

Starting point

The mining industry is experiencing major problems in meeting its growing need for human resources. The current growth surge in the industry coupled with many worker retirements are resulting in a massive influx of a variety of inexperienced workers. At the request of the Association paritaire pour la santé et la sécurité du secteur minier (a joint occupational health and safety association in the mining industry), a research team conducted an exploratory study to document how these new workers are integrated by producing a statistical assessment of injuries in this industry and a picture of the risks associated with the work activities, and by carrying out a case study on new worker orientation and training.

Research team

Sylvie Ouellet, Élise Ledoux and Esther Cloutier, of the IRSST; Pierre-Sébastien Fournier, of Université Laval.

Results

The exploratory study provided a statistical overview of accidents and injuries in the mining industry and a preliminary assessment of the main risks associated with new worker integration. The field study revealed that the orientation process, working conditions and transfer of job knowledge and skills are key components in their safe integration. However, the sharing of knowledge by experienced workers with new workers essentially depends on supervisors' good will and communication skills. A research protocol was proposed to continue observation on a larger scale and to define ways of better integrating new workers.

Users

Individuals responsible for human resources, orientation, training, and occupational health and safety in mining companies.

Mining industry Harmonizing new worker integration with OHS

DUE TO A WORK SHORTAGE, many workers in the natural resources sector are having to change vocation. By contrast, Quebec's mining sector is booming. The many projects under development and the start-up of new mines are responsible for a major increase in the number of jobs to be filled. This reality, coupled with the numerous retirements of experienced workers, poses a sizeable challenge from both the recruitment and occupational health and safety standpoints.

»»» Jean Drolet, executive director of the Association paritaire pour la santé et la sécurité du secteur minier (ASPM), explains: "Mines are located in remote regions where there is a smaller pool of workers than in large cities. The size of the labour force is also declining in mining regions. On the North Shore, they're already talking about a drop of 12%. In Abitibi-Témiscamingue, the decline began this year. Another factor is that, on average, mine workers are older than workers in other industries. For example, in 2006, 41% of the Quebec labour force was over 45 years of age compared to a percentage of 49% among mine workers." The mining industry is therefore recruiting and hiring people from very diverse backgrounds, including workers from other industries, young people, women, indigenous people, and immigrants.

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To gain a better understanding of the conditions under which this new, diversified and inexperienced workforce is integrated, and of the issues raised by their integration, a team of researchers co-directed by Sylvie Ouellet and Élise Ledoux of the IRSST and Pierre-Sébastien Fournier of Université Laval, visited two mines, one open-pit and the other underground. Sylvie Ouellet explains: "The integration of new workers is a relatively recent concern in the industry. You feel that there's a sense of urgency to act before the job knowledge and skills are lost in the shuffle as experienced workers retire. In some cases, the workers who train new arrivals have only one year of experience themselves.

The job risks

The underground work environment presents obstacles, while the nature of the activities poses its share of hazards, even if in Quebec great progress has been made in terms of controlling risks.

Mines in numbers

From 2000 to 2002, mines and mining departments combined headed the groups posting the highest rates of compensated occupational injury, with a frequency of 41.8 accidents for every 1,000 workers. Breaking down these numbers by victim age, we see that workers aged 18 to 24 are especially vulnerable. Fortunately, the picture of occupational health and safety in Quebec mines is improving. The figures recently revealed by the Québec Mining Association indicated a 76% reduction in accidents over the past 20 years.



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Workers are exposed to dust, vibrations, and noise in a damp environment. There's also the added danger of falling rocks and the awkward work postures required. In an Ontario study, heavy machinery operators reported a lack of visibility associated with certain features of this equipment.

Earlier studies have shown that experienced workers acquire job knowledge over time, that is, tricks of the trade and strategies for handling work demands more effectively and thus reducing the risk of accidents. Jean Drolet summarizes as follows: "From a prevention perspective, it's essential to ensure that best practices are passed on to new workers right from start." The research team identified three factors affecting the safe integration of new workers in the mining industry: the orientation process, working conditions, and transfer of job knowledge. "One frequently used method is the mentoring of new workers by experienced workers. We have observed that the success of this practice depends on the conditions under which the knowledge transfer takes place." By way of example, the researcher cited the number of tasks the new worker has to learn and the time available to so, particularly in view of production demands. Recognition of the mentor role and of experienced workers, who are not formally designated as such, is equally important, and the work pace and tempo must allow for dialogue between new and experienced workers. If experienced miners have to maintain their usual production quota in addition to coaching new workers, then they face added pressure. "We also observed that it's not always easy for experienced workers to verbalize all that they know, because often their knowledge has

become unconscious," explains Ms. Ouellet. Once this knowledge has been identified, it's important to keep a record of it so that it can be passed on. The exploratory study already helped identify some factors that can more or less facilitate the safe integration of new workers. Furthermore, in this industry, the various actors have long since developed habits for managing preventive measures. The high level of risk characterizing the industry promotes joint action. For his part, Mr. Drolet has witnessed several successful initiatives, such as the implementation of the modular training program in 1995 and of a "zero tolerance" policy to improve miner safety. "The management of these issues by OHS committees is also an important factor," he specifies. These are important steps forward, and prevention remains the best way to preserve this experiential knowledge.

An in-depth analysis of integration conditions in other companies currently in progress will improve our understanding of the impact various factors have in this regard. The IRSST team is now conducting a study in five mining companies to document the new worker integration process and to analyze the work performed by some of the actors involved, particularly in mentoring situations. "The ultimate aim is to identify better ways of integrating new workers

Modular training program: OHS 101

Quebec's *Regulation respecting occupational health and safety in mines* obliges anyone working underground to take the modular training program for mine workers. Given by the Commission scolaire de l'Or-et-des-Bois, this program is designed to give mine workers a background in occupational health and safety. Some of the aspects covered include general instructions, secondary scaling, scaffolding, ground consolidation and drilling.

and provide companies with tools they can use to develop their own reference points in order to put in place conditions conducive to safe integration." <<

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To learn more

OUELLET, Sylvie, ÉLISE LEDOUX, Esther CLOUTIER, Pierre-Sébastien FOURNIER. *Conditions d'intégration des nouveaux travailleurs dans le secteur minier : une étude exploratoire*, Report R-650, 38 pages (in French only).
Free download:
www.irsst.qc.ca/media/documents/PubIRSSST/R-650.pdf

CLOUTIER, Esther, Solange LEFEBVRE, ÉLISE LEDOUX, Céline CHATIGNY, Yves ST-JACQUES. *Enjeux de santé et de sécurité au travail dans la transmission des savoirs professionnels : le cas des usiniers et des cuisiniers*, Report R-316, 217 pages (in French only).
Free download:
www.irsst.qc.ca/media/documents/PubIRSSST/R-316.pdf

OUELLET, Sylvie, Nicole VÉZINA. « *Savoirs professionnels et prévention des TMS : portrait de leur transmission durant la formation et perspectives d'intervention* », PISTES : Perspectives interdisciplinaires sur le travail et la santé, Volume 11, Number 2, 37 pages (in French only).
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