

MINING

MINING REVIEW

UNEARTHED

WHOLE NEW WAY OF APPROACHING

WORKER SAFETY

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THE CONCEPT OF JOINT “OWNERSHIP” FOR RISK AVOIDANCE IN ONTARIO’S MINING SECTOR HAS BECOME THE STANDARD FOR WORKPLACE HEALTH AND SAFETY ACROSS THE BOARD.

In January of this year, the Ontario labour ministry announced the formation of a mining safety review dedicated to improving the health and well-being of workers in this vital sector of the provincial economy.

Acting under the auspices of the Ontario Prevention Office and its chief officer, George Gritziotis, the review has six major focus areas, ranging from emergency response and mine rescue to the management of change as a result of new technology in the mining industry.

Another key issue for the safety review, however, is an examination of the state of the Internal Responsibility System (IRS), a foundational element of Ontario’s far-reaching *Occupational Health and Safety Act* (OHSA).

Ontario engineers might take more than a little pride in the IRS and its impact on safety in the mining sector—and, in fact, all workplaces. For it was an engineer, the late James Ham, ScD, P.Eng., who conceptualized the system and recommended that it be made a key part of Ontario’s health and safety legislation.

In the mid-1970s, Ham was asked by the provincial government to review health and safety conditions in Ontario’s mines, and to make recommendations to protect workers better. The review was prompted by an increase in fatalities and

occupation-related disease, such as lung cancer and silicosis, among Ontario’s miners.

Although the subsequent *Report of the Royal Commission on the Health and Safety of Workers in Mines* resulted in a host of legislative and administrative changes to the province’s occupational health regime, it was the IRS that is regarded as its seminal accomplishment.

In interviews with *Engineering Dimensions*, Bob Barclay, P.Eng., provincial coordinator of the Ministry of Labour’s (MOL) mining health and safety program, said that, in addition to the IRS, Ham’s report led to a reorganization of mining safety oversight in Ontario. “Prior to Ham’s review, the health and safety regulations resided under the *Mining Act*, which was under the Ministry of Natural Resources [and Forestry]. There was also some involvement of the Ministry of Health [and Long-Term Care],” Barclay said. “What happened as a result of Ham’s work [was that] all of that became integrated into the OHSA, or came under the auspices of the OHSA.”

Barclay says as the cornerstone of current health and safety legislation, the IRS and workplace safety programs are a logical part of the current mine safety review. “It is widely accepted that the IRS is fundamentally important to workplace health and safety, not just in the mining sector, but in all workplaces generally,” he noted.

CHANCE FOR POLICY DEVELOPMENT

For professional engineers concerned about their profession’s lack of status among the senior, self-regulated professions, the IRS and related developments in safety legislation can be viewed as a ringing endorsement of engineering’s beneficence in the policy-making realm.

Since the IRS was introduced in Ontario, it has spread to other jurisdictions as a model of workplace safety and the engagement of workers in promoting and maintaining a safety culture. It is a tribute to engineer Ham that the IRS, in effect, gave workers the “right to participate” in matters involving health and safety in the workplace—so much so, in fact, that under Ontario’s labour laws, workers can refuse to work if they believe unsafe conditions exist. At the time, some industry leaders felt the right to refuse would make adversaries of management and labour, resulting in disruption and chaos. Instead, the system is credited with encouraging positive collaboration among employers, management and workers in identifying risk and maintaining a safety mindset.

The Ham report also set the stage for the introduction of the OHSA on October 1, 1979. It has since been augmented with additional regulations, including the mandating of joint health and safety committees in all Ontario workplaces of 20 employees or more.

However, the Ham report offers more than just IRS and workplace safety lessons. It provides a glimpse into how the engineering profes-



James Ham, ScD, P.Eng. (left), whose review of safety in the Ontario mining industry led to the development of the province's *Occupational Health and Safety Act*, participates in a mock demolition ceremony with R.F. Moore in this 1966 photo. Photo: University of Toronto archives

sion, in conjunction with workers and other stakeholders, can take policy- and regulation-making in a more positive direction.

In addition to the Ham report, two other mining safety studies have resulted in further improvements—and have underscored the vital link between engineering and safer workplaces.

The Burkett report of 1981, which came in response to miner fatalities in 1980, reaffirmed the importance of the joint management-union approach to workplace safety, beginning at the senior executive level.

Half a decade later, the Stevenson report of 1986 made an additional 60 recommendations, ranging from mine design to emergency response procedures. It was prompted by four miner fatalities in June 1984, due to underground seismic activity, more commonly known as rock bursts.

The Stevenson report's key recommendation was to establish research chairs in the area of rock stability and rock mechanics at three Ontario universities. Two of the three research chairs were filled by professional engineers—Peter Kaiser, PhD, P.Eng., at Laurentian University in Sudbury, and William Bawden, PhD, P.Eng., at Queen's University in Kingston.

Kaiser is the original appointee to Laurentian's rock mechanics research chair. The past president of the Centre for Excellence in Mining Innovation (CEMI), Kaiser is in a unique position to assess how the engineering profession contributes to safer mining operations by developing protective equipment and designing and administering workplace safety systems.

Kaiser, who in July returned to his position as Laurentian's chair for rock mechanics and ground control, says it's no accident mining safety has advanced to its current, highly regarded state.

"My sense is that, today, we're actually in a situation where the mining companies are becoming more aggressive in creating safe workplaces than just through regulations," Kaiser told *Engineering Dimensions*.

"Regulations are important and they are continually being updated, basically in response to some negative event, but I think the industry has realized for quite a while that fatalities and accidents at the workplace are simply not acceptable, and many companies today have zero tolerance policies. I've taken the view that everything has to be done to minimize accidents and I think if someone does a review of accidents today, they would find there are a lot of errors in judgment and things that are very difficult to regulate."

Nonetheless, he believes the profession, in conjunction with workers' associations, the labour ministry and mine operators, has helped to improve the safety record of the mining industry as it looks to attract more practitioners and take advantage of new projects, such as the much-publicized Ring of Fire development (see "Ring of Fire puts spotlight on northern Ontario's mining industry," p. 38).

Bill Shaver, P.Eng., president and CEO of DMC Mining Services in Vaughan, north of Toronto, is an industry player interested in workplace health and safety.

DMC Mining, in fact, prides itself on safety and protection of workers as a competitive advantage over other operators. The company's vision and value statement says it is "committed to achieving zero harm to health, safety and the environment."

A self-described third generation miner, Shaver, since 2010, has headed Workplace Safety North (WSN), an association of three organizations that

oversee safety issues in the mining, forestry and pulp and paper industries. Previously, Shaver headed the Mines and Aggregates Safety and Health Association, one of the bodies rolled into the newer WSN.

Shaver suggests engineering contributions to safer operations of Ontario mines have been made hand-in-hand with the industry itself, which has long embraced the safety mantra.

“Fatalities and serious injuries in mining always wind up on the front pages of the newspapers,” he says, “so it’s natural for the industry to demonstrate its commitment to safer operations and to be on the lookout for continuous improvement in this area.”

NO ROOM FOR COMPLACENCY

Shaver says engineering ethics require that the profession never become complacent in seeking out new risks and unsafe behaviour.

In outlining the overall impact of engineering on Ontario’s mine safety regime, the labour ministry’s Barclay can point to several examples, including that engineers, whether ministry employees or industry advisors, are well represented in the current and ongoing safety review. To date, the review has established working groups to flesh out the priority areas (health system capacity, the IRS, hazards, management of new technology, safety awareness training and emergency response), with engineers taking part in many of them.

“There have been, historically, engineers serving on the Mining Legislative Review Committee as well as the subcommittees that operate under the auspices of that committee,” Barclay adds. “And apart from the current safety review, the labour ministry relies heavily on its Mining Legislative Review Committee. There is very considerable engineering involvement in mining health and safety in Ontario.”

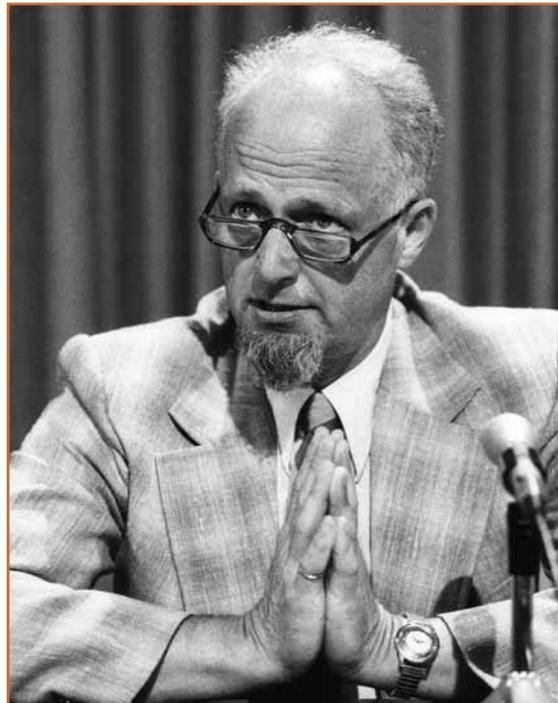
Vic Pakalnis, P.Eng., president and CEO of the Sudbury-based Mining Innovation Rehabilitation and Applied Research Corporation, says the IRS and the current review of the mining sector are good examples of how the engineering profession has taken a leading position in health and safety matters, by developing both technical and administrative solutions.

Pakalnis is chairing the review’s working group on technology and change management, one of its six focus areas.

“Technology in itself has been recognized as reducing death and injury,” Pakalnis told *Engineering Dimensions*. “The accident rates 30 years ago were much higher than today, but the advent of technology, remote-control scooptrams and other forms of automation, have led to safer conditions generally. But we recognize that technology can also have some downside to it, so we’re looking at what risk-assessment processes are in place and which ones we might want to promote in terms of best practices.”

According to the labour ministry, the current mining health and safety review will run throughout 2014, with completion in early 2015. The ministry hopes to implement many of the report’s recommendations as soon as possible.

And while it’s expected the review will make an evolving mining safety culture stronger, a stark note on the MOL website reminds anyone reading it why those involved in the industry keep looking for ways to



James Ham in 1976, announcing the release of his groundbreaking *Report of the Royal Commission on the Health and Safety of Workers in Mines*. The report set the stage for the Internal Responsibility System (IRS), which improved workplace safety not just in mining, but across all industries. Photo: University of Toronto archives

make it more safe: Since 2000, five workers have been killed in Ontario mines as a result of rock bursts. During the past three years, nine workers died and 81 workers were critically injured in underground and surface mines. So despite the improvements in safety and the evolution of safety systems, most notably the IRS, engineers can’t afford to rest on past laurels in the mining sector. Σ