

# **Mine Safety: Law, Regulation and Policy**

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# Introduction

## OHS, Regulation and the Mining Industry

Mining is one of Australia's most important industries, accounting for some 8% of Gross Domestic Product. It is also one of the most dangerous, with a fatality rate over twice the national average (ASCC 2005). Indeed, in Western Australia, over 25% of workplace fatalities occur within the mining industry, despite the fact that the industry employs only about 5% of the current workforce (Ritter 2004, 45; DOCEP 2006, 8, 10). And individual disasters involving multiple fatalities, such as Moura and Gretley, have brought their own heavy toll to individual mining communities.

But the trend for fatal injuries, lost time injuries and compensation claims is encouragingly downward and some impressive gains have been made in recent years (ASCC 2005). For example, in New South Wales the five year average fatal injury frequency rate (FIFR) has improved dramatically. The FIFR (the number of fatalities per million hours worked) for the period 2001/2 to 2005/6 was 0.04, down 78 per cent on the previous five year average of 0.18 (DPI 2006a, 2). At the same time, the Lost Time Injury Frequency Rate, or LTIFR (an imperfect but widely used comparative measure), has also fallen substantially, particularly in the coal mining sector (see Galvin 2005, A252). Other general safety measures such as serious bodily injuries and severity rate similarly show a declining trend with the exception of duration rate (Porter 2004, MCA 2006). The severity rate (the average number of days lost to injury per one million hours worked) in NSW, for example, has progressively decreased from 691 in 1998/99 (MCA 1999, 20) to 388 in 2004/05 (MCA 2006, 26).

The Australian mining and minerals industry as a whole has also demonstrated a declining trend in fatal injury frequency rate (see Galvin 2005, A253), and during the 2002–2004 period the Australian Mining Industry's Lost Time Injury Frequency Rate also showed improvement. Indeed, a PricewaterhouseCoopers study into the global mining industry concluded that Australia had the lowest Fatal Injury Frequency Rate of any of the main mining countries (Xstrata 2005). And this is despite increased production pressures: in Queensland, for example, lost time injuries and lost time injury frequency rates reached record lows in 2004/05, even though the total number of hours worked increased by 10% (NRM 2005c, 3). Overall, in the last two decades there has been "around a 90% reduction in lost-time injuries and fatalities in the Australian minerals industry" (Galvin 2005, A251).

Nevertheless the rate of injuries and fatalities remains substantially higher than that of most other industry sectors. And there remain pockets in which these

downward trends are not so apparent. For example, the Western Australian serious injury frequency rate in the coal and underground metalliferous sectors rose between 1990–2000 and 2003–04. It also appears that the improvement in OHS performance of the industry has slowed or even halted. As one mine regulator put it: "[t]he overall Industry safety performance measure of LTIFR is reducing, however when represented graphically, it is evident that the industry performance has reached a plateau" (DOIR 2004). Galvin (2005, A253), in a more recent analysis, reaches a similar conclusion.

There is widespread agreement that notwithstanding the downward trend in work related injury and disease in the mining and minerals sectors, there remains significant scope for improvement.

### ***The OHS Challenge***

Mining faces many OHS problems. Both high consequence low frequency events (disasters such as Moura and Gretley), as well as the low consequence high frequency events (such as slips, strains and falls) contribute to the industry's high lost time injury rate. The industry also has its share of occupational disease. The risk of contracting pneumoconiosis, for example, (a lung disease caused by the inhalation of mineral dust, which may cause irreversible fibrosis) has historically been important whereas today issues such as noise and vibration are of far greater concern.

Moreover, some sectors present particular problems. The underground coal industry in particular, has an LTIFR that remains well above the coal and all mining average. This is hardly surprising given the enclosed and often confined nature of the underground work environment, the physically arduous nature of the work, and the combination of heavy mobile equipment and plant operation, longwall and drills operation, and difficult terrain. And high levels of methane gas, dust, risk of underground fires, strata control, inrush, explosions, outbursts and pillar collapse can create particular risks in some mines and under some circumstances.

Nevertheless underground coal is hardly alone in confronting major OHS challenges. For example, in the Pilbara region of Western Australia, there were three deaths within a single month in unrelated incidents at sites owned and/or operated by BHP Billiton subsidiaries: BHP Billiton Iron Ore Pty Ltd and Boodarie Iron (Ritter 2004). Deaths also continue to occur in underground metalliferous mines, smelting, exploration and extractives more generally. Indeed, in 2004–05, zero fatalities occurred in the Australian coal mining sector while five occurred in the metalliferous sector, and a further five in the extractive, smelting and refining industries (MCA 2006, 25).

The nature of the OHS challenge confronting the Australian mining industry is itself changing. First, there has been a substantial reduction in conventional employment and an increase in use of contractors (who now comprise approximately a third of the industry) and various forms of non-standard and precarious employment. This trend is due to factors such as the increasing technical sophistication of the industry, the need for specialised expertise and pressures to improve efficiency and to a changed industrial relations environment. This development brings its own increased OHS risks (Quinlan 2004a). For example Quinlan (2004b), from a review of some 180 studies, notes that over 80% found a link between precarious employment and inferior OHS outcomes, likely resulting from increased work intensification and pressures to deliver, the transfer of higher risk activities to contractors and increased disorganisation at the workplace (partly resulting from lower qualifications, less training and reduced worker participation); all in conjunction with weakened regulatory protection.

Second, the profile of the industry is changing. There has been considerable rationalisation, consolidation and globalisation of ownership, resulting in increased vertical and horizontal concentration. A handful of multinational corporations now employ the very large majority of the workforce (NSWMC 2004). Yet, at the same time, there has been a growth in the number of small or very small enterprises operating in the industry. This bifurcation has important OHS consequences.

Large corporations bring considerable OHS expertise to their operations. But the drive for profitability and resource efficiencies and internal competition for budgets also bring their own substantial OHS challenges. Controlling the OHS activities of numerous mines in often remote locations is also a major problem. This is particularly what the New South Wales Mine Safety Review had in mind when it expressed concern about "a disconnect between the intentions of ... the companies, on the one hand, to reduce risk through systems and management plans and, on the other, the reality of risk encountered at the 'coal face'" (Wran & McClelland 2005, 7). In contrast, small and medium sized enterprises (SMEs) are less likely to be aware of complex OHS issues, less likely to understand legislative and management requirements, and less likely to have the skills or the willingness to take action and spend money to resolve outstanding OHS issues. Unsurprisingly, this group is responsible for a disproportionately large share of work-related illness and injury (Blewitt & Shaw 2000, 7–8).

Third, changing work patterns can themselves have important OHS implications. Of these, perhaps the most contentious is the impact of longer work hours — do these result in fatigue that significantly increases the risk of accident on the job? Fly-in fly-out operations, in particular, rely on extended shifts, although these are now also becoming more prevalent in some coal and other mining operations. Trade unions argue that "excessive hours are being worked in one of the most dangerous industries in the country where alertness and performance are critical

to safety" (CFMEU 2005, 39), while employers dispute that current practices have adverse OHS implications. In some jurisdictions (most notably Western Australia), a significant increase in shorter-term employment "has contributed to high levels of turnover both within the industry and of those entering and leaving the industry resulting in a significant decrease in experience and competency at all levels of the workforce" (DOIR 2004, 16). If an increase in numbers of young and/or inexperienced workers is combined with a lack of training and adequate supervision, as well as a push for greater productivity, then existing risks are likely to be exacerbated (CFMEU 2005, 8).

A fourth issue concerns trade unions, which in the mining industry have traditionally acted as an important countervailing force on the power of employers, with health and safety often one of their central concerns. The weakening of trade unions and the substantial increase in non-unionised labour, in conjunction with legislative changes made by the federal government (pursuant to the *Workplace Relations Amendment (Work Choices) Act 2005* (Cth)), may have their own implications for communication, consultation and participation in matters of OHS, as well as for industrial relations more broadly. And relations between trade unions and employers are in any event adversely affected by "a debilitating mistrust between the members of the tripartite process at all levels" (Wran & McClelland 2005, 7).

Trade unions maintain that the problems go deeper than this, although this is disputed by the mining industry itself. For example, during the 2004 New South Wales Mine Safety Review, concerns were expressed that some companies fail to comply with (or consult unions concerning) their own management systems, that the risk management process is vulnerable to manipulation and that "dust reading failures in NSW pits, unplanned movement of machinery, diesel particulate, design flaws and equipment, frictional ignition and inadequate training" are all major and unresolved problems (CFMEU 2005, 6).

Finally, it is increasingly recognised that the nature of the OHS challenge is more complex than was previously thought. There has been a shift from a focus solely on engineering safety and safe design, and on equipment, methods and the immediate physical work environment, to recognising the importance of systemic approaches to safety and a widespread reliance on safety management systems, audits and risk management. Most recently this has extended to a focus on behaviour, culture and leadership, and to recognition that most incidents are the result of a combination of failures at different places and at different times in the organisation (Reason 1997)

### ***Mine safety and the role of law***

Not only have the nature of the OHS challenges changed, but so also has the attitude of substantial parts of the industry towards them. Many (but far from all)

companies have shifted from a position of viewing OHS as a relatively low corporate priority, which rarely gained much attention from senior management, to one where OHS receives considerable emphasis at boardroom level. Many major companies now devote considerable energy and resources to improving their OHS performance, setting themselves ambitious targets such as zero tolerance for work related deaths or injury.

While the reasons for this shift are complex and multifaceted, one crucial influence on the behavior and attitudes of senior management has been the role of law. As former Queensland Resources Council CEO Susan Johnston put it: "one of the most significant improvements in 10 years is the extent to which very senior managers, including chief executives, have realized that health and safety outcomes...are something they are responsible for" (OHS News, 3). Johnston's conclusion is entirely consistent with more firmly grounded empirical evidence from a number of other industry sectors. For example there is very considerable evidence that the single most important driver of improved performance, whether in respect of OHS (Wright 1998) or the closely related area of environment protection (Rappaport & Flaherty 1991; KPMG 1996) is regulation. One relatively recent study of corporate regulation found that "three fifths of our respondent companies were aware of serious punitive consequences being imposed on organisations in their sector and, of these three fifths, over eighty five per cent said this knowledge had impacted on their own punitive risk management 'very strongly' or 'somewhat'" (Baldwin 2004, 373).

Yet, surprisingly, no study has ever given serious consideration to either the role of the existing law in preventing work-related injury and disease in the mining sector, or to the question of how mine safety regulation and policy can and should be improved in its design, implementation and enforcement. This relative neglect of mine safety law, regulation and policy cannot be explained by arguing that generalist accounts of OHS regulation have equal application to the mining industry, because this is manifestly not the case.

On the contrary, as we will see in Chapter 2, mine safety regulation is quite separate from the "mainstream" OHS legislation that applies to almost every other industry sector, and thus requires an analysis largely distinct from that which might be apposite to such legislation. These substantial differences between mainstream and mine specific regulations also extend to inspection and enforcement. Each of the mining states has an independent mines inspectorate which has a very different culture, history and approach to that of the generalist OHS regulatory agencies.

One consequence of the distinctiveness of mine safety legislation and its implementation (and of the relative insularity of the mining and the minerals sectors) is that mining regulation has much to learn from mainstream OHS law and policy and vice versa. In terms of the contemporary statutory regime, the mine safety legislation of Queensland and New South Wales, which had long

lagged far behind "mainstream" OHS regulation, has finally shifted to a point where, in some respects at least, it is now substantially ahead, particularly as regards the introduction of management systems and hazard management plans. In contrast, in terms of their "on the ground" activities, the specialised mines inspectorates fall far short of administrative best practice. When it comes to targeting and rational allocation of resources, avoiding the risk of "capture" by powerful interest groups, and efficient and effective inspection, enforcement and prosecution strategies, most of the mines inspectorates are far behind some of their generalist counterparts, particularly those of New South Wales and Victoria.

Now is a particularly apposite time both to critically review the legislative status quo and to examine questions of how regulation and its implementation can and should be designed to ensure that it is efficient, effective and maintains community confidence. In terms of contemporary legislation, there have been major reforms over the last few years to the legislation of the "mining states" that have yet to be subject to sustained analysis. Queensland made major changes to its mine safety legislation in 1999. New South Wales enacted generalist OHS legislation in 2000 and coupled this to mine specific statutes relating to coal mining in 2002, as well as other types of mining in 2004. These latter statutes only came into force in 2006 and 2007 respectively. Western Australia amended its mine specific legislation in 2004 and is contemplating further reform at the time of writing.

In terms of best practice, the Ministerial Council on Mineral and Petroleum Resources (through its Subcommittee of Chief Ministers of Mines) is seeking to identify the contribution of government in realising a safe and healthy mining industry. Its principal initiative, the National Mine Safety Framework, aims to develop a uniform nationwide approach to mine safety with a focus on (inter alia): the establishment of a consistent legislative framework that protects health and safety of mine workers and others; the development of a nationally consistent approach to enforcement; and the establishment of effective approaches to consultation with stakeholders and between jurisdictions (MCMPR 2004). Its broader concern — how to achieve an efficient and effective regulatory system in each jurisdiction — is also one focus of this book.

Some of the central questions relating to regulatory reform were canvassed in a review conducted by the Western Australian Mine Safety Improvement Group (MSIG 2005) and in the NSW Mine Safety Review (Wran & McClelland 2005). The insights of these reviews are valuable and are drawn upon below. However, both were undertaken under serious constraints of resources and time. As a result, neither was able to examine regulatory or policy issues in any detail. The recommendations of the Mine Safety Review, for example only "tend to point in general directions" (Wran & McClelland 2005, 13). In consequence both identified a need for further assessment and analysis over a longer timeframe. This book takes up that invitation. As will become apparent, the regulatory

challenge it engages with is a complex one, which varies with the nature of the hazards, and with the motivations and capacities of target groups.

The central theme is that mine safety legislation can play an important role in achieving ambitious OHS goals. Although regulation is never likely to be the entire answer, good regulation not only brings laggards up to a minimum legal standard, it also encourages, rewards and facilitates leaders in going beyond them. Bad regulation, in contrast, constrains good enterprises from taking the initiative to improve OHS (while failing to persuade or coerce bad ones to change their ways), or to create the "level playing field" which is necessary to reassure responsible companies that others are not gaining an unfair competitive advantage at their expense.

The book is in three parts. The first examines the existing law in the three mining states — New South Wales, Queensland and Western Australia — and analyses its strengths and weaknesses. The second, and most substantial section, examines what best practice would look like in terms of legislative reform and regulatory design. It also argues that substantial reform is necessary in terms of inspection, enforcement and prosecution practices. This implies substantial changes in the way the mine safety inspectorates go about their tasks: in the way they use their resources, in their inspection and enforcement tools and strategies, and in the circumstances in which they choose to prosecute. It will be suggested that many existing practices fall far short of what is necessary to achieve efficiency, effectiveness and community acceptance, but that many of these shortcomings cannot be laid at the feet of the inspectorates alone, but require further and far reaching reforms which can only be made at a political level. The final part examines the potential capacities of trade unions, workers and industry associations to complement traditional legal regulation but recognises that neither of these groups can be fully effective when their relations with each other, and with the mines inspectorate, are poisoned by the "debilitating mistrust" that is particularly characteristic of contemporary relations between the major stakeholders in New South Wales. The final chapter considers how this mistrust can be broken down and more constructive relationships developed. Without this, the effectiveness of law and regulation will be seriously compromised and the industry's ambitious OHS targets, little closer to achievement.

This book is a synthesis. It draws on the author's own work on occupational health and safety, major hazard facilities and environment regulation, including official mine safety reviews and broader OHS reviews in which the author has been involved; on over 100 interviews with major stakeholders within the industry, including senior executives at corporate level, mine managers and under-managers, deputies and supervisors, local and district check inspectors/safety representatives, trade union officials, senior regulators, industry consultants and OHS lawyers specialising in the mine industry; and on the international evidence based literature of regulation and policy.

The decision to limit discussion to the three principal mining jurisdictions was taken for a number of reasons. In part, it was desirable to maintain the coherence of the narrative: constant cross referencing to multiple jurisdictions increases detail at the cost of the overall argument. But equally, it became apparent that there was little to be learnt, in terms of general principle, from an examination of mine safety legislation in Victoria, South Australia, Tasmania and the Northern Territory that cannot be gleaned from an analysis of legislation in the principal mining states.

New South Wales and Queensland in particular, are well ahead of all other jurisdictions except Victoria. The latter, following the enactment of its mainstream *Occupational Health and Safety Act 2004* and the contemplated introduction of OHS regulations in 2007 also has an advanced and relatively sophisticated regulatory approach both generally and as regards the mining sector. In contrast,

- the South Australian legislation — principally the *Occupational Health, Safety and Welfare Act, 1986* — is outdated. While it incorporates the sort of general duties (to ensure OHS so far as reasonably practicable) to be found elsewhere, it does not require broad based risk-management, OHS management systems or hazard management plans and is also deficient in a number of other respects.
- The Northern Territory legislation is inadequate in the way it addresses a range of important issues. For example there are serious limitations as regards the provision of safety and health management systems, only very limited provision for graduated enforcement measures, an over-emphasis on prescription to the detriment of performance and process based standards, and a lack of general risk management provisions. A number of specific provisions found in most other jurisdictions are also lacking. At the time of writing the Northern Territory is about to review all its OHS legislation and this might be an appropriate time to consider wide ranging statutory reform.
- Tasmania, through the *Workplace Health and Safety Act 1995*, addresses general duty requirements but lacks adequate provision for OHS management systems, provisions specifying key positions within the mine management and supervision structure, provisions specifying safety and health policy for a mine, and a variety of other mine specific requirements. Tasmania also lacks mine specific regulations. The final report of a review of Tasmanian OHS legislation was published in early 2007. This too provides an opportunity for substantial legislative change.

In 2007, as part of the National Mine Safety Framework Implementation Plan, an initiative was in progress to achieve uniformity of outcome in terms of approximately 40 key features/principles (broadly inline with the provisions of ILO Convention 176 *Concerning Safety and Health in Mines* 1995).

Unsurprisingly in the light of the above, New South Wales, Queensland and Victoria will have little difficulty satisfying these principles whereas the other jurisdictions may well find it necessary to make substantial changes to do so. For all these reasons a decision was made to focus on the principal mining states. Readers should have little difficulty applying the general analysis to other jurisdictions.