each other, that level of care goes a long way and the internal response system works well," she said. "We've stopped to really think about why we care about safety instead of making it a tick box to check off."

In her current role, Kolb and her team of 14 have developed strategies that are working well when it comes to allaying mistakes that can lead to injuries in fieldwork currently underway in northwestern Ontario. Planning task flow and conducting daily morning lineups, for example, ensures all team members have a clear idea of what needs to be done every time they go out into the field. "I try to make sure I'm in the morning huddle, too, and in the field on-site checking in," she said. "Injuries happen when we get busy and sloppy and constant communication really helps us from getting there."

Finding proactive ways to prevent field risks is always on the company's radar too. With forest fires this summer happening near exploration sites, her group initiated a meeting with the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry. "We actually had ministry [staff] coming to the site to do a [one-time] review of practices we've put in place with our drilling contractors to mitigate the risk of starting a fire in a drill move," she said.

Kolb explained that getting a new set of eyes into the field every once and a while can be beneficial in spotting potential risks the regular crew is missing. In turn, going to inspect other workplaces herself helps her to recognize if there are risk areas in her own site that the team may have become complacent about.

The ultimate safety atmosphere is about each employee owning their own safety and that of their field partners. "So, it doesn't have to be the manager that suggests a change, it could be anyone," she said. "We're all equal partners on the safety field and that's the overall culture we should have in our industry."

Eliminating "risk secrecy"

To make mining safer overall, the industry needs to reduce the focus on performance numbers and eliminate the emphasis on zero-lost-time entirely, believes Pitzer. "You can be at zero and catastrophic events [can still be] only a few seconds away," he said.

In fact, in working with some of the industry's leaders whose lost-time-injury rate performance numbers were stellar, he found growing levels of "risk secrecy" working their way into companies' attitudes about safety. "People become increasingly reluctant to upset the applecart when a company is doing well and this puts extensive pressure on employees, especially those in the front-line," he said. "We've found enormous fatal risks sitting there with people not wanting to talk about them because of apprehension in sending back bad news."

Instead, by defining "safe" as a readiness to respond to risk, Pitzer said companies can develop a culture that will ultimately protect employees. This means finding the right balance of safety strategies, risk discovery, risk analysis and risk control. As part of that, he said supervisors at the operational level should be trained to "entice and invite people to speak up" about concerns. "The onus is not just to comply to rules, but for employees to understand they have an obligation to stop work that is unsafe for them to do." **CIM**

Mike Parent and Corrie Pitzer were speakers at CIMVTL21. Their presentations (and others from the conference) can be accessed on the CIM Academy website: https://academy.cim.org.

To read the Mining Health and Safety Risk Assessments and the Root Cause Analyses that originated from the 2014 review, see the Worplace Safety North website: https://www.workplacesafetynorth.ca/industries/mining.