

Improving Safety and Health in mines: A Long and Winding Road?

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I Introduction

Occupational safety and health (OSH) in mining continue to improve, but much remains to be done. The significant decreases in the serious injury rate in mines that have been achieved in many countries are due to changes in the nature of work and as a result of sustained improvements in achieving a safer and healthier workplace. But the evolving nature of work is generating new occupational hazards that must be dealt with — musculo-skeletal problems, stress and mental problems, asthmatic and other allergic reactions, and problems caused by exposure to hazardous agents.

An important starting point in improving OSH standards in mining is the rejection of the notion that it is inherently dangerous and work-related diseases and a certain number of mine accidents are therefore inevitable.

The ILO has been actively involved in labour and social aspects of mining for over 70 years. A watershed in the international treatment of mine OSH was reached in June 1995 with the adoption of the ILO's Safety and Health in Mines Convention. This international standard is important — because the special hazards faced by mineworkers are now dealt with in a specific instrument; and because the increasing importance of the mining industry in many countries is emphasizing the need to improve health and safety. Moreover, the Convention has set the principle for national action on, and international monitoring of, the improvement of working conditions in the mining industry.

Seventeen countries¹ have ratified the Convention, which came into force in 1998. Several others are working towards ratification.

A widely ratified and fully implemented Convention will make a major contribution to achieving significant and lasting improvements in OSH in the mining industry. The ILO is ready to assist wherever it can. For example, we have held workshops in several countries to explain the Convention and promote its ratification. But even before the Convention is ratified, its provisions can be included in regulations or in collective agreements. If this is the case, we would urge that the path towards ratification continues to be followed. But having a Convention, codes of practice, legislation and regulations does not guarantee better OSH standards. There is a need for sustained action and vigilance if conditions that lead to tens of thousands of mineworkers being killed or injured, let alone getting sick, every year are to be changed.

Several questions need to be answered throughout the mining industry — including by governments, employers and workers' organizations — if improvements in OSH are to be sustained. What can be done? Who should do it? What is being done elsewhere that might be relevant? What changes to legislation might be necessary? What will be the role of the regulator as the regulations and the mining industry change? How will any changes affect the duty and liability of the employer and of workers? What emphasis should there be on

¹ As at June 2001 the following governments have ratified the Convention: Armenia, Austria, Botswana, Czech Republic, Finland, Germany, Ireland, Lebanon, Norway, Philippines, Poland, Slovakia, South Africa, Spain Sweden, United States, Zambia.

human rather than technical factors? On occupational health and surveillance? On risk assessment? On social dialogue? On training? The following elements are crucial to achieving lasting improvements in OSH performance in mining in the coming years.

2 Technical change

Greater mechanization, automation and larger concentrations of energy in plant and equipment have resulted in a move away from individual miners to closely-coupled, tightly-paced processes, involving teams.

More aspects of production are being contracted out, changing the employment relationship and, sometimes, making responsibility less clear-cut. The rationalization of mining activities in many countries has resulted in a high turnover of mineworkers, particularly affecting older, more experienced workers. This has led to a loss of institutional memory.

More intensive working, including extended shifts, has become a prerequisite for economic survival. The ILO will hold a tripartite meeting in October 2002 to discuss the evolution of working time, employment and training in the mining industry.

Information technology is creating new opportunities for exchanging information, creating data bases, analysing practices and procedures, and identifying where efforts should be focused. Virtual reality is becoming a powerful training tool that enables realistic scenarios to be repeatedly examined and mastered. New technology has had a positive impact on the number and severity of mining accidents and diseases. But the effects have not been uniform. Some new technologies have been accompanied by new or intensified hazards — such as dust, noise, vibration, ergonomics-related problems, and electric current.

3 Health as well as safety

Workers' health has often received less attention than their safety; regular health surveillance of mineworkers is regrettably not universal. In small-scale mines it is non-existent. There is little awareness of the enormous cost of occupational health to much of the mining industry and to the general public. Moreover, occupational diseases are becoming more pervasive. Noise, vibration, heat and humidity affect the ability to work efficiently. They can also affect safety and be major causes of sickness or disease. A recent ILO code of practice on ambient factors at the workplace provides guidance on the roles and obligations of all who are involved in dealing with them.² VDU use is an issue too. Stress-related illnesses are being increasingly recognized as valid for compensation if they are proved to be work-induced. More and longer work-shifts might have implications for both occupational health and family life.³

² ILO: *Code of practice on ambient factors at the workplace* (Geneva), 2001.

³ Heiler, K.; Pickersgill, R.; Briggs, C.: *Working time arrangements in the Australian mining industry: Trends and implications with particular reference to occupational health and safety*, Sectoral Activities Programme Working Paper, WP.162 (Geneva, ILO), 2000 (<http://www.ilo.org/public/english/dialogue/sector/papers/austrmin/index.htm>).

The impact of HIV/AIDS on the mining industry in some countries is extremely serious, cutting the supply of labour and slashing income for many workers. Increased absenteeism raises labour costs for employers. As illness forces workers to leave their jobs, valuable skills and experience are lost, often leading to a mismatch between human resources and labour requirements. In June 2001 the ILO adopted a Code of Practice on HIV/AIDS and the World of Work.⁴ The fundamental aim of the Code is to help safeguard conditions of decent work and protect the rights and dignity workers living with HIV/AIDS. The Code provides practical guidance to governments, employers and workers' organizations for developing national and workplace HIV/AIDS policies and programmes.

Three key areas of occupational health — testing, diagnosis and control — are being approached differently in different countries. An approach that is fair to all is necessary; one that is practical, cost-effective and sustainable. And one that is philosophically, legally and morally acceptable, and is effective in reducing exposure and mitigating the effects.

There is a shortage of trained occupational health professionals in much of the mining industry, particularly in developing and transition countries. Even those that are available sometimes have problems in applying their knowledge. Getting access to current occupational health information is still a problem in many areas, but there is growing international cooperation. One example is the ILO/WHO International Programme on the Global Elimination of Silicosis.

The importance of managing health risks has often been understated. Ill health costs money, big money, over many years. So there are plenty of economic, let alone humanitarian, incentives to improve standards now, so that improvements in both health and safety in mines can proceed in step. New ILO guidelines on occupational safety and health management systems provide practical recommendations for use in achieving continual improvements in OSH performance.⁵

4 Legislation and the role of the regulator

Legislation should provide an effective framework of standards and direction. And the regulatory authority charged with administering that legislation needs to do so in a professional, constructive and consistent manner. Prescriptive regulations are being reduced. New regulations are highlighting the responsibility and liability of mine managers, and make it a requirement that they manage health and safety and provide a safe place to work.

Enforcement should not be an end in itself; it must be matched by a continuing decline in preventable harm to miners. The long-term goal should be to ensure that, without exception, an individual can devote a lifetime to a mining career and emerge healthy and unharmed. If the power of the inspectorate is to be sensibly deployed and effective, the quality of staff must be high, and no compromises made. Regulators will continue to need a high level of technical and professional expertise. But they will also need to be well

⁴ *An ILO code of practice on HIV/AIDS and the world of work* (Geneva, ILO), 2001 (<http://www.ilo.org/public/english/protection/trav/aids/index.htm>).

⁵ ILO: *Guidelines on occupational safety and health management systems* (Geneva), 2001.

equipped to deal with the increasingly important human and organizational factors of mining. This is highlighted by the increase in foreign-owned mining companies bringing new methods and approaches into mining operations in many countries.

5 Convention 176

Governments which ratify this Convention⁶ undertake to adopt legislation for its implementation, including the provision for inspection services and the designation of the competent authority to monitor and regulate the various aspects of OSH in mines. The Convention also sets out procedures for reporting and investigating disasters, accidents and dangerous occurrences related to mines, and for the compilation of the relevant statistics. Both workers' and employers' rights and responsibilities are set out.

It is important to note that the Convention provides a floor — the minimum safety requirement against which all changes to mine operations should be measured. The Recommendation⁷ — which is advisory — provides more specific guidance on the different sections of the Convention. More specific still are some of the ILO codes of practice for mining and for topics relevant to mining.⁸

6 The all important human factors

The past focus on engineering and technical developments as the means to improve occupational health and safety in mining was very successful. But this approach is providing diminishing returns in many countries. There is therefore a need to provide everyone with a better understanding of the different categories of human behaviour and performance-shaping factors that lie behind them. Without such an understanding people will still be blamed for things they could not have done otherwise, and preventive measures will continue to be misdirected.

The development of a safety culture is part of the behavioural approach to improving OSH. Some mining companies have safety “core beliefs” — internal standards — that have been developed and agreed through social dialogue. They form part of the contract of employment and influence behaviour from top to bottom of an enterprise. The achievement of a safety culture in mining needs a genuine and visible commitment, and leadership from the top, with health and safety being a line management responsibility. There should be an acceptance that improving health and safety performance is a long-term goal that requires sustained effort, resources and commitment.

⁶ The text of the Convention is at:

<http://ilolex.ilo.ch:1567/scripts/convde.pl?query=C176&query0=176>.

⁷ The Recommendation is at: <http://ilolex.ilo.ch:1567/scripts/convde.pl?query=R183&query1=183>.

⁸ ILO: *Safety and health in opencast mines* (Geneva), 1991.

7 Risk management & risk assessment

Since human behaviour holds the key to further improvements in OSH and to the implementation of standards, greater effort will need to be directed towards promoting an understanding of risk assessment, risk management and safety audits that are specifically based on the behavioural contribution to accidents. The purpose of introducing risk management is to improve health and safety. The challenge is how to introduce it in a well thought-out, structured way that is understood and practised by all, and is seen to be beneficial. The increasing practice of using accredited third party auditors can facilitate analysis and provide a sound basis for improved behaviour and performance. They must work to standards too.

8 Education and training

The examination of the ability of the workforce to behave safely must be an integral part of risk assessment and other safety management tools such as audits. There is no point in advocating the importance of safety behaviour if it is not feasible to behave safely.

Education and training are the foundations for enabling improvement in OSH. Sound basic education for work, certified induction and refresher training, and certified company-specific training as part of lifelong learning, are crucial for the implementation of effective health and safety hazard prevention programmes. These must be supplemented by specific seminars and refresher training and improvement programmes — for trainers and for managers supervisors and workers.

There is a clear link between poor or inadequate education and training and poor OSH performance. Competency-based training has facilitated the introduction of OSH competencies into various industry competency standards. This has proved to be a fresh approach to certification that is linked to career progression.

9 Small-scale mines

OSH are important issues for the world's 13 million or so small-scale miners. OSH is no less important for their communities since up to 100 million people depend on small-scale mining for their livelihood. Many of those involved are women and children. Progress in dealing with diseases and accidents affecting small-scale miners will require better data. This will mean having a simple form for reporting accidents and disease, and the removal of any stigma that is attached to reporting. OSH regulations may need to be revised to ensure that the special requirements of small-scale mines are covered. Also, mines inspectorates will need to be strengthened if they are to oversee OSH and provide the extension services that are essential if small-scale miners are to be convinced that they can be more open about OSH to their ultimate advantage. Some African ministries of mines have been to the forefront in setting up small-scale mining units, but many lack resources.

Both mineworkers and owners/concession-holders must be helped to realize that accident prevention and improved occupational health are worth obtaining and keeping. Fortunately,

there are several examples of the self-interest of small-scale miners being used to good effect to improve OSH.

In view of the individual and competitive nature of much small-scale mining, the long hours and the arduous work the impetus for OSH improvement is likely to have to be external — from government, a large mine nearby, mining trade unions, NGOs or IGOs — and involve all at each site and, preferably, the local community.

Education, training, demonstration and surveillance are the key elements of any programme to improve OSH in small-scale mining. But this is well known. What is required are the will and resources to undertake a sustained programme that will provide sufficient incentive for those concerned to want it to continue. Attempting to improve OSH without appealing to the self-interest of those most directly involved is likely to prove fruitless.

The ILO has just published an illustrated handbook on safety and health in small-scale surface mines⁹ which we hope will provide practical guidance both to the many people who turn to small-scale mining without any formal training, and to those whose task it is to regulate these mines and the miners.

10 Conclusions

As OSH regulations become less prescriptive and more emphasis is put on the human factors that affect safety and health performance, a key objective will be to instil a strong safety culture in all aspects of mining. An improved safety culture is partly a question of resources and technology. But, above all, it requires better information, better management and higher ethical standards in confronting the ever present, ever evolving changes at the workplace.

Different strategies will be needed to meet different circumstances and degrees of economic and technological development. But the final goal must not be compromised. Because the types of issues that predispose unsafe behaviour, and their relative importance, will vary from mine to mine, there is no single solution to the promotion of safe behaviour. The main strategies involve: compelling; facilitating; rewarding; training; informing; and participating.

Careful data collection and analysis will enable risks to be identified and managed and information shared both nationally and internationally. The fostering of closer ties between all concerned, leading to meaningful social dialogue, will pave the way to break through the ceiling that has stalled improvements in health and safety in many mining operations, and led to it getting worse in others.

⁹ Manfred Walle & Norman Jennings: *Safety and health in small-scale surface mines: A handbook*, Sectoral Activities Programme Working Paper, WP.168 (Geneva, ILO), 2001.

In discharging their responsibilities, governments should establish a regime for effective reporting on OSH performance in small-scale mining. In doing so, they should place emphasis on investing in the prevention of accidents and disease. A pragmatic approach that yields quick financial gains — through better practices — is the key; not the heavy hand of regulation and penalties.

Finally, safety and health issues must be considered as an integral part of other mainstream social priorities, including conditions of work, employment, training, industrial relations and social security. The pressures on the world of work, be they driven by financial, technological, or environmental factors, or by the social factors of globalization, can only be dealt with by a mix of standards, action and surveillance; achieved through constructive social dialogue.

Bibliography

Jennings, Norman S.: “Standards in mining safety and health: An ILO perspective”, in *African Newsletter on Occupational Health and Safety*, vol. 11, no. 1, Apr. 2001.

— : *Small-scale mining has large-scale safety and health implications*. Paper presented at Minesafe International 2000, Perth, 4-8 Sep. 2000.

— : *Health and safety in mining: Issues for a new millennium*. Paper presented at the Queensland Mining Industry Health & Safety Conference, Townsville, 27-30 Aug. 2000.

— : *Improving safety and health in mines: The role of Convention 176*. Paper presented at the Conference on Safety and Hygiene of Work in the Mining Industries of Central and Eastern European Countries, Katowice, 21-22 Feb. 2000.

ILO: *Social and labour issues in small-scale mines* (Geneva), 1999.