THE UNIVERSITY OF
NEW SOUTH WALES

NSW
INJURY RISK MANAGEMENT
RESEARCH CENTRE

I R M R C

Development of Performance Measures to support the NSW Mining Health and Safety Action Plan to 2008

Ann Williamson and Naomi Dunn

September, 2007

NSW Injury Risk Management Research Centre
University of New South Wales

UNSW SYDNEY NSW 2052, AUSTRALIA
Telephone: +61 (2) 9385 4207, Facsimile: +61 (2) 9385 6040, Email: irmrc@unsw.edu.au,
ABN 57 195 873 179

Background

The NSW mining industry established Occupational Health and Safety priorities areas at the NSW Government Safety Summit in August, 2005. These priorities areas and the goals and steps to achieve them were described in the NSW Workplace Health and Safety Strategy 2005-2008 document. Subsequently, an Industry Action plan was developed which outlined the targets and performance measures suggested to allow monitoring of the implementation and success towards achieving the targets. The Department of Primary Industry on behalf of the Mine Safety Advisory Council (MSAC) engaged the NSW Injury Risk Management Research Centre to develop the appropriate performance measurement indicators for the priority areas.

Choice of performance measures as indicators of change in industry health and safety performance is not necessarily a simple matter mainly because many of the indicators that might be used cannot be classified as 'good' indicators. Good indicators of occupational health and safety change or, in fact, any outcome, need to be valid, reliable and reflect changes in health and safety, not changes in other outcomes.

Aim of this proposal

To provide the Mine Safety Advisory Council with industry performance measures for priority areas in order to facilitate measurement of the mining industry's performance over the period 2005 to 2008 and to allow monitoring of progress towards the targets put forward in the National Strategy.

Specifically the objectives of this project were:

- To develop more sophisticated performance measures to monitor industry success
- To develop performance measures that will allow MSAC to monitor and analyse trends
- To develop performance measures for evaluation of the success of the implementation of OHS improvement strategies by the mining industry.

Method

The overall approach for developing the performance measures is described below.

1. Identify the sources of data available to develop the performance measures. This involved a review of available data sources including the DPI's COMET collection, Coal mines data collection, WorkCover Workers compensation data and the Hospital Inpatient data collection.

2. Production of performance measures in the form of rates in terms of hours worked in the industry and the number of workers in the mining industry. Limitations of the performance measures that affect interpretation of these performance measures were also determined.

3. Annual trend analysis was calculated for each performance measure. Trends were calculated for each performance measure with baseline year of 2001/2002. .

4. Projected targets were established for main summit targets of the NSW Mine Safety Strategy and were also specified in the NSW Mining Industry Health and Safety Action Plan. The projected targets for each of these performance measures were calculated.

The Performance measures and associated targets to be developed were as shown in Table 1.

COMET database analysis

The data used to calculate fatalities and notifiable injuries was from the Department of Primary Industry's COMET database which collects information on all incidents required to be reported to mines inspectors under mine safety regulation. Both frequency and incidence rates were calculated using denominator data provided by the Department of Primary Industry using industry sources. This included data for each year on hours worked in the mining industry and data on the number of workers in the mining industry.

For the performance indicators based on COMET data, rates were calculated using three yearly average hours worked and number of workers (see Table 2) in order to reduce the effects of variability between years. Rates were expressed as occurrences per million hours worked and incidents per 1000 workers..

Table 2: Total annual employees and total hours worked in the mining industry averaged over 3 years.

	00/01	01/02	02/03	03/04	04/05
Coal					
Employees	9,904	9,973	10,116	10,321	10,988
Hours worked	19,328,500	19,184,700	19,507,567	20,045,133	22,029,670
Hrs worked/employee	*1952*	*1924*	*1928*	*1942*	*2005*
Non-Coal					
Employees	4,837	4,298	4,357	4,504	4,840
Hours worked	10,310,215	9,052,840	9,513,335	9,944,479	10,438,543
Hrs worked/employee	*2132*	*2106*	*2184*	*2208*	*2157*
Total					
Employees	14,741	14,271	14,473	14,825	15,828
Hours worked	29,638,715	28,237,540	29,020,901	29,989,612	32,468,213
Hrs worked/employee	*2011*	*1979*	*2005*	*2023*	*2051*

Note: All numbers are averaged over 3 years

The Frequency rate was therefore calculated using the following:

$$\frac{\text{Number of incidents (eg fatality or injury)}}{\text{Number of hours worked by workers in mining averaged over last three years}} \times 1{,}000{,}000$$

The Incidence rate was therefore calculated using the following:

$$\frac{\text{Number of incidents (eg fatality or injury)}}{\text{Number workers in mining averaged over last three years}} \times 1{,}000$$

WorkCover Workers Compensation claim analysis

The data on new workers compensation claims rates was provided by WorkCover NSW. This data was based on the Australia and New Zealand Standard Industrial Classification (ANZSIC, 1993) of Mining. This is broad definition of mining and includes 'the extraction of minerals occurring naturally as solids such as coal and ores, liquids such as crude petroleum or gases such as natural gas. This classification included subdivisions of Coal Mining (110), Oil and Gas Extraction (120), Metal Ore Mining (131), Construction Material Mining (141), Mining not elsewhere classified (142), Exploration (151) and Other Mining

Services (152). The ANZSIC classification of mining and the mining industry coverage of COMET may not be the same.

The rates provided by WorkCover were incidence rates expressed as the number of claims per 1000 workers as for the COMET data. WorkCover provided both workplace injury rates and employment injury rates.

Workplace injuries are injuries occurring at the workplace either during work or a work break and when the workers activity is under the control of an employer and are defined as injuries happening either during work, during work break or road traffic accidents.

Employment injuries are all injuries arising out of or in the course of a worker's employment and are defined as workplace injuries, injuries occurring during a recess period and injuries occurring during commuting.

WorkCover also provided information on new workers compensation claims for manual handling injuries which included cases classified using the Types of Occurrence Classification System Edition 2 (Revision 1) and included the following:

41 Muscular stress while lifting, carrying or putting down objects
42 Muscular stress while handling objects other than lifting, carrying or putting down objects
43 Muscular stress with no objects being handled
44 Repetitive movement, low muscle loading

Information on claims relating to airborne contaminants was also requested from WorkCover NSW. However claims for airborne contaminant-related disease were very low for mining in this database. As a result cell sizes in the requested tables were very small and could not be reported due to privacy considerations.

As an alternative, the Dust Diseases Board was requested to supply data relevant to claims for airborne contaminant-related disease. The Dust Diseases Board was established by the NSW Workers' Compensation (Dust Diseases) Act 1942 for the purpose of determining claims for compensation from NSW workers (except coal miners) whose disability is attributable to specified dust diseases including asbestos-related disease and silicosis. Unfortunately, despite agreeing to supply the information, it was not supplied in time for this report.

Table 1: Performance measures and goals and targets for each of the priorities in the NSW Mining industry health and safety action plan

Performance Measure	Goal (compared to 2001/02)
Overall strategy	
Fatality rates: Annual mining industry fatality rate for coal and non-coal sectors combined.	20 % reduction by 30 June 2012 10 % reduction by 30 June 2007
Notified injury rates: Annual rates of injuries required to be reported to DPI by mining OHS legislation	40 % reduction by 30 June 2012 20 % reduction by 30 June 2007
New Workers Compensation Claims rate: Annual mining industry rate for new workers compensation claim incidents for coal and non-coal sectors combined (ANZSIC Coded category Mining to 3 digits)	
Priority 1: Musculoskeletal injuries	
New Workers Compensation Claims rate for musculoskeletal injuries: Annual mining industry rate for new workers compensation claim incidents for musculoskeletal injuries in coal and non-coal sectors combined (ANZSIC Coded category Mining to 3 digits)	40 % reduction by 30 June 2012
Priority 2: Unplanned movement of plant	
Notified unplanned movement incident rates for fatalities and notifiable injuries: Annual rates of incidents involving plant or mobile plant required to be reported to DPI by mining OHS legislation	20 % reduction for fatal injury rate by 30 June 2012 40 % reduction for notifiable injury rate by 30 June 2012
Priority 3: Contractor safety	
Notified injury rates for contractors: Annual rates of injuries required to be reported to DPI by mining OHS legislation. Rates can be calculated only from 2007/2008.	40 % reduction by 30 June 2012
Lost time injury frequency rates of contractors for non-coal (metals and extractives): Annual rates of average time lost due to injury involving contractors in the non-coal sector	40 % reduction by 30 June 2012
Lost time injury frequency rates contractors for coal: Annual rates of average time lost due to injury involving contractors in the coal sector	40 % reduction by 30 June 2012
New Workers Compensation Claims rate for contractors: Annual mining industry rate for new workers compensation claim incidents for contractors in coal and non-coal sectors combined (ANZSIC Coded category Mining to 3 digits)	
Priority 6: Atmospheric Contaminants	
New Workers Compensation Claims rate for diseases relating to airborne contaminants: Annual mining industry rate for new workers compensation claim incidents for coal and non-coal sectors combined (ANZSIC Coded category Mining to 3 digits)	40 % reduction by 30 June 2012

Development of Performance Measures

Overall performance indicators

1. Fatality rates

The source of the data for this performance measure was the COMET database. Annual incidence and frequency rates for fatalities in mining (coal and non coal sectors combined) are shown in Table 3. Both types of rates showed a very clear reduction between 2000/2001 and 2001/2002. Rates remained very static for the next three years and showed a further, much smaller drop in the most recent year.

Table 3: Annual mining industry fatality frequency and incidence rates (coal and non coal combined) showing projected targets for 2007 and 2012[@]

Fatality rates	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	***2007***	***2012***
*Frequency Rates**	0.17	0.06	0.06	0.06	0.04	*0.05*	*0.04*
*Incidence Rates^*	0.34	0.12	0.12	0.11	0.08	*0.11*	*0.07*

* Expressed as number of reports per million hours worked averaged over 3 years
^ Expressed as number of reports per 1000 workers averaged over 3 years
[@] source DPI's COMET database

The NSW Mining Industry Health and Safety Action Plan projected targets for reducing workplace fatalities by at least 20 percent by 30 June 2012 and by 10 percent by 30 June 2007 compared to the base year of 2001/2002. These are shown in Table 3 and graphically for fatality incidence rates in Figure 1. The decrease in fatality rates since 00/01 means that the 2007 target was met in 04/05 and that the most recent 04/05 rate is very close to the projected targets for 2012.

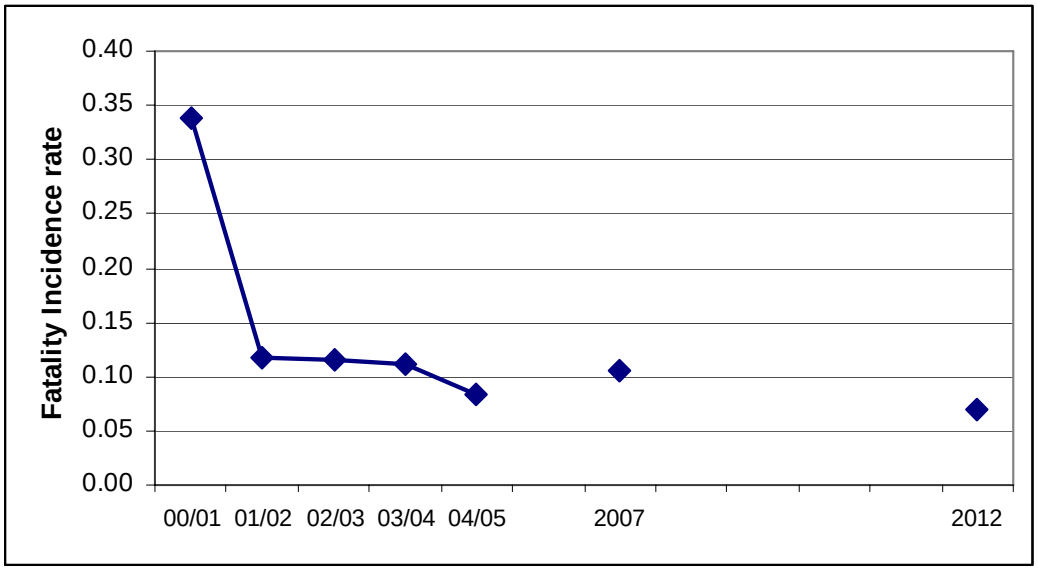

Figure 1: Annual mining industry fatality incidence rates and projected targets of 10 percent reduction by 30 June 2007 and 20 percent reduction by 30 June 2012 compared to 2001/2002 rates

Comment

Fatality rates in mining are a most valid performance indicator for health and safety as they are based on a clear and unambiguous definition of cases. In the mining industry they are (fortunately) small in number so analysis and interpretation of yearly trends can be difficult as the numbers can vary greatly from year to year. This means that it can be difficult to determine whether or not targets are met when numbers are so small and numbers and rates can vary considerably from year to year. Longer term trends are usually more reliable with indicators of this type.

2. Notified injury rates

The data for this performance measure was from the DPI's COMET database. Under mining OHS legislation, serious injury occurring at mine sites must be reported to the mine safety inspectorate. These notifiable injuries include:

- fracture of main large bony structures (eg, skull, jaw, spine, pelvis, arm, shoulder-blade, collar-bone, forearm, thigh, leg, knee-cap, ankle or ribs
- dislocation of shoulder, elbow, hip, knee or spine
- amputation of hand or foot or substantial part of the hand or foot
- serious impairment or loss of sight of an eye
- internal haemorrhage receiving hospital treatment
- Burns receiving treatment from a registered medical practitioner
- an injury involving injection of hydraulic fluid
- asphyxia

Annual frequency and incidence rates for notifiable injuries required to be reported under legislation are shown in Table 4. Over the five year period of this analysis, frequency and incidence rates have been fairly stable and there has been only a small variation of around 10 percent in total.

Table 4: Annual notified injury frequency and incidence rates showing projected targets for 2007 and 2012[@]

Injury rates	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	***2007***	***2012***
*Frequency Rates**	1.83	1.83	1.93	1.78	1.70	*1.46*	*1.10*
*Incidence Rates^*	3.69	3.62	3.87	3.60	3.50	*2.90*	*2.17*

* Expressed as number of reports per million hours worked averaged over 3 years
^ Expressed as number of reports per 1000 workers averaged over 3 years
[@] Source, DPI's COMET database

The projected targets for reducing workplace injuries set down in the NSW Mining Industry Health and Safety Action Plan are for a reduction of at least 40 percent by 30 June 2012 and by 20 percent by 30 June 2007 compared to the base year of 2001/2002. The projected targets for notifiable injury frequency and incidence rates are shown in Table 4 and for injury incidence rates in graphical form in Figure 2. While the injury frequency and incidence rates for the most recent year were the lowest over the five year period, a considerable change

over a short time would be required to meet the 20 percent reduction target by 2007.

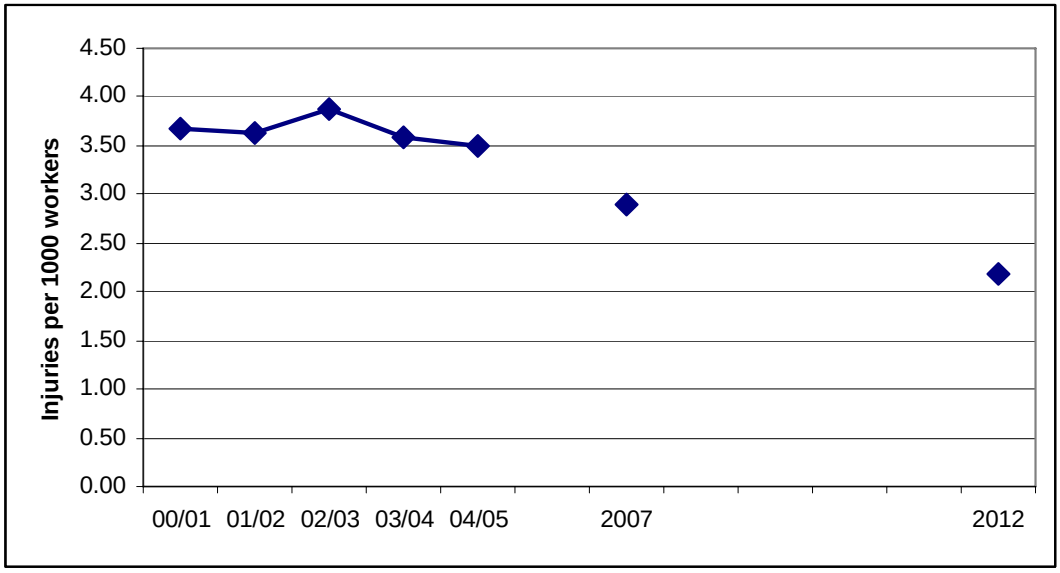

Figure 2: Annual mining industry notifiable injury incidence rates and projected targets of 20 percent reduction by 30 June 2007 and 40 percent reduction by 30 June 2012 compared to 2001/2002 rates

Comment

Due to the clear definitions of injury that are included in this performance measure, it is most likely to be a valid indicator of mine safety. It is therefore likely to be reported accurately across all mine sectors. In addition, due to the seriousness of these injury types and the legislated requirement to report them, they are unlikely to remain unreported or be overlooked or missed by employers or workers. These characteristics mean that this will be a good performance indicator for tracking trends in mine safety.

3. New Workers Compensation Claims rate:

The source of this data was the WorkCover's NSW Workers Compensation claims database. Annual mining industry rate for new workers compensation claim incidents for coal and non-coal sectors combined for the period 2001/2002 to 2004/2005 are shown in Table 5. As incidence rates for employment-related injury claims include both claims for workplace and commuting injuries, they were, not surprisingly, considerably higher than those for workplace injury claims. Both workplace and employment injury claim incidence rates varied considerably over the four years of this analysis and showed no clear trend.

Table 5: Major workplace and employment injuries and incidence rates for the mining industry (provided by WorkCover NSW) [@]

Workplace Injuries	**01/02**	**02/03**	**03/04**	**04/05**
Number of claims	636	454	519	468
*Incidence rate**	37.5	30.1	36.1	28.2
Employment Injuries				
Number of claims	917	656	741	840
*Incidence rate**	54.2	43.5	51.6	39.4

* Expressed as number of reports per 1000 workers
[@] Source, WorkCover NSW Workers Compensation claims database

Comment

Changes in workers compensation claims rates may not reflect changes in mine safety outcomes as they may vary due to factors unrelated to mine safety. These can include systemic changes in the workers compensation system itself which admit some types or levels of severity of injuries and not others, variation between mine sectors, mine companies and mine sites in encouraging claims or differences between individual workers in their willingness to claim. Any of these factors can limit the extent that workers compensation claims are an accurate performance measure of mine safety. Of course, compensation claim rates may be seen as an indicator of general mine industry performance, not necessarily safety performance.

Priority 1: Musculoskeletal Injuries

The annual incidence rates for New Workers Compensation Claims for manual handling or musculoskeletal injuries are shown for coal and non coal sectors combined in Table 6. For both employment-related injuries and workplace injuries there has been a consistently declining trend across the four years examined. Incidence rates have decreased by nearly one-third between 2001/2002 and 2004/2005.

Table 6: Annual Incidence rates of new Workers Compensation claims for manual handling injuries for workplace and employment injuries and projected targets for 2012[@]

	01/02	**02/03**	**03/04**	**04/05**	***2012***
Workplace Injuries					
*Incidence rate**	12.9	11.7	11.0	8.8	*7.74*
Employment Injuries					
*Incidence rate**	13.9	12.3	12.6	9.5	*8.34*

* Expressed as number of reports per 1000 workers
[@] Source, Workers compensation claims database

The projected targets for reducing new Workers Compensation claims for musculoskeletal injures included in the NSW Mining Industry Health and Safety Action Plan are for a reduction of at least 40 percent by 30 June 2012 compared to the base year of 2001/2002. As shown in Table 6 and Figure 3, due to the sustained reductions in new Workers Compensation claims for manual handling injuries over the past four years, it is likely that the target for this performance measure will be met, if not exceeded, by 2012.

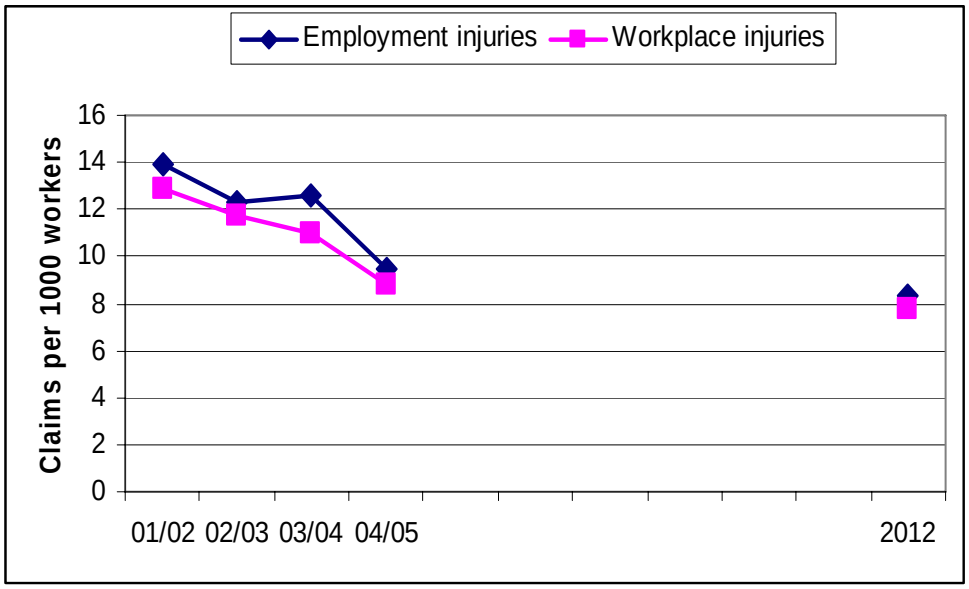

Figure 3: Annual incidence rates for new Workers compensation claims for manual handling injuries in the mining industry and the projected target of 40 percent reduction by 30 June 2012 compared to 2001/2002 rates

Comment

Using new Workers Compensation claims as a performance measure to reflect changes in mine safety performance has the same potential problems as using the all mining Workers Compensation claims measure. It is likely that this measure will be somewhat less variable as the case definitions are more narrowly defined compared to the broad range of injury types included in the all claims measure. Again, however, this measure may reflect other aspects of mine industry performance, rather than safety.

Priority 2: Notified unplanned movement of plant incident rates:

The rate of Notifiable unplanned movement of plant and mobile plant incidents involving fatalities and injuries is difficult to obtain from the current version of COMET. This problem occurs because cases involving injury or fatality due to a Notifiable unplanned movement incident may be in the COMET database for either of two reasons: they involved a serious reportable injury or because they involved a serious type of incident that is required to be reported. As there is only one variable for entering the type of incident that is being notified (Incident subtype Description), only one of these attributes is entered. Only nine cases in COMET were coded as an Incident subtype of 'unplanned movement so most cases where a serious injury was caused by an unplanned movement, were coded as a fatality or serious injury.

There is no other variable in COMET that would clearly differentiate the serious injury cases due to unplanned movements. It was possible to identify cases by cross-tabulating the Agency of the injury code with the Mechanism of injury code. For this purpose Mechanism codes that were most related to Unplanned movements of plant or mobile equipment.

The mechanism codes that were included were:

- being hit by falling objects,
- being hit by moving objects,
- being trapped by stationary and moving object

The agency codes that were included were:

- machinery and fixed plant,
- mobile plant,
- non-powered equipment,
- powered equipment tools and appliances,
- crushing pressing rolling machinery

This resulted in identification of a total of 45 cases over the five years of this analysis. These were used to calculate the performance indicators for this priority.

The annual rates of fatal and serious injury incidents involving plant or mobile plant required to be reported to DPI by mining OHS legislation are shown in Tables 7 and 8. For fatal injuries resulting from unplanned movements, frequency and incidence rates were low and showed little change between 2000/2001. In contrast, frequency and incidence rates for injuries resulting from unplanned movement incidents have increased by around two-thirds between 00/01 and 04/05, although most of the increase occurred in the first years of this analysis.

Table 7: Annual unplanned movement fatality frequency rates per 1,000,000 hours worked and incidence rates per 1,000 workers in the mining industry[@]

Fatalities	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	***2012***
*Frequency Rates**	0.02	0.02	0.03	0.03	0.02	*0.02*
*Incidence Rates^*	0.05	0.05	0.07	0.07	0.04	*0.04*

* Expressed as number of reports per million hours worked averaged over 3 years
^ Expressed as number of reports per 1000 workers averaged over 3 years
[@] Source, DPI's COMET database

Table 8: Annual unplanned movement injury frequency rates per 1,000,000 hours worked and incidence rates per 1,000 workers in the mining industry[@]

Injuries	**00/01**	**01/02**	**02/03**	**03/04**	**04/05**	***2012***
*Frequency Rates**	0.13	0.19	0.21	0.21	0.22	*0.11*
*Incidence Rates^*	0.27	0.37	0.41	0.43	0.44	*0.22*

* Expressed as number of reports per million hours worked averaged over 3 years
^ Expressed as number of reports per 1000 workers averaged over 3 years
[@] Source, DPI's COMET database

The NSW Mine Safety Strategy Action plan set a goal for unplanned movement-related fatalities of achieving a reduction of 20 percent by 30 June 2012. The target rates for fatal incidents are shown in Table 7 and Figure 4. Based on this data the 2012 targets were met for both frequency and incidence rates by 2004/2005. For injury frequency and incidence rates resulting from unplanned movements, the target was to achieve 40 percent reduction by 2012. As shown in Table 8 and Figure 4 the rates for both performance measure will need to halve in order to reach this target.

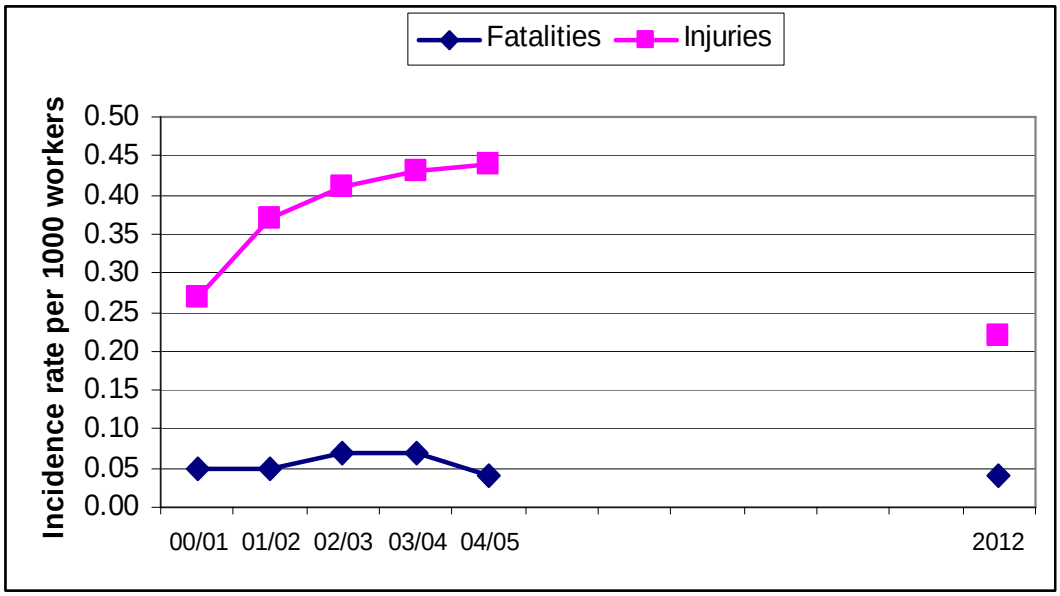

Figure 4: Annual incidence rates for injuries involving unplanned movements of plant and mobile plant in the mining industry and the projected target of 40 percent reduction by 30 June 2012 compared to 2001/2002 rates

Comment

While the analysis presented is an attempt to estimate the trends in annual rates for unplanned movements-related injury, clearly to obtain the best measures of the rates of serious injury incident involving unplanned movements of plant and mobile plant some revisions are needed to the COMET database. An additional variable is needed to allow Inspectors and data recorders to record at least two reasons for notifying incidents. One of the variables should focus on recording that a serious notifiable injury had occurred and the other on the non-injury type of incident that was required to be reported. Both variables will only be needed in cases where a notifiable incident results in injury

Priority 3: Contractor safety

For performance measures involving contractors, trends can only be calculated from 2007/2008 as a systematic classification of contractor has only become in use since the introduction of new reporting requirements for contractors. The intended performance indicators to be collected to track contractor safety are the following.

- Notified injury rates for contractors:
  Annual rates of injuries required to be reported to DPI by mining OHS legislation. Rates can be calculated only from 2007/2008.

- Lost time injury frequency rates for contractors in non-coal (metals and extractives):
  Annual rates of average time lost due to injury in the non-coal sector

- Lost time injury frequency rates for contractors in coal:
  Annual rates of average time lost due to injury in the coal sector

- New Workers Compensation Claims rate for contractors:
  Annual mining industry rate for new workers compensation claim incidents for contractors in coal and non-coal sectors combined (ANZSIC Coded category Mining to 3 digits)

For each of these performance indicators, the target reduction of injury rates of 40 percent is the goal to be achieved by 2012.

Priority 6: Atmospheric Contaminants

This performance measure has not been included in this report as WorkCover NSW was unable to supply the required information. The intended performance indicator for this priority was

- New Workers Compensation and/or NSW Dust Diseases Board claims for mining employment related airborne contaminant-related diseases.

WorkCover was unable to supply this performance measure as their analysis of new workers compensation claims for diseases of respiratory system resulted in too few claims to allow them to produce a report. In order to protect the identity of claimants/employers, WorkCover suppresses any cell in a table with fewer than four cases, so this information did not meet their criteria for release. It may be possible to revise the data request to make it possible for some data to be reported, for example by combining data over two to three years.

The request for data from the Dust Diseases Board was not met in the timeframe required for this report. Even if data can be supplied, however, it will only cover non-coal mining cases.

Conclusions

This project explored a range of performance measures that were suggested in the NSW Mining Industry Health and Safety Action Plan as potentially useful indicators of changes in occupational health and safety performance in the industry. Performance measures that were examined included three that reflect overall safety and health performance and others that reflect changes relevant to specific Priority areas, including Musculoskeletal or manual handling injuries, and injuries resulting from unplanned movements of plant and mobile plant. For two other priority areas, contractor safety and atmospheric contaminants, performance measures were not examined in detail. For Contractor safety, performance indicator data has not been available to identify contractors separately, although this will be possible from 2007/2008. Performance indicators to track the number of miners affected by atmospheric contaminants will need further development.

From this analysis it is clear that the performance measure most likely to be a successful indicator of changes in health and safety performance is notifiable injury rates. This measure will be most suitable as it involves clear definitions, it is unlikely to be under-reported and it is a direct outcome of safety failure. Furthermore these injuries occur sufficiently frequently so there is no problem of interpretation of variation from year to year that occurs with measures involving small numbers of cases. While fatality rates should also be a very good indicator of changes in health and safety performance, their numbers are currently very low and variable and so in practice this will not be a very successful performance indicator in this industry. The performance measure for unplanned movement injuries could be a good indicator once problems of classification and coding within COMET are overcome.

The use of new compensation claim rates as performance indicators will be less successful for tracking changes in safety and health outcomes as this measure is vulnerable to influences other than safety-related ones, such as variations in propensity to make claims between individual workers and to changes in the compensation system rules and procedures. Tracking new workers compensation claims, however, may be useful for reasons other than monitoring safety performance.

While the suggested performance indicators for contractor safety cannot yet be examined, it is likely that the most successful indicator for this priority area will again be notifiable injury rates. Lost time injury frequency rates are suggested as performance indicators for this priority area, however this measure has similar problems to tracking workers compensation claims due to its sensitivity and vulnerability to factors that are not necessarily related to safety or health. This means that changes in this measure may not be interpretable as a safety or health indicator.

Tracking changes in disease related to airborne contaminant exposure proved to be a problem. Both the Workers Compensation claims and the Dust Diseases Board claims databases collect information on these claims although the latter only collects information on non-coal mining claims. There were difficulties in accessing this information relating mainly to small sample sizes and privacy and the speed of response to requests. This performance indicator has the same problems as for new compensation claim rates since the likelihood of claiming may be related to non-safety factors and to changes in compensation system rules. Further work is needed to explore the best approaches to tracking airborne contaminant related disease in mining in NSW.

Progress towards meeting goals and targets for Safety Action Plan priorities

Analysis of the progress of the performance measures towards meeting the goals established in the Action Plan showed mixed results. Fatalities are clearly almost at the target level already, although these are a volatile measure and may vary greatly from year to year. Notifiable injury rates are significantly higher than the projected target and will require further action to make the reductions in serious injuries required to meet the goal. Rates of new workers compensation claims for musculoskeletal injury are already very close to the projected target. In contrast, rates of injuries due to unplanned movements of plant and mobile plant increased markedly over the five years of the analysis and will need considerable action to reduce them to the target level. It should be noted these trends may vary once the identification of cases within COMET is clarified.